CERTIFIED MAIL™

Dan Wellings
Doddridge Co Flood Plain MGT
Room 102
118 East Court St.
West Union, WV 26456

7013 2250 0001 6914 7882

015H14161808
HASLER
$6.48
02/05/14
Mailed From 26456
US POSTAGE

A
C
S
☐ INSUFFICIENT ADDRESS
☐ ATTEMPTED NOT KNOWN
☐ NO SUCH NUMBER/ STREET
☐ NOT DELIVERABLE AS ADDRESSED - UNABLE TO FORWARD
☐ OTHER

RTS
RETURN TO SENDER

Unclaimed

2014 MAR 10 AM 11:40

DODDRIDGE COUNTY CLERK'S OFFICE

26456270018

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. Also complete item 4 if Restricted Delivery is desired.
- 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:

#13-054 A

Markwest Liberty Midstream & Res.
Atten: Kevin Sturgill
218 Swisher Lane
West Union, WV 26456

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
☐ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7013 2250 0001 6914 7882

PS Form 3811, July 2013 Domestic Return Receipt

PERMIT NO. 13-054A

EXTENSION OF PERMIT #13-054

DODDRIDGE COUNTY

FLOODPLAIN DEVELOPMENT

PERMIT

PURPOSE FOR PERMIT: FILL - MOOSE PHASE 1

ISSUED TO Mark West

218 Swisher Lane

ADDRESS: West Union, WV 26456

PROJECT ADDRESS: NEAR MOUTH OF MEATHOUSE FORK + MOUTH OF BUCKEYE CREEK

ISSUED BY: Dan Walters

DATE: 02/03/2014

CONSTRUCTION MUST START WITHIN 180 DAYS FROM ISSUED DATE. PERMIT EXPIRES IN 12 MONTHS FROM ISSUED DATE. IF EXTENTION IS NEEDED A REQUEST MUST BE MADE IN WRITING STATING A REASON FOR THE EXTENTION.

THIS PERMIT MUST BE POSTED ON THE PREMISES IN A CONSPICUOUS PLACE SO AS TO BE CLEARLY VISIBLE FROM THE STREET.

DAN WELLINGS, PS
DODDRIDGE CO. FLOODPLAIN MANAGER
118 EAST COURT STREET, ROOM 102
WEST UNION, WV 26456
OFFICE PHONE: (304) 873 - 2631
CELL PHONE: (304) 629 - 7249
E-MAIL: wellingsd8@gmail.com

DATE: 02/04/2014
RE: PROPOSED SHERWOOD GAS PROCESSING PLANT MASTER PLAN
COUNTY ROAD 50/34
DODDRIDGE COUNTY, WEST VIRGINIA
CEC PROJECT 110-811.5001

Dear Mr. Celender,

As the Doddridge County Floodplain Manager I would like to inform Civil & Environmental Consultants, Inc. (CEC) as consultant to provide professional engineering services to MarkWest Liberty Midstream & Resources, LLC (MarkWest) that I have asked another engineering firm to be a consultant for review of materials submitted regarding the efficacy of granting or denying Doddridge County Floodplain Permit Application #14-123.

Said floodplain permit application was prepared by said CEC for said MarkWest's Sherwood Gas Processing Plant Master Plan request for a revised permit to finalize grading of the entire site as part of the construction of the Gas Processing Plants 6 through 10, de-ethanizers, and substation expansion.

Sincerely,

Dan Wellings 02/04/2014
DAN WELLINGS, PS
DODDRIDGE COUNTY FLOODPLAIN MNGR.

DAN WELLINGS, PS
DODDRIDGE CO. FLOODPLAIN MANAGER
118 EAST COURT STREET, ROOM 102
WEST UNION, WV 26456
OFFICE PHONE: (304) 873 - 2631
CELL PHONE: (304) 629 - 7249
E-MAIL: wellingsd8@gmail.com

DATE: 02/03/2014

RE: PROPOSED MOOSE PROPERTY PHASE 1
DODDRIDGE COUNTY FLODPLAIN PERMIT #13-054 TIME EXTENSION REQUEST
US RT. 50
DODDRIDGE COUNTY, WEST VIRGINIA
CEC PROJECT 130-359

Dear Mr. Celender,

As the current Doddridge County Floodplain Manager I would like to inform Civil & Environmental Consultants, Inc. (CEC) as consultant to provide professional engineering services to MarkWest Liberty Midstream & Resources, LLC (MarkWest) that I have conducted a thorough review of the request for a time extension and amendment to DODDRIDGE COUNTY FLOODPLAIN PERMIT # 13-054 issued on September 9, 2013 for the construction of two fill areas off U.S. Rt. 50 near the mouth of Meathouse Fork and the mouth of Buckeye Creek.

REQUEST FOR TIME EXTENSION:

It is my professional opinion as the current Doddridge County Floodplain Manager that MarkWest's diligent pursuit for the start of construction of said two fill areas while awaiting the pending permit approvals from the WVDEP and WVDNR for relocation of a Dominion Gas transmission line that crosses the project area is "justifiable delay" as defined in Section 7.6 Start of Construction in the current Doddridge County Floodplain Ordinance at the top of page 39.

Furthermore granting of the requested extension will **NOT** be detrimental to public safety, health, or welfare or injurious to other property.

Furthermore the said pipeline relocation is adjacent to, but not located within the FEMA designated special flood hazard area.

Therefore I hereby **GRANT** the said request for an extension of the 180 day Start of Construction period for said permit #13-054 to begin on February 2, 2014.

I hereby **GRANT** the said request for an extension of the 12 month period for which all work must be completed under said permit #13-054 to begin on February 2, 2014.

REQUEST FOR AMENDMENT:

Since the gas pipeline work area is located outside of the FEMA designated special flood hazard area, the request to have said permit #13-054 amended to include said pipeline relocation is **GRANTED.**

Sincerely,

Dan Wellings 02/03/2014

DAN WELLINGS, PS

DODDRIDGE COUNTY FLOODPLAIN MNGR.

CERTIFIED MAIL

Beth A. Rogers
Doddridge County Clerk
Room 102
118 East Court St.
West Union, WV 26456

7012 1010 0001 4282 8614

015H14112420
$6.11
08/08/13
Mailed From 26456
US POSTAGE
HASLER

Name
1st Notice
2ad Notice
Return

UNABLE TO FORWARD

JAMES BALLENGER
RT 1, BOX 73
WEST UNION, WV 26456

2013 SEP 16 PM 12:16

BETH A. ROGERS
COUNTY CLERK

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT

SENDER: *COMPLETE THIS SECTION*

- **Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.**
- **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: 13-064

James Ballenger
Rt. 1, Box 73
West Union, WV 26456

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
XX Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7012 1010 0001 4282 8614

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

Legal Advertisement:

Doddridge County

Floodplain Permit Application

Please take notice that on the 7TH day of August, 2013 **MARKWEST LIBERTY – MOOSE SITE** filed an application for a Floodplain Permit to develop land located at or about: **SURFACE OWNERS: MARKWEST LIBERTY MIDSTREAQM & RESOURCES, LLC.**

Deed book 257 Pg 66, Tax Map 08-16 Parcel 0015

The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours.

Any interested persons who desire to comment shall present the same in writing by **August 27th , 2013.**

Delivered to the:

Clerk of the County Court

118 E. Court Street, West Union, WV 26456.

Beth A Rogers, Doddridge County Clerk

Dan Wellings, Doddridge County Flood Plain Manager

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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: 13-054

Clinton D. Means
Rt 2, Box 47 D
West Union, WV 26456

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Nancy Means ☒ Agent ☐ Addressee

B. Received by *(Printed Name)* Nancy Means
C. Date of Delivery 8-9-13

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

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1670 0001 1415 5142

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

UNITED STATES POSTAL SERVICE

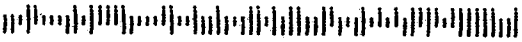
First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

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

FILED
2013 AUG 12 AM 11:49
BETH A. ROGERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

BETH A ROGERS
DODDRIDGE COUNTY CLERK
118 E. COURT ST., RM 102
WEST UNION, WV 26456

E456129798



SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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: 13-054

Lawrence Gaskins
~~Rt 2, box 207~~ 3582 SMITHTON ROAD
West Union, WV 26456

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Lawrence Gaskins ☐ Agent ☒ Addressee

B. Received by *(Printed Name)* LAWRENCE GASKINS
C. Date of Delivery 8-22-2013

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

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1670 0001 1415 5135

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

UNITED STATES POSTAL SERVICE

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

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

FILED
2013 AUG 26 PM 1:57
BETH A. ROGERS
DODDRIDGE COUNTY CLERK

BETH A ROGERS
DODDRIDGE COUNTY CLERK
118 E. COURT ST., RM 102
WEST UNION, WV 26456

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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: #13-054-A

Civil & Environmental Consult.
Atten: Rick Celender
333 Baldwin Road
Pittsburgh, PA 15205

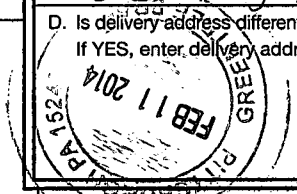
COMPLETE THIS SECTION ON DELIVERY

A. Signature

X Sue Nagel ☐ Agent ☐ Addressee

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

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



3. Service Type

☒ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7013 2250 0001 6914 7875

PS Form 3811, July 2013 Domestic Return Receipt

UNITED STATES POSTAL SERVICE

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

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

FILED
2014 FEB 18 PM 12: 22
BETH A. ROGERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

Dan Wellings
Doddridge Co. Flood Plain MGT.
118 E. Court St
West Union, WV 26456

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- 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: 13-054

Clarence D. Evans
Rt 2, Box 56
West Union, WV 26456

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Sandy Ewing ☒ Agent ☐ Addressee

B. Received by *(Printed Name)* Sandy Ewing
C. Date of Delivery 8-9-13

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

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7012 1010 0001 4282 8621

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

UNITED STATES POSTAL SERVICE

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

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

FILED
2013 AUG 12 AM 11:49
BETH A. ROGERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

BETH A ROGERS
DODDRIDGE COUNTY CLERK
118 E. COURT ST., RM 102
WEST UNION, WV 26456

9405612979

7012 1010 0001 4282 8614

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
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For delivery information visit our website at www.usps.com®

OFFICIAL USE

13-054

Postage	$ .46
Certified Fee	3.10
Return Receipt Fee (Endorsement Required)	2.55
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 6.11

WEST UNION WV Postmark Here AUG - 8 2013 USPS 26456

Sent To: James Ballenger
Street, Apt. No.; or PO Box No.: Rt. 1, Box 73
City, State, ZIP+4: West Union, WV 26456

PS Form 3800, August 2006 See Reverse for Instructions

7010 1670 0001 1415 5135

U.S. Postal Service™
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OFFICIAL USE

Postage	$ .46
Certified Fee	3.10
Return Receipt Fee (Endorsement Required)	2.55
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 6.11

WEST UNION WV Postmark Here AUG 8 2013 USPS 26456

Sent To: Lawrence Gaskins
Street, Apt. No.; or PO Box No.: Rt 2, Box 204
City, State, ZIP+4: West Union, WV 26456

PS Form 3800, August 2006 See Reverse for Instructions

7012 1010 0001 1415 5142

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OFFICIAL USE

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Certified Fee	3.10
Return Receipt Fee (Endorsement Required)	2.55
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 6.11

WEST UNION WV Postmark Here AUG - 8 2013 USPS 26456

Sent To: Clinton D. Means
Street, Apt. No.; or PO Box No.: Rt. 2, Box 47 D
City, State, ZIP+4: West Union WV 26456

PS Form 3800, August 2006 See Reverse for Instructions

7010 1670 0001 4282 8621

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
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Postage	$ .46
Certified Fee	3.10
Return Receipt Fee (Endorsement Required)	2.55
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 6.11

WEST UNION WV Postmark Here AUG - 8 2013 26456

Sent To: Clarence D. Evans
Street, Apt. No.; or PO Box No.: Rt. 2, Box 56
City, State, ZIP+4: West Union, WV 26456

PS Form 3800, August 2006 See Reverse for Instructions

7013 2250 0001 6914 7875

U.S. Postal Service™
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OFFICIAL USE

Postage	$ .48
Certified Fee	3.30
Return Receipt Fee (Endorsement Required)	2.70
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 6.48

WEST UNION WV Postmark Here FEB - 6 USPS 26456

#13-054-A

Sent To: Civil & Environmental Consultants
Street, Apt. No.; or PO Box No.: 333 Baldwin Road
City, State, ZIP+4: Pittsburgh PA 15205

PS Form 3800, August 2006 See Reverse for Instructions

7013 2250 0001 6914 7882

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

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

OFFICIAL USE

Postage	$ .48
Certified Fee	3.30
Return Receipt Fee (Endorsement Required)	2.70
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 6.48

WEST UNION WV Postmark Here FEB - 6 USPS 26456

#13-054 A

Sent To: Markwest Liberty Midstream & Res.
Street, Apt. No.; or PO Box No.: 218 Swisher Lane
City, State, ZIP+4: West Union, WV 26456

PS Form 3800, August 2006 See Reverse for Instructions

By: BH - MEH - AML
Asst. Chief Tax Deputy

W. C .Underwood Jr.
Sheriff of Doddridge County

The Person paying Money into the Treasury shall forthwith file one of these Receipts with the County Clerk

Doddridge County, West Virginia

No. 256

Date: August 7, 2013
Customer copy

Received: #13-054 mark west liberty/ moose site $1,500.00

In Payment For: 318 Building Permits (LP)

For: 12-Flood Plain Ordinance #20 Fund

By: BH - MEH - AML
Asst. Chief Tax Deputy

W. C .Underwood Jr.
Sheriff of Doddridge County

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

94379

Check Date: 7/12/2013

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
07112013	7/11/2013	000000224339	500.00			500.00
Doddridge County Commission		TOTAL	500.00			500.00
Operating Account 55		11261				

Mark West Liberty / Moose Site

13-054

PRODUCT DLT141 USE WITH 91500 ENVELOPE

DODDRIDGE COUNTY
FLOODPLAIN APPLICATION PERMIT FEES

Accessory Building and/or Appurtenant Structures ---------- **$100.00**
(examples: garage, storage or pole building, carport)
(the total cost of which do not exceed $10,000.00)

Accessory Building and/or Appurtenant Structures, Additions and/or Substantial Improvement to Single Family Residential or Manufactured Homes, New Single or Multi-Family Residential and Commercial Structures or Substantial Improvement to existing Commercial Structures, Commercial Land Use Changes and Land Altering Activities
(commercial structures includes buildings used for business purposes)
(the total costs of which exceed $10,000.00 but do not exceed $50,000.00) ----- **$250.00**

Accessory Building and/or Appurtenant Structures, Additions and/or Substantial Improvement to Single Family Residential or Manufactured Homes, New Single or Multi-Family Residential and Commercial Structures or Substantial Improvement to existing Commercial Structures, Commercial Land Use Changes and Land Altering Activities
(commercial structures includes buildings used for business purposes)
(the total costs of which exceed $50,000.00 plus $2.oo per $1,000.00 to cover costs over $50,000.00) ---------- **$350.00**

New Industrial Structures or Additions and/or Substantial Improvement to Existing Industrial Structures, changes in Land Use and Land Altering Activities for Industrial purposes
(industrial structures includes oil and/or natural gas wells, roads, bridges, tank pads, and Buildings used or associated with oil and natural gas purposes)
(the total costs of which do not exceed $100,000.00) ---------- **$500.00**

New Industrial Structures or Additions and/or Substantial Improvement to Existing Industrial Structures, changes in Land Use and Land Altering Activities for Industrial purposes
(industrial structures includes oil and/or natural gas wells, roads, bridges, tank pads, and Buildings used or associated with oil and natural gas purposes)
(the total costs of which exceed $100,000.00 plus $5.00 per $1,000.00 in costs over $100,000.00) ---------- **$1,000.00**

Maximum Fee: In no event shall any Floodplain Application Permit Fee charged under the Doddridge County Floodplain Ordinance exceed the sum of $25,000.00.

Legal Advertisement:

Doddridge County

Floodplain Permit Application

Please take notice that on the 7TH day of August, 2013 **MARKWEST LIBERTY – MOOSE SITE** filed an application for a Floodplain Permit to develop land located at or about: **SURFACE OWNERS: MARKWEST LIBERTY MIDSTREAQM & RESOURCES, LLC.**

Deed book 257 Pg 66, Tax Map 08-16 Parcel 0015

The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours.

Any interested persons who desire to comment shall present the same in writing by **August 27th , 2013.**

Delivered to the:

Clerk of the County Court

118 E. Court Street, West Union, WV 26456.

Beth A Rogers, Doddridge County Clerk

Dan Wellings, Doddridge County Flood Plain Manager

P. 01

TRANSACTION REPORT

AUG-07-2013 WED 02:46 PM

FOR: DODDRIDGE CO. CLERK 304 873 1840

SEND

DATE	START	RECEIVER	TX TIME	PAGES	TYPE	NOTE	M#	DP
AUG-07	02:46 PM	93048731600	30″	1	FAX TX	OK	562	

TOTAL : 30S PAGES: 1

Legal Advertisement:

Doddridge County

Floodplain Permit Application

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Deed book 257 Pg 66, Tax Map 08-16 Parcel 0015

The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours.

Any interested persons who desire to comment shall present the same in writing by **August 27th, 2013.**

Delivered to the:

Clerk of the County Court

118 E. Court Street, West Union, WV 26456.

Beth A Rogers, Doddridge County Clerk

Dan Wellings, Doddridge County Flood Plain Manager

January 31, 2014

Mr. Dan Wellings, Floodplain Manager
Doddridge County Commission
118 East Court Street
West Union, WV 26456

Extension request
#13-054
granted
02/03/2014
DJW

Dear Mr. Wellings:

Subject: Proposed Moose Property Phase I Fill Site
Floodplain Permit No. 13-054 Time Extension Request
U.S. Route 50
Doddridge County, West Virginia
CEC Project 130-359

On behalf of MarkWest Liberty Midstream & Resources, LLC (MarkWest), Civil & Environmental Consultants, Inc. (CEC) is requesting a time extension and amendment to the Floodplain Permit No. 13-054, which was issued on September 9, 2013 for the construction of two fill areas off U.S. 50 in Doddridge County, West Virginia.

An extension of the permit expiration is requested because of a delay in the start of construction. Construction has been delayed because it is necessary to relocate a Dominion Gas transmission line that crosses the project area. MarkWest and CEC are currently pursuing permit approvals from the WVDEP and WVDNR for the gas line relocation work.

We are also requesting that the permit be amended to include the proposed gas line relocation, as it is directly related to the originally approved permit. The gas line work area is located outside of the floodplain. The gas line will be constructed by trenching methods outside of stream crossing areas. Two mechanical bores are proposed for crossing streams along the proposed alignment. After backfilling the gas line trench, the work areas will be restored to pre-construction conditions and there will be no impact on the floodplain.

We have enclosed the following items for your review and approval as part of this extension and amendment request:

1. Doddridge County Floodplain Development Permit Application, filled out for the additional work associated with the gas line relocation;

2. Opinion of Probable Construction Costs for the project;

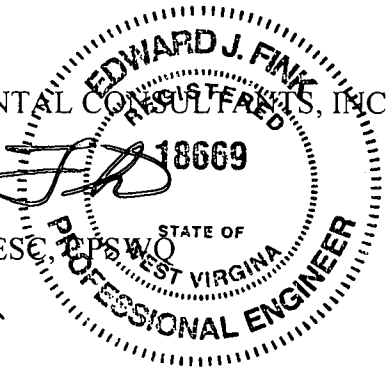
3. Floodplain Application Permit Fee in the amount of $1,000.00 (Check No. 99615 payable to Doddridge County Commission); and

4. Gas Line Relocation Erosion and Sedimentation Control Plans (Drawings C900 and C901, dated January 2014).

Please contact us at 412-429-2324 if you have any questions.

Very truly yours,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.



Edward J. Fink, P.E., CPESC, CPSWQ
Project Manager

Richard P. Celender, C.E.T., CPESC, CPSWQ
Principal

130-359-L-Floodplain Permit-1-31-14/P

13-054-A

DODDRIDGE COUNTY
FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

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. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. **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 1/31/14

SECTION 2: PROPOSE DEVELOPMENT (TO BE COMPLETED BY APPLICANT).

IF THE APPLICANT IS NOT A NATURAL PERSON, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF A NATURAL PERSON WHO SHALL BE APPOINTED BY THE APPLICANT TO RECEIVE NOTICE PURSUANT TO ANY PROVISION OF THE CURRENT DODDRIDGE COUNTY FLOODPLAIN ORDINANCE.

APPLICANT'S NAME: MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC
ADDRESS: 218 SWISHER LN, WEST UNION, WV 26456
TELEPHONE NUMBER: (724) 873-3637

BUILDER'S NAME: TO BE DETERMINED
ADDRESS:
TELEPHONE NUMBER:

ENGINEER'S NAME: CIVIL & ENVIRONMENTAL CONSULTANTS, INC. - DANIEL LARKIN
ADDRESS: 333 BALDWIN ROAD, PITTSBURGH, PA 15205
TELEHONE NUMBER: (412) 429-2324

PROJECT LOCATION:

NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)
MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC
ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)
218 SWISHER LN, WEST UNION, WV 26456
DISTRICT: WEST UNION
DATE/FROM WHOM PROPERTY
PURCHASED: 7/15/2013 FROM GENE P. MOOSE
LAND BOOK DESCRIPTION: -
DEED BOOK REFERENCE: DBV 257, PG 66
TAX MAP REFERENCE: 08-16-0015
EXISTING BUILDINGS/USES OF PROPERTY: HUNTING CABIN/WOODS
NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY N/A
ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY N/A

To avoid delay in processing the application, please provide enough information to easily identify the project location.

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 DEVEOPLMENT ACTIVITIES:

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

C. STANDARD SITE PLAN OR SKETCH

1. **SUBMIT ALL STANDARD SITE PLANS, IF ANY HAVE BEEN PREPARED.**
2. **IF STANDARD SITE PLANS HAVE NOT BEEN PREPARED:**
   SKETCH ON A SEPARATE 8 ½ X 11 INCH SHEET OF PAPER THE SHAPE AND LOCATION OF THE LOT. SHOW THE LOCATION OF THE INTENDED CONSTRUCTION OR LAND USE INDICATING BUILDING SETBACKS, SIZE & HEIGHT. IDENTIFY EXISTING BUILDINGS, STRUCTURES OR LAND USES ON THE PROPERTY.
3. **SIGN AND DATE THE SKETCH.**

ACTUAL TOTAL CONSTRUCTION COSTS OF THE COMPLETE DEVELOPMENT IRRESPECTIVE OF WHETHER ALL OR ANY PART OF THE SUBJECT PROPOSED CONSTRUCTION PROJECT IS WITHIN THE FLOODPLAIN $ $750,600

COST OF CONSTRUCTION WITHIN THE FLOODPLAIN = $0.00

D. ADJACENT AND/OR AFFECTED LANDOWNERS:

1. NAME AND ADDRESS OF ALL OWNERS OF SURFACE TRACTS ADJACENT TO THE AREA OF THE SURFACE TRACT (UP & DOWN STREAM) UPON WHICH THE PROPOSED ACTIVITY WILL OCCUR AND ALL OTHER SURFACE OWNERS UP & DOWN STREAM) WHO OWN PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY (IF ONE HAS BEEN COMPLETED).

NAME: CLINTON D. MEANS
ADDRESS: RT. 2 BOX 47D
WEST UNION, WV 26456

NAME: CLARENCE D. EVANS
ADDRESS: RT 2 BOX 56
WEST UNION, WV 26456

NAME: LAWRENCE GASKINS
ADDRESS: RT 2 BOX 204
WEST UNION, WV 26456

NAME: JAMES BALLENGER
ADDRESS: RT. 1 BOX 73
WEST UNION, WV 26456

1. NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON ANY ADJACENT PROPERTY AT THE TIME THE FLOODPLAIN PERMIT APPLICATION IS FILED AND THE NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN ANY HOME ON ANY PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY.

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

NAME: _____
ADDRESS: _____

E. CONFIRMATION FORM

THE APPLICANT ACKNOWLEDGES, AGREES, AND CONFIRMS THAT HE/IT WILL PAY WITHIN 30 DAYS OF RECEIPT OF INVOICE BY THE COUNTY FOR ALL EXPENSES RELATIVE TO THE PERMIT APPLICATION PROCESS GREATER THAN THE REQUIRED DEPOSIT FOR EXPENSES INCLUDING:

(A) PERSONAL SERVICE OF PROCESS BY THE DODDRIDGE COUNTY SHERIFF AT THE RATES PERMITTED BY LAW FOR SUCH SERVICE.

(B) SERVICE BY CERTIFIED MAIL RETURN RECEIPT REQUESTED.

(C) PUBLICATION.

(D) COURT REPORTING SERVICES AT ANY HEARINGS REQUESTED BY THE APPLICANT.

(E) CONSULTANTS AND/OR HEARING EXPERTS UTILIZED BY DODDRIDGE COUNTY FLOODPLAIN ADMINISTRATOR/MANAGER OR FLOODPLAIN APPEALS BOARD FOR REVIEW OF MATERIALS AND/OR TESTIMONY REGARDING THE EFFICACY OF GRANTING OR DENYING THE APPLICANT'S FLOODPLAIN PERMIT.

NAME (PRINT): Rick Lowry

SIGNATURE: _____ DATE: 1/31/14

After completing SECTION 2, APPLICANT should submit form to Floodplain Administrator/Manager or his/her representative for review.

SECTION 3: FLOODPLAIN DETERMINATION (to be completed by Floodplain Administrator/Manager or his/her representative)

THE PROPOSED DEVELOPMENT:

THE PROPOSED DEVELOPMENT IS LOCATED ON:

FIRM Panel: 140

Dated: 10/04/2011

Gas line relocation

[X] Is NOT located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOODPLAIN DEVELOPMENT PERMIT IS REQUIRED**).

[] Is located in Special Flood Hazard Area.

FIRM zone designation _____

100-Year flood elevation is: _____ NGVD (MSL)

[] Unavailable

[] The proposed development is located in a floodway.

FBFM Panel No. _____ Dated _____

[] See section 4 for additional instructions.

SIGNED Dan Wells DATE 02/03/2014

SECTION 4: ADDITIONAL INFORMATION REQUIRED (To be completed by Floodplain Administrator/Manager or his/her representative)

The applicant must submit the documents checked below before the application can be processed.

[] A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.

[] Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor; (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proffing of utilities located below the first floor and details of enclosures below the first floor. Also_____

_____

[] Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).

[] Plans showing the extent of watercourse relocation and/or landform alterations.

[] Top of new fill elevation_____Ft. NGVD (MSL).
For floodproofing structures applicant must attach certification from registered engineer or architect.

[] Certification from a registered engineer that the proposed activity in a regulatory floodway will not result in any increase in the height of the 100-year flood. A copy of all data and calculations supporting this finding must also be submitted.

[] Manufactured homes located in a floodplain area must have a West Virginia Contractor's License and a Manufactured Home Installation License as required by the Federal Emergency Management Agency (FEMA).

[] Other:

_____

_____

_____

SECTION 5: PERMIT DETERMINATION (To be completed by Floodplain Administrator/Manager or his/her representative)

I have determined that the proposed activity **(type is or is not)** in conformance with provisions of the Floodplain Ordinance adopted by the County Commission of Doddridge County on May 21, 2013. The permit is issued subject to the conditions attached to and made part of this permit.

SIGNED_____ DATE_____

If the Floodplain Administrator/Manager found that the above was not in conformance with the provisions of the Doddridge County Floodplain Ordinance and/or denied that application, the applicant may complete an appealing process below.

APPEALS: Appealed to the County Commission of Doddridge County? [] Yes {} No
Hearing Date:_____
County Commission Decision - Approved [] Yes [] No

CONDITIONS:_____

_____

_____

_____

SECTION 6: AS-BUILT ELEVATIONS (To be submitted by APPLICANT before Certificate of Compliance is issued).

The following information must be provided for project structures. This section must be completed by a registered professional engineer or a licensed land surveyor (or attach a certification to this application).

COMPLETE 1 OR 2 BELOW:

1 Actual (As-Built) Elevation of the top of the lowest floor (including basement or crawl space is_____FT. NGVD (MSL)

2 Actual (As Built) elevation of floodproofing is_____FT. NGVD (MSL)

Note: Any work performed prior to submittal of the above information is at risk of the applicant.

SECTION 7: COMPLIANCE ACTION (To be completed by the Floodplain Administrator/Manager or his/her representative).

The Floodplain Administrator/Manager or his/her representative will complete this section as applicable based on inspection of the project to ensure compliance with the Doddridge County Floodplain Ordinance.

INSPECTIONS:

DATE:_____ **BY:**_____

DEFICIENCIES ? **Y/N**

COMMENTS_____

SECTION 8: CERTIFICATE OF COMPLIANCE (To be completed by Floodplain Administrator/Manager or his/her representative).

Certificate of Compliance issued: DATE:_____ BY:_____

CERTIFICATE OF COMPLIANCE
FOR DEVELOPMENT IN SPECIAL FLOOD HAZARD AREA
(OWNER MUST RETAIN)

PERMIT NUMBER:_____

PERMIT DATE:_____

PURPOSE –

CONSTRUCTION LOCATION:_____

OWNER'S ADDRESS:_____

_____

_____

THE FOLLOWING MUST BE COMPLETED BY THE FLOODPLAIN ADMINISTRATOR/MANAGER OR HIS/HER AGENT.

COMPLIANCE IS HEREBY CERTIFIED WITH THE REQUIREMENT OF THE FLOODPLAIN ORDINANCE ADOPTED BY THE COUNTY COMMISSION OF DODDRIDGE COUNTY ON MAY 21, 2013.

SIGNED_____**DATE**_____

Moose Property - Dominion Gas Line Relocation - Doddridge County, WV
Doddridge County Floodplain Permit Application
Opinion of Probable Construction Costs
Project #: 130-359
January 2014

Total Construction Cost

2,085 LF @ $360.00 per LF = $750,600.00

Construction Cost for Work in Floodplain

0 LF @ $360.00 per LF = $0.00

Note:
Cost per Lineal Foot based on total construction cost for similar gas line projects completed by MarkWest.

DAN WELLINGS, PS
DODDRIDGE CO. FLOODPLAIN MANAGER
118 EAST COURT STREET, ROOM 102
WEST UNION, WV 26456
OFFICE PHONE: (304) 873 - 2631
CELL PHONE: (304) 629 - 7249
E-MAIL: wellingsd8@gmail.com

DATE: 02/03/2014
RE: PROPOSED MOOSE PROPERTY PHASE 1
DODDRIDGE COUNTY FLODPLAIN PERMIT #13-054 TIME EXTENSION REQUEST
US RT. 50
DODDRIDGE COUNTY, WEST VIRGINIA
CEC PROJECT 130-359

Dear Mr. Celender,

As the current Doddridge County Floodplain Manager I would like to inform Civil & Environmental Consultants, Inc. (CEC) as consultant to provide professional engineering services to MarkWest Liberty Midstream & Resources, LLC (MarkWest) that I have conducted a thorough review of the request for a time extension and amendment to DODDRIDGE COUNTY FLOODPLAIN PERMIT # 13-054 issued on September 9, 2013 for the construction of two fill areas off U.S. Rt. 50 near the mouth of Meathouse Fork and the mouth of Buckeye Creek.

REQUEST FOR TIME EXTENSION:

It is my professional opinion as the current Doddridge County Floodplain Manager that MarkWest's diligent pursuit for the start of construction of said two fill areas while awaiting the pending permit approvals from the WVDEP and WVDNR for relocation of a Dominion Gas transmission line that crosses the project area is "justifiable delay" as defined in Section 7.6 Start of Construction in the current Doddridge County Floodplain Ordinance at the top of page 39.

Furthermore granting of the requested extension will **NOT** be detrimental to public safety, health, or welfare or injurious to other property.

Furthermore the said pipeline relocation is adjacent to, but not located within the FEMA designated special flood hazard area.

Therefore I hereby **GRANT** the said request for an extension of the 180 day Start of Construction period for said permit #13-054 to begin on February 2, 2014.

I hereby **GRANT** the said request for an extension of the 12 month period for which all work must be completed under said permit #13-054 to begin on February 2, 2014.

REQUEST FOR AMENDMENT:

Since the gas pipeline work area is located outside of the FEMA designated special flood hazard area, the request to have said permit #13-054 amended to include said pipeline relocation is **GRANTED.**

Sincerely,

Dan Wellings 02/03/2014

DAN WELLINGS, PS

DODDRIDGE COUNTY FLOODPLAIN MNGR.

FILED

2014 FEB -5 AM 10:50

BETH A. ROGERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

PERMIT NO. 13-054A
EXTENSION OF PERMIT #13-054

DODDRIDGE COUNTY

FLOODPLAIN DEVELOPMENT

PERMIT

PURPOSE FOR PERMIT: FILL - MOOSE PHASE 1

ISSUED TO Mark West
218 Swisher Lane

ADDRESS: West Union, WV 26456

PROJECT ADDRESS: NEAR MOUTH OF MEATHOUSE FORK & MOUTH OF BUCKEYE CREEK

ISSUED BY: Dan Wellings

DATE: 02/03/2014

CONSTRUCTION MUST START WITHIN 180 DAYS FROM ISSUED DATE. PERMIT EXPIRES IN 12 MONTHS FROM ISSUED DATE. IF EXTENTION IS NEEDED A REQUEST MUST BE MADE IN WRITING STATING A REASON FOR THE EXTENTION.

THIS PERMIT MUST BE POSTED ON THE PREMISES IN A CONSPICUOUS PLACE SO AS TO BE CLEARLY VISIBLE FROM THE STREET.

DAN WELLINGS, PS
DODDRIDGE CO. FLOODPLAIN MANAGER
118 EAST COURT STREET, ROOM 102
WEST UNION, WV 26456
OFFICE PHONE: (304) 873 - 2631
CELL PHONE: (304) 629 - 7249
E-MAIL: wellingsd8@gmail.com

DATE: 02/04/2014
RE: PROPOSED SHERWOOD GAS PROCESSING PLANT MASTER PLAN
COUNTY ROAD 50/34
DODDRIDGE COUNTY, WEST VIRGINIA
CEC PROJECT 110-811.5001

Dear Mr. Celender,

As the Doddridge County Floodplain Manager I would like to inform Civil & Environmental Consultants, Inc. (CEC) as consultant to provide professional engineering services to MarkWest Liberty Midstream & Resources, LLC (MarkWest) that I have asked another engineering firm to be a consultant for review of materials submitted regarding the efficacy of granting or denying Doddridge County Floodplain Permit Application #14-123.

Said floodplain permit application was prepared by said CEC for said MarkWest's Sherwood Gas Processing Plant Master Plan request for a revised permit to finalize grading of the entire site as part of the construction of the Gas Processing Plants 6 through 10, de-ethanizers, and substation expansion.

Sincerely,

Dan Wellings 02/04/2014

DAN WELLINGS, PS
DODDRIDGE COUNTY FLOODPLAIN MNGR.

Moose Property
Permit # 13-054

DODDRIDGE COUNTY
FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

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. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. **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 _____
(AGENT)

DATE 7/12/2013

SECTION 2: PROPOSE DEVELOPMENT (TO BE COMPLETED BY APPLICANT).

IF THE APPLICANT IS NOT A NATURAL PERSON, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF A NATURAL PERSON WHO SHALL BE APPOINTED BY THE APPLICANT TO RECEIVE NOTICE PURSUANT TO ANY PROVISION OF THE CURRENT DODDRIDGE COUNTY FLOODPLAIN ORDINANCE.

APPLICANT'S NAME: MarkWest Liberty - Kevin Sturgill
ADDRESS: 218 Swisher Lane, West Union, WV 26456
TELEPHONE NUMBER: 724-514-4319
720-300-5825
KSturgill@MarkWest.com

BUILDER'S NAME: ANDERSON EXCAVATING, LLC
ADDRESS: 343 WILLIAMS ROAD, MORGANTOWN, WV 26501
TELEPHONE NUMBER: 304-983-2296

ENGINEER'S NAME: CIVIL + ENVIRONMENTAL CONSULTANTS - CHRIS REMLEY
ADDRESS: 333 BALDWIN RD PITTSBURGH, PA 15205
TELEHONE NUMBER: 412-429-2324

PROJECT LOCATION:

NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)
MARK WEST LIBERTY MIDSTREAM & RESOURCES, LLC
ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)
218 SWISHER LANE WEST UNION, WV 26456
DISTRICT: WEST UNION DISTRICT
DATE/FROM WHOM PROPERTY PURCHASED: 7/15/2013 FROM GENE P. MOOSE
LAND BOOK DESCRIPTION: —
DEED BOOK REFERENCE: D.B.V. 257, PAGE 66
TAX MAP REFERENCE: PARCEL 08-16-0015
EXISTING BUILDINGS/USES OF PROPERTY: HUNTING CABIN / WOODS
NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY N/A
ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY N/A

To avoid delay in processing the application, please provide enough information to easily identify the project location.

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 DEVEOPLMENT ACTIVITIES:

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

_____

C. STANDARD SITE PLAN OR SKETCH

1. **SUBMIT ALL STANDARD SITE PLANS, IF ANY HAVE BEEN PREPARED.**
2. **IF STANDARD SITE PLANS HAVE NOT BEEN PREPARED:**
   SKETCH ON A SEPARATE 8 ½ X 11 INCH SHEET OF PAPER THE SHAPE AND LOCATION OF THE LOT. SHOW THE LOCATION OF THE INTENDED CONSTRUCTION OR LAND USE INDICATING BUILDING SETBACKS, SIZE & HEIGHT. IDENTIFY EXISTING BUILDINGS, STRUCTURES OR LAND USES ON THE PROPERTY.
3. **SIGN AND DATE THE SKETCH.**

ACTUAL TOTAL CONSTRUCTION COSTS OF THE COMPLETE DEVELOPMENT IRRESPECTIVE OF WHETHER ALL OR ANY PART OF THE SUBJECT PROPOSED CONSTRUCTION PROJECT IS WITHIN THE FLOODPLAIN $ 80,000

D. ADJACENT AND/OR AFFECTED LANDOWNERS:

1. **NAME AND ADDRESS OF ALL OWNERS OF SURFACE TRACTS ADJACENT TO THE AREA OF THE SURFACE TRACT (UP & DOWN STREAM) UPON WHICH THE PROPOSED ACTIVITY WILL OCCUR AND ALL OTHER SURFACE OWNERS UP & DOWN STREAM) WHO OWN PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY (IF ONE HAS BEEN COMPLETED).**

NAME: CLINTON D. MEANS
ADDRESS: RT. 2 Box 47D
WEST UNION, WV 26456

NAME: Clarence B. Evans
ADDRESS: Rt. 2, Box 56
West Union, WV 26456

NAME: LAWRENCE GASKINS
ADDRESS: RT. 2 Box 204
WEST UNION, WV 26456

NAME: JAMES BALLENGER
ADDRESS: RT. 1 Box 73
WEST UNION, WV 26456

1. **NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON ANY ADJACENT PROPERTY AT THE TIME THE FLOODPLAIN PERMIT APPLICATION IS FILED AND THE NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN ANY HOME ON ANY PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY.**

NAME:_____
ADDRESS:_____

NAME:_____
ADDRESS:_____

NAME:_____
ADDRESS:_____

NAME:_____
ADDRESS:_____

E. CONFIRMATION FORM

THE APPLICANT ACKNOWLEDGES, AGREES, AND CONFIRMS THAT HE/IT WILL PAY WITHIN 30 DAYS OF RECEIPT OF INVOICE BY THE COUNTY FOR ALL EXPENSES RELATIVE TO THE PERMIT APPLICATION PROCESS GREATER THAN THE REQUIRED DEPOSIT FOR EXPENSES INCLUDING:

(A) PERSONAL SERVICE OF PROCESS BY THE DODDRIDGE COUNTY SHERIFF AT THE RATES PERMITTED BY LAW FOR SUCH SERVICE.

(B) SERVICE BY CERTIFIED MAIL RETURN RECEIPT REQUESTED.

(C) PUBLICATION.

(D) COURT REPORTING SERVICES AT ANY HEARINGS REQUESTED BY THE APPLICANT.

(E) CONSULTANTS AND/OR HEARING EXPERTS UTILIZED BY DODDRIDGE COUNTY FLOODPLAIN ADMINISTRATOR/MANAGER OR FLOODPLAIN APPEALS BOARD FOR REVIEW OF MATERIALS AND/OR TESTIMONY REGARDING THE EFFICACY OF GRANTING OR DENYING THE APPLICANT'S FLOODPLAIN PERMIT.

NAME (PRINT): RICHARD P. CELENDER (AGENT)

SIGNATURE: _____ **DATE:** 7/12/2013

After completing SECTION 2, APPLICANT should submit form to Floodplain Administrator/Manager or his/her representative for review.

SECTION 3: FLOODPLAIN DETERMINATION (to be completed by Floodplain Administrator/Manager or his/her representative)

THE PROPOSED DEVELOPMENT:

THE PROPOSED DEVELOPMENT IS LOCATED ON:

FIRM Panel: 140

Dated: 10/04/2011

[] Is **NOT** located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOOPLAIN DEVELOPMENT PERMIT IS REQUIRED**).

[X] Is located in Special Flood Hazard Area.

FIRM zone designation AE

100-Year flood elevation is: 792.5 NGVD ~~(MSL)~~

[] Unavailable

[] The proposed development is located in a floodway.

FBFM Panel No. _____ Dated _____

[] See section 4 for additional instructions.

SIGNED Dan Wellings DATE 08/09/2013

SECTION 4: ADDITIONAL INFORMATION REQUIRED (To be completed by Floodplain Administrator/Manager or his/her representative)

The applicant must submit the documents checked below before the application can be processed.

[] A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.

[] Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor, (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proffing of utilities located below the first floor and details of enclosures below the first floor. Also_____

_____

[] Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).

[] Plans showing the extent of watercourse relocation and/or landform alterations.

[] Top of new fill elevation_____Ft. NGVD (MSL).
For floodproofing structures applicant must attach certification from registered engineer or architect.

[] Certification from a registered engineer that the proposed activity in a regulatory floodway will not result in any increase in the height of the 100-year flood. A copy of all data and calculations supporting this finding must also be submitted.

[] Manufactured homes located in a floodplain area must have a West Virginia Contractor's License and a Manufactured Home Installation License as required by the Federal Emergency Management Agency (FEMA).

Moose site

X Other: Must have itemized cost breakdown of total construction located within the floodplain, not an estimate

SECTION 5: PERMIT DETERMINATION (To be completed by Floodplain Administrator/Manager or his/her representative)

I have determined that the proposed activity **(type is or is not)** in conformance with provisions of the Floodplain Ordinance adopted by the County Commission of Doddridge County on May 21, 2013. The permit is issued subject to the conditions attached to and made part of this permit.

SIGNED Dan Wellington DATE 08/09/2013

If the Floodplain Administrator/Manager found that the above was not in conformance with the provisions of the Doddridge County Floodplain Ordinance and/or denied that application, the applicant may complete an appealing process below.

APPEALS: Appealed to the County Commission of Doddridge County? [] Yes {} No
Hearing Date: _____
County Commission Decision - Approved [] Yes [] No

CONDITIONS: _____

SECTION 6: AS-BUILT ELEVATIONS (To be submitted by APPLICANT before Certificate of Compliance is issued).

The following information must be provided for project structures. This section must be completed by a registered professional engineer or a licensed land surveyor (or attach a certification to this application).

COMPLETE 1 OR 2 BELOW:

1 Actual (As-Built) Elevation of the top of the lowest floor (including basement or crawl space is_____FT. NGVD (MSL)

2 Actual (As Built) elevation of floodproofing is_____FT. NGVD (MSL)

Note: Any work performed prior to submittal of the above information is at risk of the applicant.

SECTION 7: COMPLIANCE ACTION (To be completed by the Floodplain Administrator/Manager or his/her representative).

The Floodplain Administrator/Manager or his/her representative will complete this section as applicable based on inspection of the project to ensure compliance with the Doddridge County Floodplain Ordinance.

INSPECTIONS:

DATE: 12/06/13 **BY:** Dan Wallace

DEFICIENCIES ? Y/(N)

COMMENTS Trees cleared, house down, no fill yet

SECTION 8: CERTIFICATE OF COMPLIANCE (To be completed by Floodplain Administrator/Manager or his/her representative).

Certificate of Compliance issued: DATE:_____ BY:_____

CERTIFICATE OF COMPLIANCE
FOR DEVELOPMENT IN SPECIAL FLOOD HAZARD AREA
(OWNER MUST RETAIN)

PERMIT NUMBER:_____

PERMIT DATE:_____

PURPOSE –

CONSTRUCTION LOCATION:_____

OWNER'S ADDRESS:_____

_____

_____

THE FOLLOWING MUST BE COMPLETED BY THE FLOODPLAIN ADMINISTRATOR/MANAGER OR HIS/HER AGENT.

COMPLIANCE IS HEREBY CERTIFIED WITH THE REQUIREMENT OF THE FLOODPLAIN ORDINANCE ADOPTED BY THE COUNTY COMMISSION OF DODDRIDGE COUNTY ON MAY 21, 2013.

SIGNED_____DATE_____

Mark West - Moose site 13-054

12/06/2013

July 16, 2013

2013 JUL 19 AM 4:41

Mr. Dan Wellings, Floodplain Manager
Doddridge County
HC 68, Box 5
West Union, WV 26456

Dear Mr. Wellings:

Subject: Proposed Moose Property Phase II Fill Site
US Route 50
Doddridge County, West Virginia
CEC Project 130-359

Civil & Environmental Consultants, Inc. (CEC) has been hired as a consultant to provide professional engineering services to MarkWest Liberty Midstream & Resources, LLC (MarkWest). MarkWest is proposing to construct two fill areas , one comprised of approximately 155,000 cubic yards of imported soil material and a second comprised of approximately 248,000 cubic yards of imported soil material, off US 50 in Doddridge County, West Virginia. The construction of the fill areas and gravel access road will require the removal of existing structures, the construction of proposed collection channels, storm sewers, and two temporary sediment basins. The new gravel access road, which provides access from Snowbird Road (Co Rt 50/16), will be used as the primary access to the site.

On behalf of MarkWest, CEC is requesting a Floodplain Permit that includes the proposed fill areas, collector channels, access road, and two temporary sediment basins within the Meathouse Fork and Buckeye Creek 100-year floodplain.

CEC conducted a flood study for this area to demonstrate the impact that the fill areas, collector channels, access road, and temporary sediment basins will have on the existing floodplain at locations along Meathouse Fork and Buckeye Creek for the 100-year storm event. Based on the analysis CEC anticipates a maximum increase in the base flood elevation (BFE) of 0.05' for both Buckeye Creek and Meathouse Fork. The proposed increase is de minimis and will not cause any adverse impact to adjacent property or dwellings. CEC is providing the stamped, signed engineer's seal stating that the BFE increase caused by the proposed fill areas are within the federal allowable limit of increase of one foot.

Please contact us at 412-429-2324 if you have any questions.

Very truly yours,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

George Haberman, P.E.
Senior Project Manager

GEORGE J. HABERMAN REGISTERED 17441 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Richard P. Celender, C.E.T., CPESC, CPSWQ
Principal

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Austin	855/365-2324	**Cleveland**	866/507-2324	**North Central PA**	877/389-1852
Boston	866/312-2024	**Columbus**	888/598-6808	**Philadelphia**	888/267-7891
Bridgeport	855/488-9539	**Detroit**	866/380-2324	**Phoenix**	877/231-2324
Charlotte	855/859-9932	**Export**	800/899-3610	**St. Louis**	866/250-3679
Chicago	877/963-6026	**Indianapolis**	877/746-0749	**Toledo**	855/274-2324
Cincinnati	800/759-5614	**Nashville**	800/763-2326		

July 24, 2013

Mr. Dan Wellings, Floodplain Manager
Doddridge County
HC 68, Box 5
West Union, WV 26456

Dear Mr. Wellings:

Subject: Proposed Moose Property Phase II Fill Site
US Route 50
Doddridge County, West Virginia
CEC Project 130-359

Civil & Environmental Consultants, Inc. (CEC) has been hired as a consultant to provide professional engineering services to MarkWest Liberty Midstream & Resources, LLC (MarkWest). MarkWest is proposing to construct two fill areas, one comprised of approximately 155,000 cubic yards of imported soil material and a second comprised of approximately 248,000 cubic yards of imported soil material, off US 50 in Doddridge County, West Virginia. The construction of the fill areas and gravel access road will require the removal of existing structures, the construction of proposed collection channels, storm sewers, and two temporary sediment basins. The new gravel access road, which provides access from Snowbird Road (Co Rt 50/16), will be used as the primary access to the site.

On behalf of MarkWest, CEC is requesting a Floodplain Permit that includes the proposed fill areas, collector channels, access road, and two temporary sediment basins within the Meathouse Fork and Buckeye Creek 100-year floodplain.

Article VI.H of the Doddridge County Floodplain Ordinance requires that a Flood Protection Setback equal to twice the width of the watercourse or 50 feet, whichever is less, maintained from the top of bank for all watercourses. Along Meathouse Fork, a setback of at least 54 feet is maintained between the top of bank and the proposed access road and sediment basin grading. Along Buckeye Creek, a minimum 50 foot setback is maintained from the confluence with Meathouse Fork to a point upstream along Buckeye Creek approximately 490 feet above the confluence. Upstream from this point, the proposed access road is within the 50 foot setback for approximately 190 LF; however, the elevations of the section of access road within this setback range from 6 to 22 feet above the proposed 100-year storm event base flood elevation (BFE) for Buckeye Creek. With the difference in elevation, the proposed access road will not disturb native vegetation that currently protects the floodplain limits, and the intent of the Flood Protection Setback will be satisfied.

CEC conducted a flood study for this area to determine the impact of the fill areas, collector channels, access road, and two temporary sediment basins along Meathouse Fork and Buckeye Creek for the 100-year storm event. Based on the analysis CEC found the existing BFE for Meathouse Fork ranges from elevation 792.5 to 794.28 and Buckeye Creek ranges from elevation 792.50 to 793.97.

Based on the analysis CEC anticipates a change in the BFE for Buckeye Creek ranging from -0.02ft to +0.05ft, and for Meathouse Fork ranging from 0.00ft to +0.05ft. The proposed increase in BFE is *de minimis* and will not cause any adverse impact to adjacent property or dwellings. This analysis demonstrates that the BFE increase caused by the proposed project is within the federal allowable limit of increase of one foot.

Please contact us at 412-429-2324 if you have any questions.

Very truly yours,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

George Haberman, P.E.
Senior Project Manager

Richard P. Celender, C.E.T., CPESC, CPSWQ
Principal

130-359-L-Floodplain Permit-7-24-13/P

August 24, 2013

Clerk of the County Court
Room 102
118 East Court Street
West Union, WV 26456

Dan Wellings, Doddridge County Flood Plain Manager

I am writing in reference to the Floodplain Permit filed by **MARKWEST LIBERTY – MOOSE SITE** on the 7th day of August 2013, to develop land located at or about: **SURFACE OWNERS: MARKWEST LIBERTY MIDSTREAMQM & RESOURCES, LLC. Deed book 257 Page 66, Tax Map 08-16 Parcel 0015.**

I am writing to express my opposition of the issuing of this permit. If **MARKWEST LIBERTY – MOOSE SITE** add dirt to raise the surface of their land it could cause extreme flooding of 2 tracts of land that I own along the Meathouse Fork Creek. The 2 tracts of land flood now as they are, but if they were to raise their surface it will put all of the water on my land because it would be lower.

My first tract of land that I am expressing the most concern for is at the end of Pennsylvania Street. It is where Buckeye Creek and Meathouse Fork Creek meet to form the Middle Island Creek. It receives water from both directions. It floods frequently as is. As you may know I am very particular about the appearance of my property. It is time consuming and costly to clean this up each time it is flooded. My neighbor also owns land and has a home in this bottom and his home has it been raised to meet the current flood plain standards. If this permit is issued he also faces a greater risk for flooding.

My second tract of land that I am expressing concern for is the former D.A. Davis farm. Currently the road already has a flooding issue. My newest concern is how much water will be backed up on this piece of ground. I worry that this could cause the basement of the home and my barn to have flooding issues as well.

I would like to ask that you consider the possibility of this causing a flooding issue at the Hope Gas Pumping Station on Snowbird Road. This could also contribute to the flooding and closing of Snowbird Road as well.

Please take my concerns into consideration when reviewing this permit. My request is that the permit be denied. Thank you for your time.

Sincerely,

Clarence Duane Evans

Clarence Duane Evans
100 Pennsylvania Street
West Union, WV 26456
(304) 873-1360

cc: Beth A. Rogers, Doddridge County Clerk

August 24, 2013

FILED

2013 AUG 27 PM 1:25

BETH A. ROGERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

Clerk of the County Court
Room 102
118 East Court Street
West Union, WV 26456

Beth A. Rogers, Doddridge County Clerk

I am writing in reference to the Floodplain Permit filed by **MARKWEST LIBERTY – MOOSE SITE** on the 7th day of August 2013, to develop land located at or about: **SURFACE OWNERS: MARKWEST LIBERTY MIDSTREAMQM & RESOURCES, LLC. Deed book 257 Page 66, Tax Map 08-16 Parcel 0015.**

I am writing to express my opposition of the issuing of this permit. If **MARKWEST LIBERTY – MOOSE SITE** add dirt to raise the surface of their land it could cause extreme flooding of 2 tracts of land that I own along the Meathouse Fork Creek. The 2 tracts of land flood now as they are, but if they were to raise their surface it will put all of the water on my land because it would be lower.

My first tract of land that I am expressing the most concern for is at the end of Pennsylvania Street. It is where Buckeye Creek and Meathouse Fork Creek meet to form the Middle Island Creek. It receives water from both directions. It floods frequently as is. As you may know I am very particular about the appearance of my property. It is time consuming and costly to clean this up each time it is flooded. My neighbor also owns land and has a home in this bottom and his home has it been raised to meet the current flood plain standards. If this permit is issued he also faces a greater risk for flooding.

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I would like to ask that you consider the possibility of this causing a flooding issue at the Hope Gas Pumping Station on Snowbird Road. This could also contribute to the flooding and closing of Snowbird Road as well.

Please take my concerns into consideration when reviewing this permit. My request is that the permit be denied. Thank you for your time.

Sincerely,

Clarence Duane Evans
100 Pennsylvania Street
West Union, WV 26456
(304) 873-1360

cc: Dan Wellings, Doddridge County Flood Plain Manager

DAN WELLINGS, PS
DODDRIDGE CO. FLOODPLAIN MANAGER
DODDRIDGE CO. SURVEYOR
1590 WV RT. 18 SOUTH
WEST UNION, WV 26456
PHONE: (304) 873 – 2329
CELL: (304) 629 - 7249
E-MAIL: wellingsd8@gmail.com

DATE: 09/09/2013
RE: MOOSE PROPERTY PHASE II FILL SITE

Clarence Duane Evans,

I have reviewed your letter dated August 24, 2013 regarding your flooding concerns of your properties as a result if a FLOODPLAIN PERMIT for fill to be place upon the MARKWEST LIBERTY – MOOSE SITE is granted.

I carefully studied the property you refer to at the end of Pennsylvania Street of the Fairview Addition to Smithburg near the intersection of Buckeye Creek and Meathouse Fork along with the old D. A. Davis property along Snowbird Road and Meathouse Fork with the results of Civil & Environmental Consultants, Inc. (CEC) HYDRAULIC STUDY OF MEATHOUSE FORK AND BUCKEYE CREEK prepared for MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC, and made a part of the Floodplain Permit Application.

The results of the said CEC hydraulic study clearly indicated that the maximum impact on Buckeye Creek as a result of the proposed fill will be from lowering the floodplain -0.02 feet (about ¼ of an inch) in places to increasing the floodplain +0.05 feet (about 5/8 of an inch) in some sections. The said hydraulic study indicates a resulting increase of from 0.00 feet (zero) to 0.05 feet (about 5/8 of an inch) on Meathouse Fork.

The change in the floodplain near the end of said Pennsylvania Street, and furthest downstream studied, indicates zero change as the result of the proposed fill.

The change in the floodplain near the said old D. A. Davis property, and the furthest upstream studied, indicates zero change as a result of the proposed fill.

Therefore the said hydraulic study submitted indicates no change in the floodplain will occur at either of your properties as a result of the proposed fill, and the most the floodplain will be impacted at any point is 0.05 feet or about 5/8 of an inch.

Therefore it is my decision to grant MARKWEST LIBERTY – MOOSE SITE Floodplain Permit as of September 09. 2013.

Sincerely,

DAN WELLINGS, PS
DODDRIDGE COUNTY FLOODPLAIN MNGR.
DODDRIDGE COUNTY SURVEYOR

PERMIT NO. 13-054

DODDRIDGE COUNTY

FLOODPLAIN DEVELOPMENT

PERMIT

PURPOSE FOR PERMIT: FILL - MOOSE SITE

ISSUED TO MARKWEST LIBERTY MIDSTREAM

ADDRESS: 218 SWISHER LANE
WEST UNION, WV 26456

PROJECT ADDRESS: INTERSECTION MEATHOUSE FORK
& BUCKEYE - SMITHBURG, WV

ISSUED BY: Dan Wellings

DATE: 09/09/2013

THE PERMIT EXPIRES 180 DAYS FROM THIS DATE

THIS PERMIT MUST BE POSTED ON THE PREMISES IN A CONSPICUOUS PLACE SO AS TO BE CLEARLY VISIBLE FROM THE STREET.

STATE OF WEST VIRGINIA,
COUNTY OF DODDRIDGE, TO WIT

I, Virginia Nicholson, Editor of THE HERALD RECORD, a weekly newspaper published regularly, in Doddridge County, West Virginia, Do Hereby Certify Upon Oath That the Accompanying Legal Notice Entitled:

Floodplain Permit

was published in said paper for 2

successive weeks beginning with the issue of August 13 2013 and ending with the issue of August 20 2013 and that said notice contains 168

WORD SPACE at 115 cents a word

amounts to the sum of $ 19.32

FOR FIRST PUBLICATION, SECOND PUBLICATION IS 75% OF THE FIRST PUBLICATION

$ 14.49

and each publication thereafter

$ 33.81 TOTAL

EDITOR

D.O. Nicholson

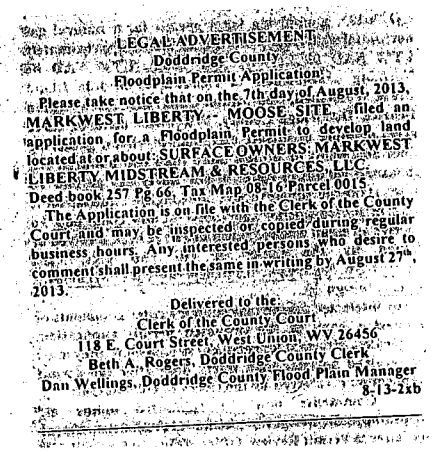
SWORN TO AND SUBSCRIBED

BEFORE ME THIS THE 22 DAY

OF August 2013

NOTARY PUBLIC

Laura J Adams

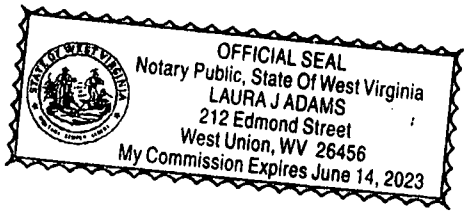


LEGAL ADVERTISEMENT
Doddridge County
Floodplain Permit Application

Please take notice that on the 7th day of August, 2013, MARKWEST LIBERTY - MOOSE SITE, filed an application for a Floodplain Permit to develop land located at or about SURFACE OWNERS: MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC Deed book 257 Pg 66, Tax Map 08-16 Parcel 0015.

The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by August 27th, 2013.

Delivered to the:
Clerk of the County Court
118 E. Court Street, West Union, WV 26456
Beth A. Rogers, Doddridge County Clerk
Dan Wellings, Doddridge County Flood Plain Manager
8-13-2xb



OFFICIAL SEAL
Notary Public, State Of West Virginia
LAURA J ADAMS
212 Edmond Street
West Union, WV 26456
My Commission Expires June 14, 2023

HYDRAULIC STUDY OF MEATHOUSE FORK AND BUCKEYE CREEK

MOOSE PROPERTY PHASE II FILL SITE
DODDRIDGE COUNTY, WEST VIRGINIA

Prepared for:

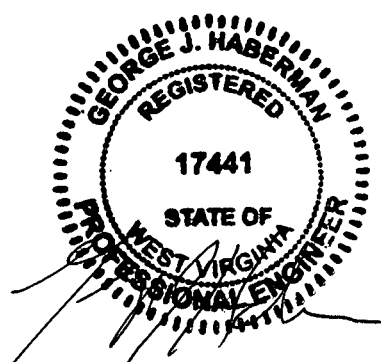
MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC

Prepared by:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
PITTSBURGH, PENNSYLVANIA

CEC Project 130-359

July 2013



Civil & Environmental Consultants, Inc.

Pittsburgh 333 Baldwin Road • Pittsburgh, Pennsylvania 15205
Phone 412/429-2324 • Fax 412/429-2114 • Toll Free 800/365-2324 • E-mail info@cecinc.com

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Phoenix, Arizona
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St. Louis, Missouri
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E-mail stlouis@cecinc.com

Toledo, Ohio
Toll Free 855/274-2324
E-mail toledo@cecinc.com

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 BACKGROUND

MarkWest Liberty Midstream & Resources, LLC (MarkWest) has contracted Civil & Environmental Consultants, Inc. (CEC) to perform a flood study as part of the construction of the proposed Moose Property Phase II Fill Site. MarkWest is proposing to construct two fill areas , one comprised of approximately 155,000 cubic yards of imported soil material and a second comprised of approximately 248,000 cubic yards of imported soil material, off US 50 in Doddridge County, West Virginia. The construction of the fill areas and gravel access road will require the removal of existing structures, the construction of proposed collection channels, storm sewers, and two temporary sediment basins. The new gravel access road, which provides access from Snowbird Road (Co Rt 50/16), will be used as the primary access to the site.

The fill areas, collection channels, and temporary sediment basin will include the placement of excess material and associated earthwork within the FEMA floodplain of Meathouse Fork and Buckeye Creek. A site location map has been provided in Appendix A. The new Doddridge County Floodplain Application is included in Appendix F.

1.2 PURPOSE

The purpose of this study is to perform a Hydrologic and Hydraulic (H&H) analysis of the existing 100-year floodplain of Meathouse Fork and Buckeye Creek and to estimate the effect on the floodplain by the fill areas. The H&H analysis will be used to compare the existing and proposed 100-year floodplain water surface elevations (WSELs) of Meathouse Fork and Buckeye Creek upstream and downstream of the proposed fill areas. This comparison will show the theoretical impacts, if any, of the proposed fill areas along the study area as it relates to the 100-year floodplain WSELs.

1.3 SCOPE OF SERVICES

The following scope of services was performed in order to achieve the above-stated purpose:

- Performance of hydraulic analyses utilizing the Hydrologic Engineering Center River Analysis System (HEC-RAS) program to perform a detailed backwater analysis of Meathouse Fork and Buckeye Creek for the existing and proposed conditions during the 100-year, 24-hour storm event. The study included:
    - Development of an appropriate number of stream cross-sections for use in the HEC-RAS model;
    - Development of a model of the existing terrain and floodplain, which was used as a baseline;
    - Development of a floodplain plan that delineated the boundary of the 100-year flood in Meathouse Fork and Buckeye Creek under existing conditions; and
    - Development of a floodplain plan that delineated the boundary of the 100-year flood in Meathouse Fork and Buckeye Creek under proposed conditions that include the installation of the proposed fill areas, collection channels, access road, and temporary sediment basins.
- Preparation of this hydraulic analysis report that summarizes our calculations and findings.

1.4 AUTHORIZATION

This study was performed as authorized by MarkWest.

1.5 STANDARD OF CARE

The services provided by CEC were conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the civil engineering profession practicing contemporaneously under similar conditions in the locality of the project. No warranty, expressed or implied, is made.

2.0 HYDROLOGIC ANALYSIS

2.1 METHODOLOGY

The Federal Emergency Management Agency (FEMA) conducted a Flood Insurance Study (FIS) for Doddridge County, West Virginia, in 1991. According to this study, Meathouse Fork discharges 9,600 cubic feet per second (cfs) at its confluence with Middle Island Creek, while Buckeye Creek discharges 7,350 cfs at its confluence with Middle Island Creek during the 100-year, 24-hour storm event. The FEMA FIS is included in Appendix B.

In order to maintain conditions similar to the FIS, the discharges of 9,600 cfs and 7,350 cfs and the known water surface elevation of 792.5 were used during the hydraulic analysis of Meathouse Fork and Buckeye Creek respectively, as described in Section 4. The FEMA Flood Insurance Rate Map is provided in Appendix B.

3.0 HYDRAULIC ANALYSIS

The U.S. Army Corps of Engineers HEC-RAS computer software was utilized to analyze the hydraulic capacity and project water surface elevations (WSELs) along Meathouse Fork and Buckeye Creek during the 100-year, 24-hour design storm evaluations. The Meathouse Fork study area boundary extended from approximately 100 feet downstream of its confluence with Middle Island Creek to approximately 1,400 feet upstream of its confluence with Middle Island Creek. The Buckeye Creek study area boundary extended from approximately 100 feet downstream of its confluence with Middle Island Creek to approximately 1,300 feet upstream of its confluence with Middle Island Creek. A map of the cross section locations utilized for the hydraulic analysis is located in Appendix D.

3.1 EXISTING CONDITIONS

A HEC-RAS model for the existing conditions was created using aerial survey information, DEM data, and the FEMA FIS for Doddridge County, WV dated March 18, 1991

The HEC-RAS input and output data for the model is provided in Appendix C. The map in Appendix D also shows the estimated lateral extent of the floodplain resulting from the 100-year, 24-hour design storm.

Included in Appendix E is the HEC-RAS summary table for the estimated water surface elevations in Meathouse Fork and Buckeye Creek resulting from the 100-year, 24-hour design storm at each analyzed cross-section based on the existing conditions.

3.2 PROPOSED CONDITIONS

The HEC-RAS model for the proposed conditions was developed by revising the Meathouse Fork and Buckeye Creek cross-sections to include the proposed fill areas. The proposed fill areas, collection channels, access road, and temporary sediment basin 1 along Meathouse Fork are located between cross-sections 2+00 (C) to 8+00 (I). The proposed fill area, collector

channels, access road, and temporary sediment basin 2 along Buckeye Creek are located between cross-sections 2+67 (Q) to 8+27 (W).

The HEC-RAS input and output data for the proposed conditions model have been provided in Appendix C. The HEC-RAS summary table for proposed conditions for each cross section is summarized in the hydraulic calculations in Appendix E. In addition, a summary table for the comparison of the 100-year existing and proposed water surface elevations is located at the end of Appendix E.

4.0 CONCLUSIONS

The following conclusions are presented based on the results of engineering analyses using the HEC-RAS model.

4.1 EXISTING CONDITIONS

The existing conditions, as previously described, were evaluated to estimate the WSEL along the studied lengths of Meathouse Fork and Buckeye Creek. Appendix E contains summary tables of the HEC-RAS results. Also provided are graphical results of the HEC-RAS analysis for the 100-year design storm at numerous sections along Meathouse Fork and Buckeye Creek. Based on these analyses, the following conclusions were developed:

- The 100-year, 24-hour design storm will inundate approximately 15.30 acres, as shown in Drawing SP01 in Appendix D.

4.2 PROPOSED CONDITIONS

The proposed HEC-RAS model was setup to analyze the proposed fill areas. Appendix E contains summary tables of the HEC-RAS results for Meathouse Fork and Buckeye Creek considering the design storm, and the addition of the two fill areas within the floodplain. Also provided are graphical results of the HEC-RAS analysis for the 100-year design storm at numerous sections along Buckeye Creek. The section locations are shown in drawing SP01 in Appendix D. Based on these analyses, the following conclusions were developed:

- The 100-year, 24-hour design storm will inundate approximately 15.33 acres as shown on Drawing SP01 in Appendix D.
- The 100-year, 24-hour design storm will increase the flood elevation of Meathouse Fork a maximum of 0.05 feet at the Station 10+00 (F)
- The 100-year, 24-hour design storm will increase the flood elevation of Buckeye Creek a maximum of 0.05 feet at the Station 10+00 (T)

4.2 SUMMARY

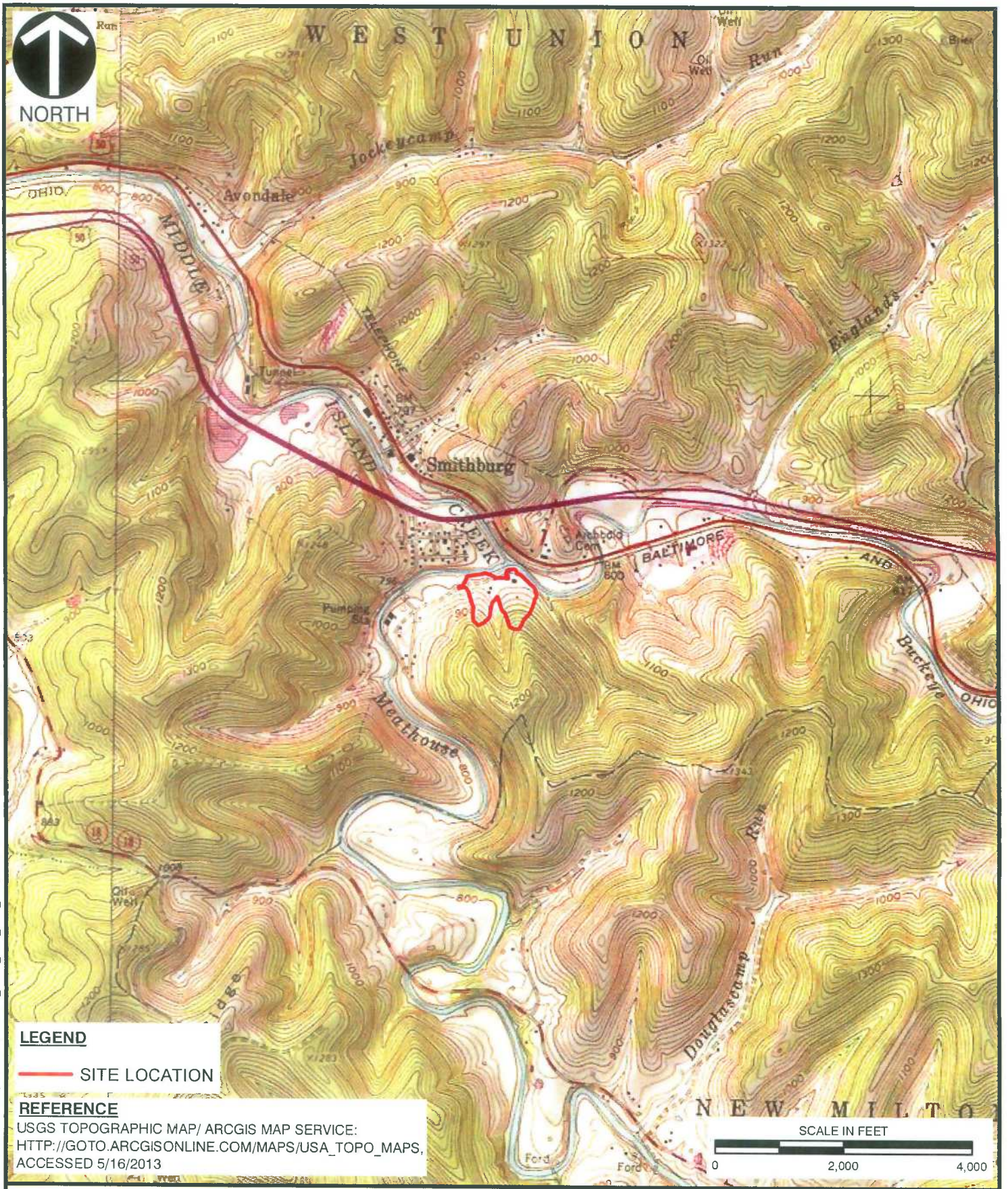
The hydraulic analysis was prepared to provide a comparison between the post-development floodplain conditions along Meathouse Fork and Buckeye Creek and the existing conditions.

The installation of the proposed fill areas will increase the Meathouse Fork and Buckeye Creek flood elevation by a maximum of 0.05 feet. This increase is within the federal allowable limit of increase of one (1) foot and does not pose any additional flooding hazard to properties adjacent to Meathouse Fork and Buckeye Creek within the study area.

Appendix A

APPENDIX A

SITE LOCATION AND SOILS MAPS



Civil & Environmental Consultants, Inc.
333 Baldwin Road - Pittsburgh, PA 15205-9072
412-429-2324 · 800-365-2324
www.cecinc.com

MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC.
MOOSE PROPERTY FILL SITE
DODDRIDGE COUNTY, WEST VIRGINIA

SITE LOCATION MAP

DRAWN BY:	RCT	CHECKED BY:	DJL	APPROVED BY:		FIGURE NO:	1
DATE:	05/16/2013	SCALE:	1 " = 2,000 '	PROJECT NO:	130-359		

\\SVR-PITTSBURGH\Projects\2013\130-359\-GIS\maps\CIVIL\130359_FIG1_Site_Loc_V10.mxd 5/16/2013 1:50 PM (rthomas)

LEGEND

LIMIT OF DISTURBANCE

SOIL UNIT

REFERENCE

ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY,
ACCESSED 5/16/2013, IMAGERY DATE: 2011.

U.S.D.A., N.R.C.S
SOIL SURVEY GEOGRAPHIC (SSURGO) DATABASE FOR
DODDRIDGE COUNTY, WV, 2009.

Civil & Environmental Consultants, Inc.
333 Baldwin Road · Pittsburgh, PA 15205-9072
412-429-2324 · 800-365-2324
www.cecinc.com

MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC.
MOOSE PROPERTY FILL SITE
DODDRIDGE COUNTY, WEST VIRGINIA

SOILS MAP

DRAWN BY:	RCT	CHECKED BY:	DJL	APPROVED BY:		FIGURE NO:	2
DATE:	05/16/2013	SCALE:	1 " = 500 '	PROJECT NO:	130-359		

I:\SVR-PITTSBURGH\Projects\2013\130-359\-GIS\maps\CT\WL130359_FIG2_Soils_V10.mxd 5/16/2013 1:51 PM (mhomes)

Appendix B

APPENDIX B

FEMA FLOOD INFORMATION STUDY AND RATE MAP

NOTES TO USERS

This 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. The community map repository should be consulted for possible updated or additional flood hazard information.

Some information shown in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies the FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 17. The horizontal datum was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov.

Base map created by the WV Statewide Addressing and Mapping Board (SAMB). Imagery was captured at a scale of 1:24000 in the spring of 2003 for the purpose of producing natural color digital orthophotos at a 2 foot resolution.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a listing of Communities Participating in the National Flood Insurance Program (NFIP) and the panels on which each community is located.

For information on available products associated with this FIRM, visit the Map Service Center (MSC) website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have questions about this map, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

ZONE A — No Base Flood Elevations determined.

ZONE AE — Base Flood Elevations determined.

ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

Base Flood Elevation line and value; elevation in feet*

Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A) — (A) Cross section line

(23) — (23) Transect line

97° 07' 30" 32° 22' 30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

3770000 FT 5000-foot ticks: West Virginia State Plane North Zone (FIPSZONE 4701), Lambert Conformal Conic projection

DX5510 — 1000-meter Universal Transverse Mercator grid values, zone 17

M — Bench mark (see explanation in Notes to Users section of this FIRM panel)

• — Survey control point

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
March 17, 2011

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
October 4, 2011 - to update corporate limits, to incorporate Base Flood Elevations, to change Special Flood Hazard Areas, to update map format, to add Zones AH and VE, and to reflect

For communities with multiple panels, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
150 0 300 600 METERS

PANEL 0140C

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

DODDRIDGE COUNTY, WEST VIRGINIA AND INCORPORATED AREAS

PANEL 140 OF 325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	540067	0140	C

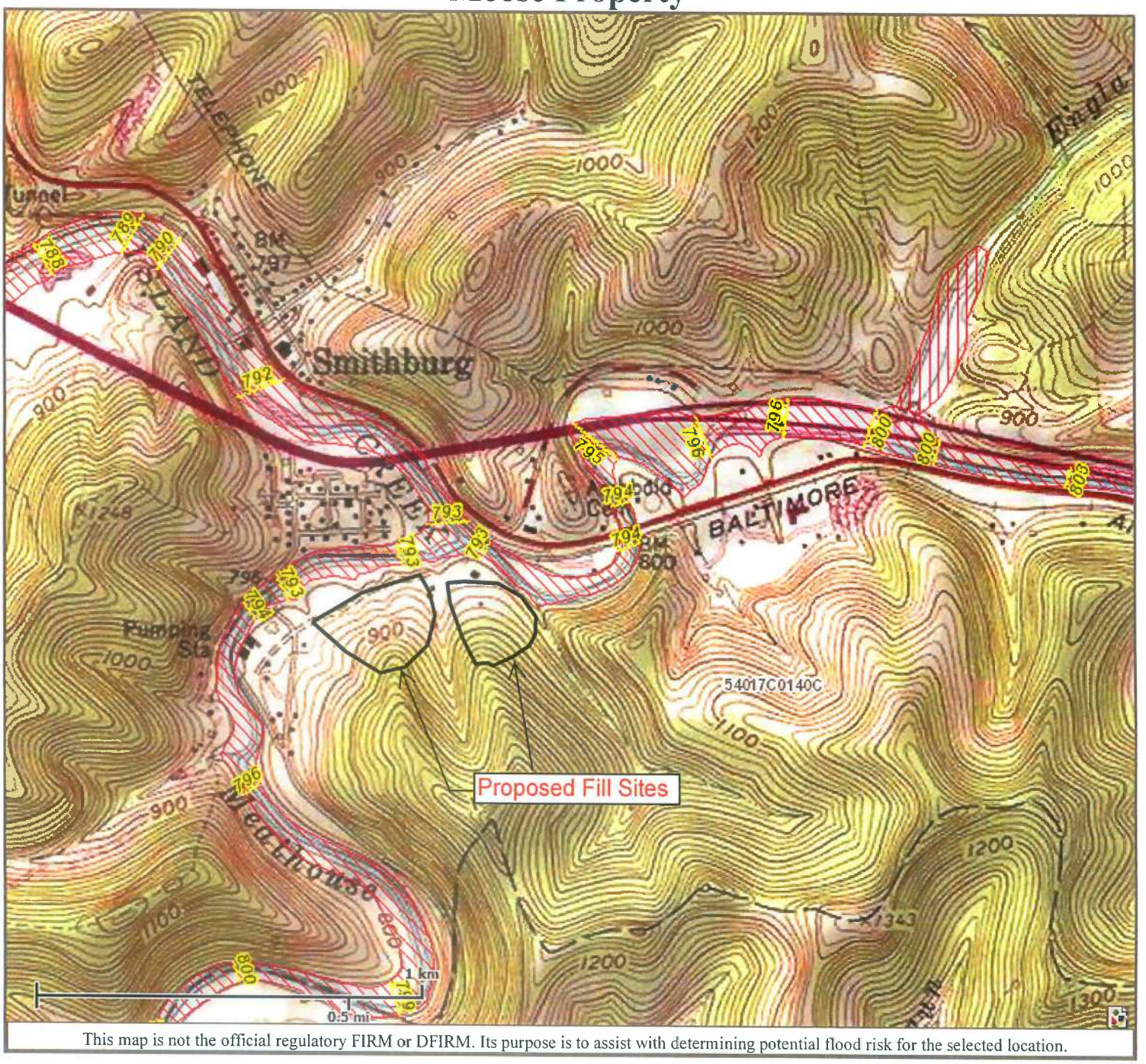
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
54017C0140C

MAP REVISED
OCTOBER 4, 2011

Federal Emergency Management Agency

Moose Property



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

Map Created on 7/15/2013

Location of the mouse click

Approximate Study (Zone A)

Detailed Study (Zone AE, AH, AO)

Floodway

Flood Water Depth (HEC-RAS)

K—K Cross Section Line

810 Base Flood Elevation Line

DFIRM Panel (Map) Index

User Notes:

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. To obtain more detailed information in areas where Base Flood Elevations have been determined, users are encouraged to consult the latest Flood Profile data contained in the official flood insurance study. These studies are available online at www.msc.fema.gov.

WV Flood Tool is supported by FEMA, WV NFIP Office, and WV GIS Technical Center (http://www.MapWV.gov/flood)

Flood Hazard Area: Selected site is NOT WITHIN any identified flood hazard area. Unmapped flood hazard areas may be present.

Advisory Flood Height: N/A

Water Depth: N/A

Elevation: About 864 feet

Location (long, lat): 80.729843 W, 39.282813 N

Location (UTM 17N): (523300, 4348196)

FEMA Issued Flood Map: 54017C0140C

Contacts: Doddridge County

CRS Information: No CRS information available

Flood Profile: No Profile

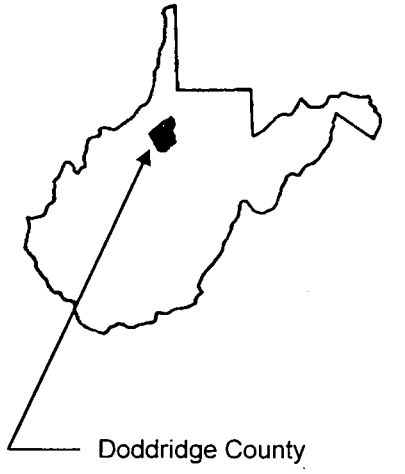
HEC-RAS Model: No Model

Parcel Number:

FLOOD INSURANCE STUDY

DODDRIDGE COUNTY, WEST VIRGINIA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
WEST UNION, TOWN OF	540025
DODDRIDGE COUNTY (UNINCORPORATED AREAS)	540024



Effective: October 4, 2011

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
54017CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. Please contact the Community Map Repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

Initial Countywide FIS Effective Date: March 18, 1991

Flood Insurance Study Revised: October 4, 2011

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FIGURES

TABLES

EXHIBITS

FLOOD INSURANCE STUDY
DODDRIDGE COUNTY, WEST VIRGINIA
AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide format Flood Insurance Study investigates the existence and severity of flood hazards in the geographic area of Doddridge County, West Virginia, including the Town of West Union and the unincorporated areas of the county (hereinafter referred to collectively as Doddridge County); and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State or other jurisdictional agency will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses in this study were prepared by the U.S. Geological Survey (USGS) for the Federal Emergency Management Agency (FEMA) under Inter-Agency Agreement No. EMW-87-E- 2512. Within the Town of West Union, the work for this study was completed in May 1988; within the unincorporated areas of the county, the work for this study was completed in June 1988.

This digital conversion was prepared by the USACE, Huntington District, for FEMA, under Inter-Agency Agreement No. HSFE03-06-X-0023.

Base map information shown on the FIRM was provided by West Virginia Statewide Addressing and Mapping Board (SAMB). Imagery was captured at a scale of 1:24,000 in the Spring of 2003 for the purpose of producing natural color digital orthophotos at a two-foot pixel resolution.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 17, and the horizontal datum used is North American Datum of 1983 (NAD 83), GRS1980 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to UTM, NAD 1983. Differences in the datum, spheroid, projection, or UTM zones used in the production of FIRMs for adjacent counties may

result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of the information shown on the FIRM.

1.3 Coordination

On January 17, 1985, an initial Consultation and Coordination Officer's (CCO) meeting was held with representatives of FEMA, the county, and the USGS (the study contractor) to determine the streams to be studied by detailed methods. The Huntington District of the U. S. Army Corps of Engineers (USACE) and the Soil Conservation Service (SCS) were contacted for information pertinent to this study.

On April 18, 1990, a final CCO meeting was held with representatives of FEMA, the county, and the study contractor to review the results of the study. The final CCO meeting for the unincorporated areas of Doddridge County also served as the final CCO meeting for this countywide study, and was open to representatives from all communities within the county that were covered by this countywide study.

For this countywide FIS, the final CCO meeting was held on April 29, 2010, and attended by representatives of the Town of West Union and Doddridge County, West Virginia. All problems raised at that meeting have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Doddridge County, West Virginia, including communities listed in Section 1.1.

Table 1, "Areas Studied by Detailed Methods" lists the streams studied by detailed methods.

Table 1 – Areas Studied by Detailed Methods

Stream	Limits of Detailed Study
Middle Island Creek	From the downstream county boundary to the confluence of Meathouse Fork and Buckeye Creek
Buckeye Creek	From the confluence with Middle Island Creek to a point approximately 240 feet upstream of the confluence of Long Run, and from the confluence of Greenbrier Creek to the confluence of Traugh Fork
Meathouse Fork	From the confluence with Middle Island Creek to County Highway 56, and from a point approximately 1,600 feet downstream of County Highway 25-13 to the confluence of Laurel Run and Big Isaac Creek
McElroy Creek	From the confluence of Flint Run to the confluence of Big Battle Run

Table 1 – Areas Studied by Detailed Methods - continued

Stream	Limits of Detailed Study
Wilhelm Run	From the confluence with Arnold Creek to a point approximately 1.2 miles upstream
Long Run	From the confluence with Buckeye Creek to a point approximately 2.4 miles upstream
Toms Fork	From the confluence with Meathouse Fork to the confluence of Little Toms Fork
Greenbrier Creek	From the confluence with Buckeye Creek to a point approximately 1.9 miles upstream
Big Isaac Creek	From the confluence with Meathouse Fork to the confluence of Little Isaac Creek
Laurel Run	From the confluence with Meathouse Fork to a point approximately 0.9 mile upstream of the confluence with Meathouse Fork

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through January 1990.

All or portions of the following streams were studied by approximate methods: Broad Run, Arnold Creek, Slaughter Run, Flint Run, Riggins Run, Robinson Fork, Big Battle Run, Skelton Run, Talkington Fork, Long Run, Bluestone Creek, Cove Creek, Indian Fork, Nutter Fork, Jockey Camp Run, Morgans Run, Buckeye Creek, Buffalo Calf Creek, Meathouse Fork, Little Toms Fork, Lick Run, Big Isaac Creek, Middle Fork, Dotson Run, Cabin Run, Leason Creek, Right Fork, Left Fork, Elk Lick Run, Pike Fork, Little Battle Run, Piggin Run, Brushy Fork, Rock Run, Wolfpen Run, Englands Run, Jockeycamp Run, Douglascamp Run, Traugh Fork, Bonnet Fork, the South Fork Hughes River, and Sycamore Fork. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Doddridge County.

No Letters of Map Revision (LOMRs) were incorporated for the October 4, 2011, revision.

2.2 Community Description

Doddridge County is located in northern West Virginia. It is bordered by the unincorporated areas of Wetzel and Tyler Counties to the north; the unincorporated areas of Ritchie County to the west; the unincorporated areas of Harrison County to the east; and the unincorporated areas of Gilmer and Lewis Counties to the south. The total land

area contained within the county is approximately 321.6 square miles. In 2000, the population of the county was 7,491 (Reference 1).

The county seat is located in the Town of West Union. The total land area of the town is approximately 0.32 square miles, and the population was 806 in 2000 (Reference 1).

The climate of Doddridge County is temperate with a seasonal variation in temperature. The county is located in a region termed humid continental: humid because of the evenly spaced precipitation, and continental because of the yearly range in temperature. Mean annual precipitation of the county is approximately 45 inches. The average monthly temperatures in degrees Fahrenheit range from the mid-30's in winter to the low 70's in summer (Reference 2).

2.3 Principal Flood Problems

The principal flood problems of Doddridge County are the overflows of Middle Island Creek, Buckeye Creek, and Meathouse Fork. The history of flooding in the county indicates that flooding can occur at any time of the year. Large frontal storms or decaying tropical storms produce the worst flooding on the larger streams, while high intensity thunderstorms produce severe flooding on smaller drainage areas. Major floods have occurred in the county in 1875, 1950, 1963, and 1985.

The mountainous topography of the county is conducive to rapid rises on streams and also to fast runoff best described as flash flooding. This condition has been aggravated by human activities such as timbering in the county.

2.4 Flood Protection Measures

No major structural flood protection measures exist or are planned for the county.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 2-, 1-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 2-, 1-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent-annual-chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance (100-year) flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the county.

Discharge-frequency curves were developed on a regional basis that applies to West Virginia (References 3 and 4). For the streams studied by detailed methods, 1-percent-annual-chance flood elevations were determined through discharge-frequency relations and the Manning equation. Within the Town of West Union, flood elevations were determined through streamflow-station data relationships and the Manning's equation.

Peak discharge-drainage area relationships for each stream studied by detailed methods are presented in Table 2, "Summary of Discharges".

Table 2 – Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ. MILES)	PEAK DISCHARGE (CFS) 1-PERCENT-ANNUAL- CHANCE
MIDDLE ISLAND CREEK		
Upstream of Doddridge-Tyler County boundary	134.78	15,200
Approximately 0.1 mile downstream of confluence of Piggin Run	120.06	13,080
BUCKEYE CREEK		
At confluence with Middle Island Creek	38.62	7,350
Downstream of confluence of Long Run	22.62	5,150
Upstream of confluence of Greenbrier Creek	9.41	3,050
Downstream of confluence of Traugh Fork	1.52	1,310
MEATHOUSE FORK		
At confluence with Middle Island Creek	66.84	9,600
Downstream of confluence of Toms Fork	50.47	8,200
Downstream of confluence of Brushy Fork	29.87	6,050
Downstream of confluence of Laurel Run and Big Isaac Creek	3.76	2,230
MCELROY CREEK		
Upstream of confluence of Flint Run	61.95	9,250
Upstream of confluence of Rigging Run	51.23	8,300
Downstream of confluence of Talkington Fork	39.18	7,100
Downstream of confluence of Robinson Fork and Big Battle Run	20.75	4,900

Table 2 – Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ. MILES)	PEAK DISCHARGE (CFS) 1-PERCENT-ANNUAL- CHANCE
WILHELM RUN		
At confluence with Arnold Creek	3.29	2,070
Approximately 1.2 miles upstream of confluence with Arnold Creek	2.07	1,570
LONG RUN		
At confluence with Buckeye Creek	4.44	2,460
Approximately 2.4 miles upstream of confluence with Buckeye Creek	1.85	1,470
TOMS FORK		
At confluence with Meathouse Fork	15.27	4,100
Downstream of confluence of Little Toms Fork	12.58	3,650
GREENBRIER CREEK		
At confluence with Buckeye Creek	2.80	1,880
Approximately 1.9 miles upstream of confluence with Buckeye Creek	1.09	1,080
BIG ISAAC CREEK		
At confluence with Meathouse Fork	1.79	1,450
LAUREL RUN		
At confluence with Meathouse Fork	1.97	1,530
Upstream of confluence of Big Isaac Creek	1.57	1,340

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1) and the FIRM (Exhibit 2) where applicable.

Water-surface elevations of floods of the selected recurrence intervals were computed

using the USACE HEC-2 step-backwater computer program, and the results were published in a special flood hazard information report (References 5 and 6). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Channel roughness factors (Manning's "n") used in the hydraulic computations were assigned on the basis of field surveys of the stream and floodplain areas. For Middle Island Creek, channel "n" values range from 0.040 to 0.045 and overbank "n" values range from 0.050 to 0.070. For Buckeye Creek and Meathouse Fork, channel "n" values range from 0.055 to 0.080.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Qualifying benchmarks within a given jurisdiction that are catalogued by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Benchmarks catalogued by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation (e.g. mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation (e.g. concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g. concrete monument below frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g. concrete monument above frost line, or steel witness post)

In addition to NSRS benchmarks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

To obtain current elevation, description, and/or location information for benchmarks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their Web site at www.ngs.noaa.gov.

It is important to note that temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

3.3 Vertical Datum

All elevations used in the original Doddridge county FIS reports were referenced to the National Geodetic Vertical Datum of 1929 (NGVD29), formerly referred to as Sea Level Datum of 1929. All flood elevations shown in this FIS report and on the FIRM are referenced to North American Vertical Datum of 1988 (NAVD88). Structure and ground elevations in the community must, therefore, be referenced to NAVD88. Elevation factors used to convert the NGVD29 elevation data of the previous Braxton county FIS reports to NAVD88 are summarized below. Elevation reference marks used in this study are shown on the maps.

The data points used to determine the conversion are listed in Table 3, "Vertical Datum Conversion Values".

Table 3 – Vertical Datum Conversion Values

USGS 7.5-Minute Quadrangle Name	Corner	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Conversion from NGVD29 to NAVD88 (foot)
Shirley	SE	39.375	80.750	-0.522
Center Point	SE	39.375	80.625	-0.515
Folsom	SE	39.375	80.500	-0.525
Pennsboro	SE	39.250	80.875	-0.554
West Union	SE	39.250	80.750	-0.515
Smithburg	SE	39.250	80.625	-0.502
Oxford	SE	39.125	80.750	-0.531
New Milton	SE	39.125	80.625	-0.522
			AVERAGE	**-0.500 foot**

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. A conversion factor of -.500 feet was applied to the NGVD29 elevations in Doddridge County to convert to NAVD88. Structure and ground elevations in the county must, therefore, be referenced to NAVD88. It is important to note that adjacent communities and counties may be referenced to NGVD29. This may result in differences in Base Flood Elevations (BFEs) across the community and county boundaries.

For more information on NAVD88, see the FEMA publication entitled "Converting the National Flood Insurance Program to the North American Vertical Datum of 1988" (FEMA, June 1992), or contact the National Geodetic Survey Information Services, NOAA, N/NGS12, National Geodetic Survey, SSMC-3, #9202, 1315 East-West Highway, Silver Spring, MD 20910-3282 (Internet address http://www.ngs.noaa.gov).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance (100-year) flood elevations and

delineations of the 1- and 0.2-percent-annual-chance (500-year) floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles and Floodway Data Table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. For the streams studied in detail, the 1-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 20 feet (Reference 7).

For the streams studied by approximate methods, the boundaries of the 1-percent-annual-chance floodplain were delineated using the Flood Hazard Boundary Map (FHBM) for the Town of West Union and the FIS for the Unincorporated Areas of Doddridge County (References 8 and 9).

The 1-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1, "Floodway Schematic".

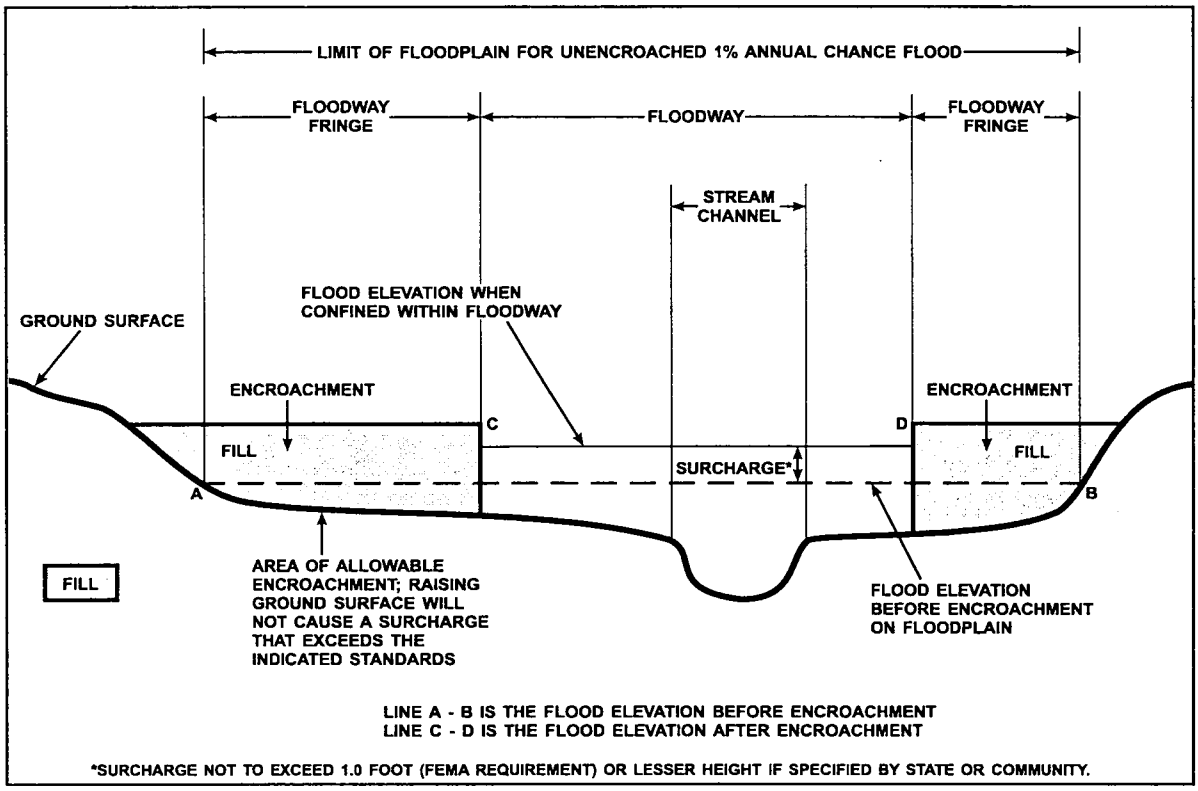


Figure 1 - Floodway Schematic

No floodways were calculated as part of this study.

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no (1-percent-annual-chance) BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance risk zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance risk zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot base flood depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Zone AR is the flood insurance risk zone that corresponds to an area of special flood hazard formerly protected from the 1-percent-annual-chance flood event by a flood-control system that was subsequently decertified. Zone AR indicates that the former flood-control system is being restored to provide protection from the 1-percent-annual-chance or greater flood event.

Zone A99

Zone A99 is the flood insurance risk zone that corresponds to areas of the 1-percent-annual-chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No BFEs or depths are shown within this zone.

Zone V

Zone V is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no BFEs are shown within this zone.

Zone VE

Zone VE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1-foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

Zone X (Future Base Flood)

Zone X (Future Base Flood) is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined based on future-conditions hydrology. No BFEs or base flood depths are shown within this zone.

Zone D

Zone D is the flood insurance risk zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplain. The locations of selected cross sections used in the hydraulic analyses are shown where applicable.

The current FIRM presents flooding information for the entire geographic area of Doddridge County. Previously, separate FHBMs and/or FIRMs were prepared for each incorporated community with identified flood hazard areas and the unincorporated areas of the County. Historical map dates relating to pre-countywide maps prepared for each community are presented in Table 4, "Community Map History".

COMMUNITY NAME	INITIAL NFIP MAP DATE	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	INITIAL FIRM DATE	FIRM REVISIONS DATE
West Union, Town of	March 29, 1974	NONE	March 18, 1991	
Doddridge County (Unincorporated Areas)	November 8, 1974	June 3, 1977	March 18, 1991	

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

Flood Insurance Studies have been prepared for the unincorporated areas of Tyler, Ritchie and Harrison Counties, and for Lewis County and Incorporated Areas (References 10, 11, 12 and 13). The results of this study are in exact agreement with the results of those studies.

A FIS is currently being prepared for Gilmer County and Incorporated Areas (Reference 14). The results of that study will be in exact agreement with the results of this study.

Because it is based on more up-to-date analyses, this study supersedes the Flood Hazard Boundary Map for the Town of West Union and the FIS for the Unincorporated Areas of Doddridge County (References 8 and 9).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting Federal Insurance and Mitigation Division, FEMA Region III, One Independence Mall, Sixth Floor, 615 Chestnut Street, Philadelphia, PA 19106-4404.

9.0 BIBLIOGRAPHY AND REFERENCES

1. Holmes, Darrell E., West Virginia Blue Book, Chapman Printing, 2005.

2. U. S. Department of the Interior, Geological Survey, Hydrology of Area 8, Eastern Coal Province, West Virginia, January 1987.

3. U. S. Department of the Interior, Water-Resources Investigation 87-4111, Techniques for Estimating Flood-Depth Frequency Relations for Streams in West Virginia, by Jeffrey B. Wiley, 1987.

4. U. S. Department of the Interior, Geological Survey, in cooperation with the West Virginia Department of Highways, Runoff Studies on Small Drainage Areas by G. S. Runner, Washington, D. C., October 1980.

5. U. S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Generalized Computer Program, Davis, California, April 1984.

6. U. S. Army Corps of Engineers, Huntingdon District, Special Flood Hazard Information Report, Middle Island Creek and Tributaries, Doddridge County, West Virginia, October 1978.

7. U. S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 20 Feet: Big Isaac, West Virginia, 1964, Photorevised 1976; Center Point, West Virginia, 1961, Photorevised 1976; New Milton, West Virginia, 1965, Photorevised, 1976; Smithburg, West Virginia, 1961, Photorevised 1976; West Union, West Virginia, 1961, Photorevised 1976.

8. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Town of West Union, Doddridge County, West Virginia, April 2, 1976.

9. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, Unincorporated Areas of Doddridge County, West Virginia, Washington, D.C., June 3, 1977.

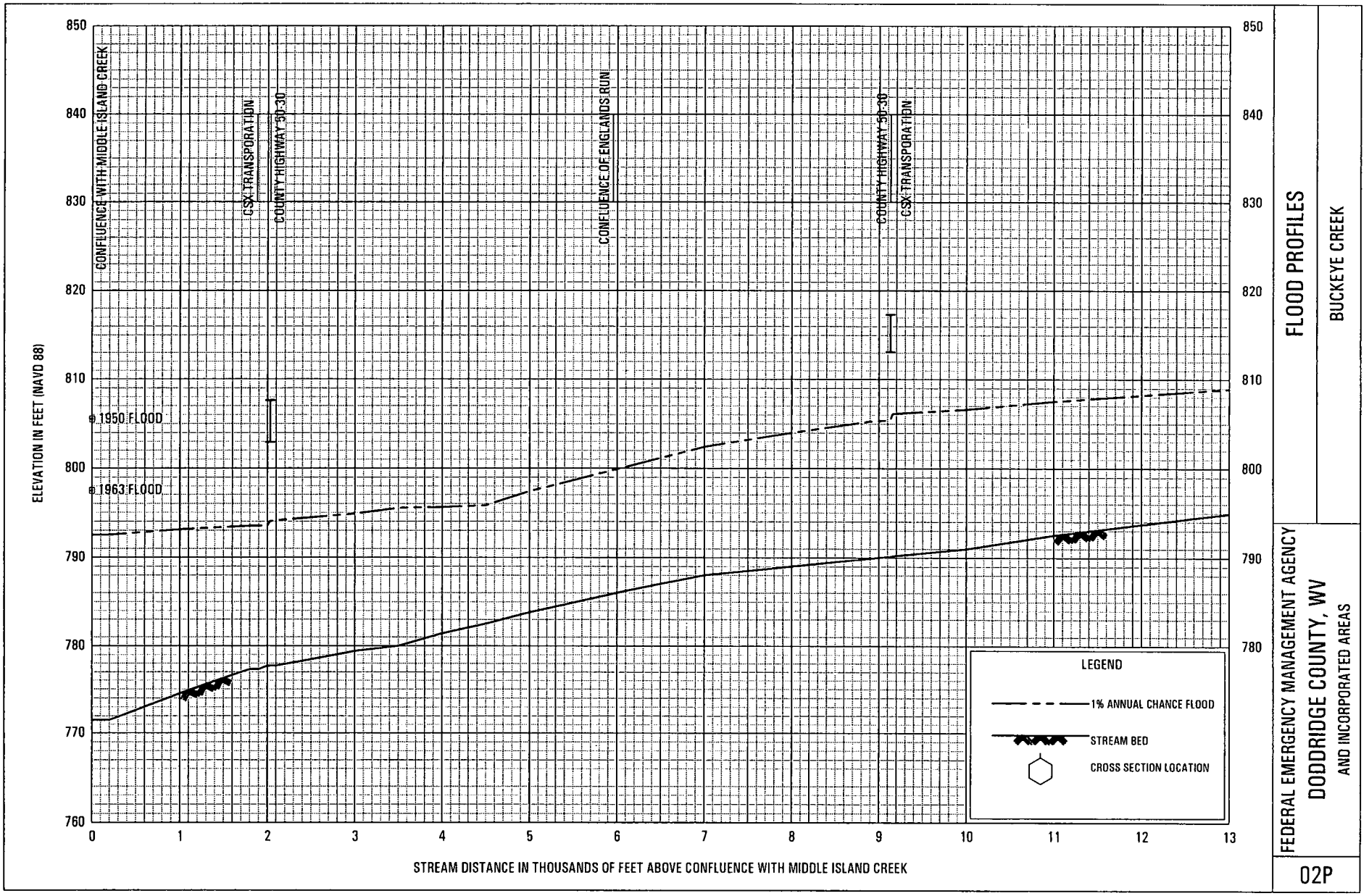
10. Federal Emergency Management Agency, Flood Insurance Study, Unincorporated Areas of Tyler County, West Virginia, Washington, D. C., November 4, 1988.

11. Federal Emergency Management Agency, Flood Insurance Study, Unincorporated Areas of Harrison County, West Virginia, Washington, D. C., July 4, 1988.

12. Federal Emergency Management Agency, Flood Insurance Study, Lewis County and Incorporated Areas, West Virginia, Washington, D.C., July 1, 1987.

13. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Unincorporated Areas of Ritchie County, West Virginia, Washington, D.C., December 11, 1981.

14. Federal Emergency Management Agency, Flood Insurance Study, Gilmer County and Incorporated Areas, West Virginia (Unpublished).



FLOOD PROFILES

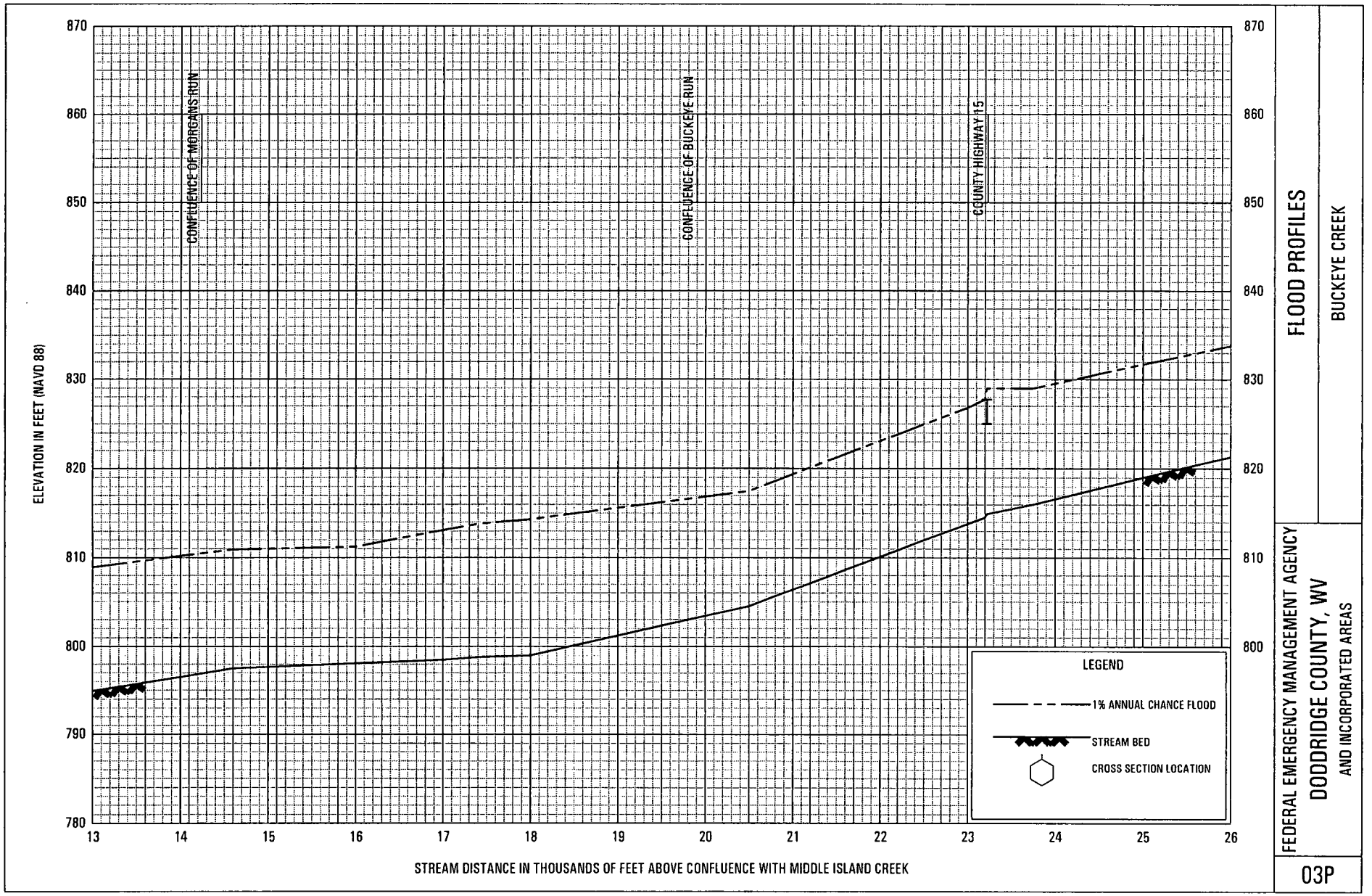
BUCKEYE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

02P



FLOOD PROFILES

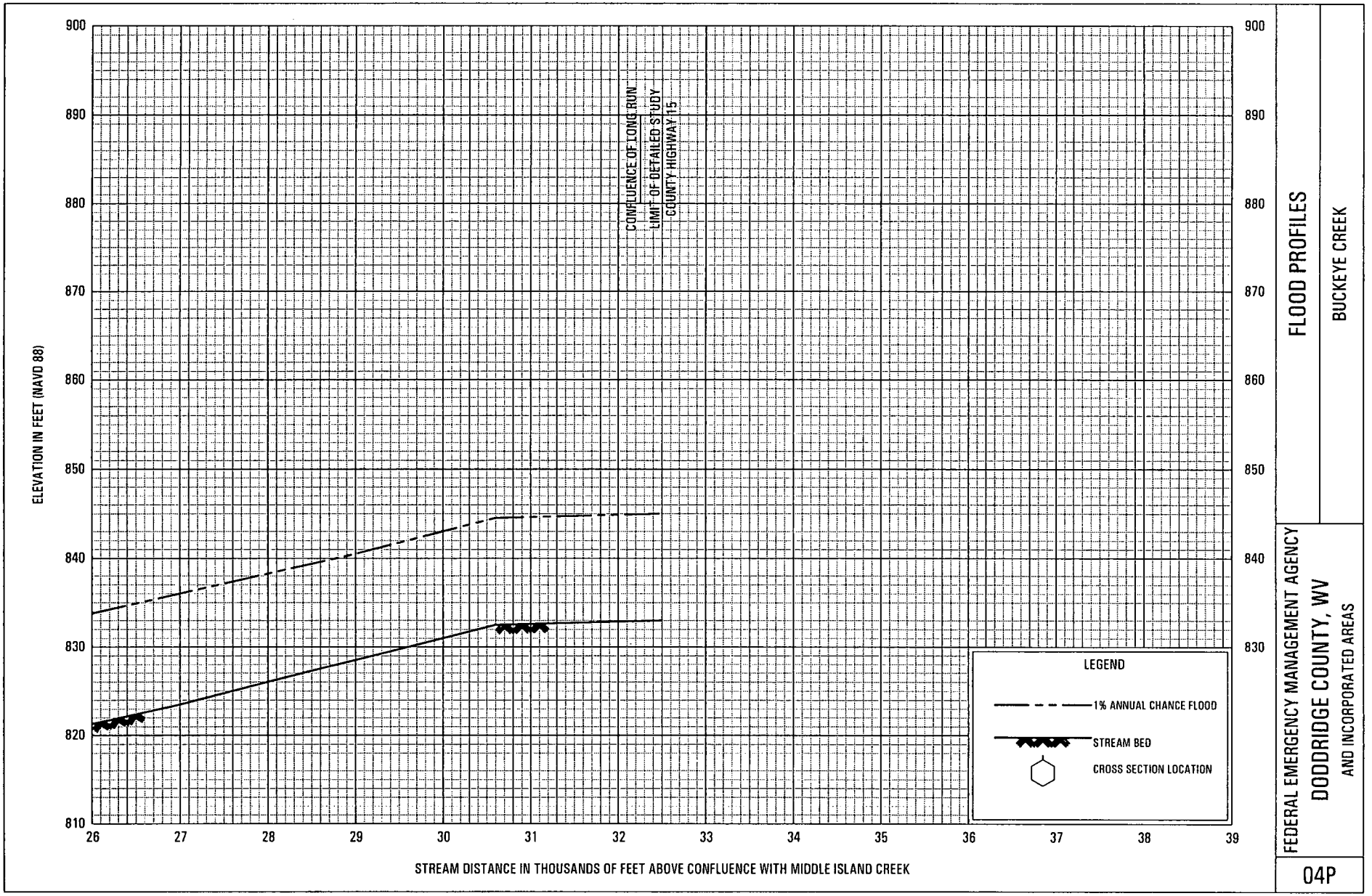
BUCKEYE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

03P



FLOOD PROFILES

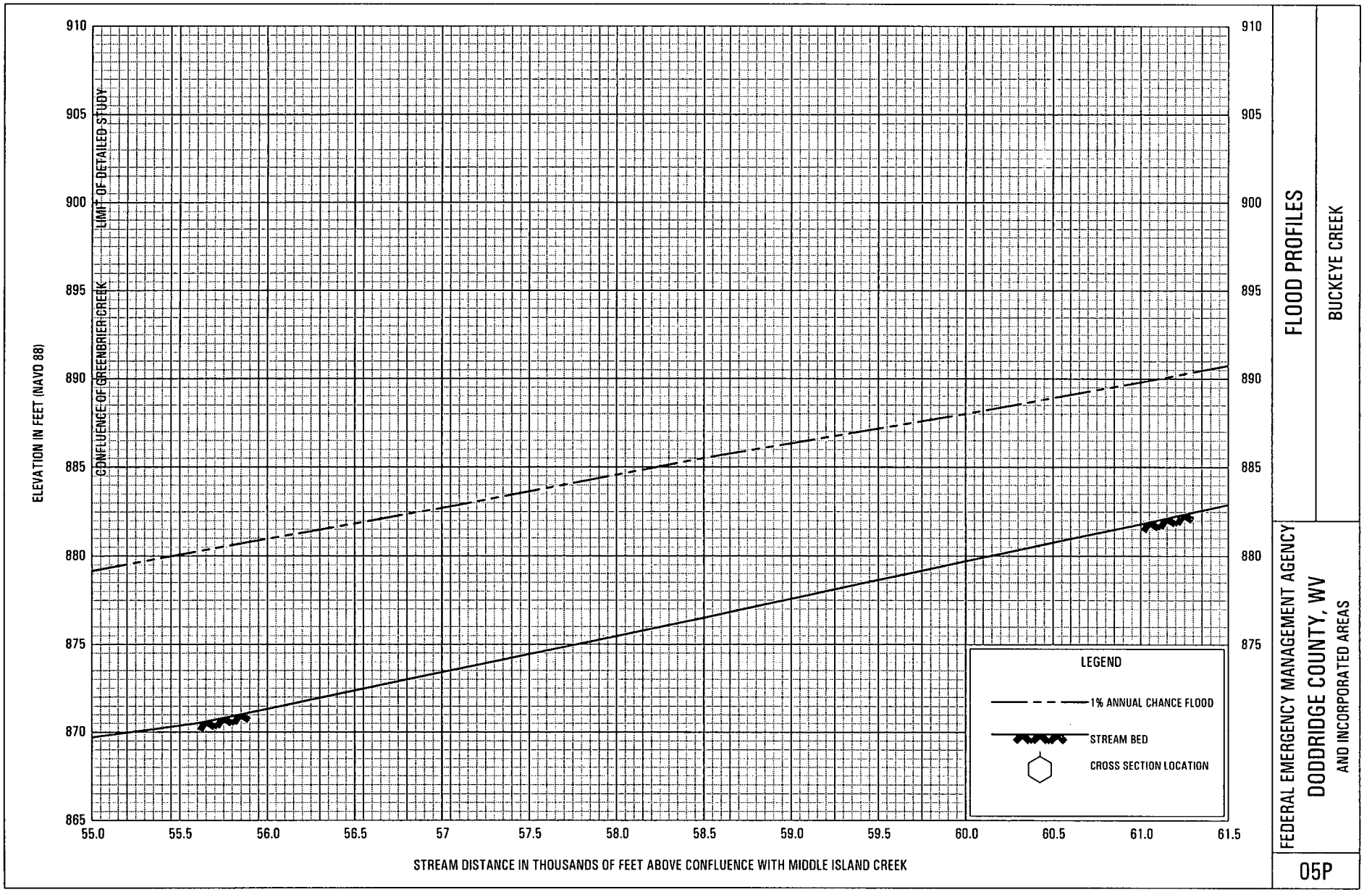
BUCKEYE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

04P



FLOOD PROFILES

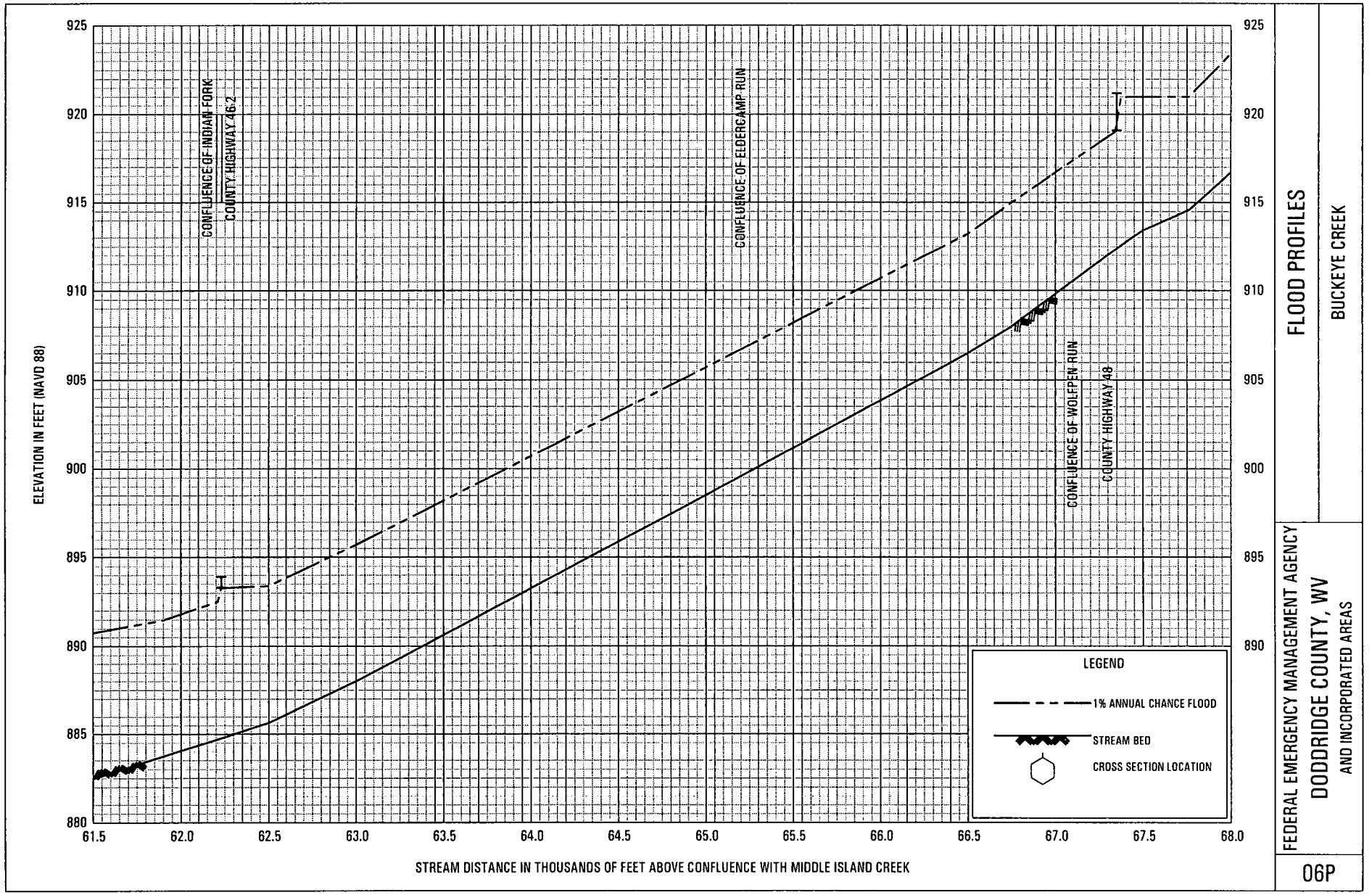
BUCKEYE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

05P



FLOOD PROFILES

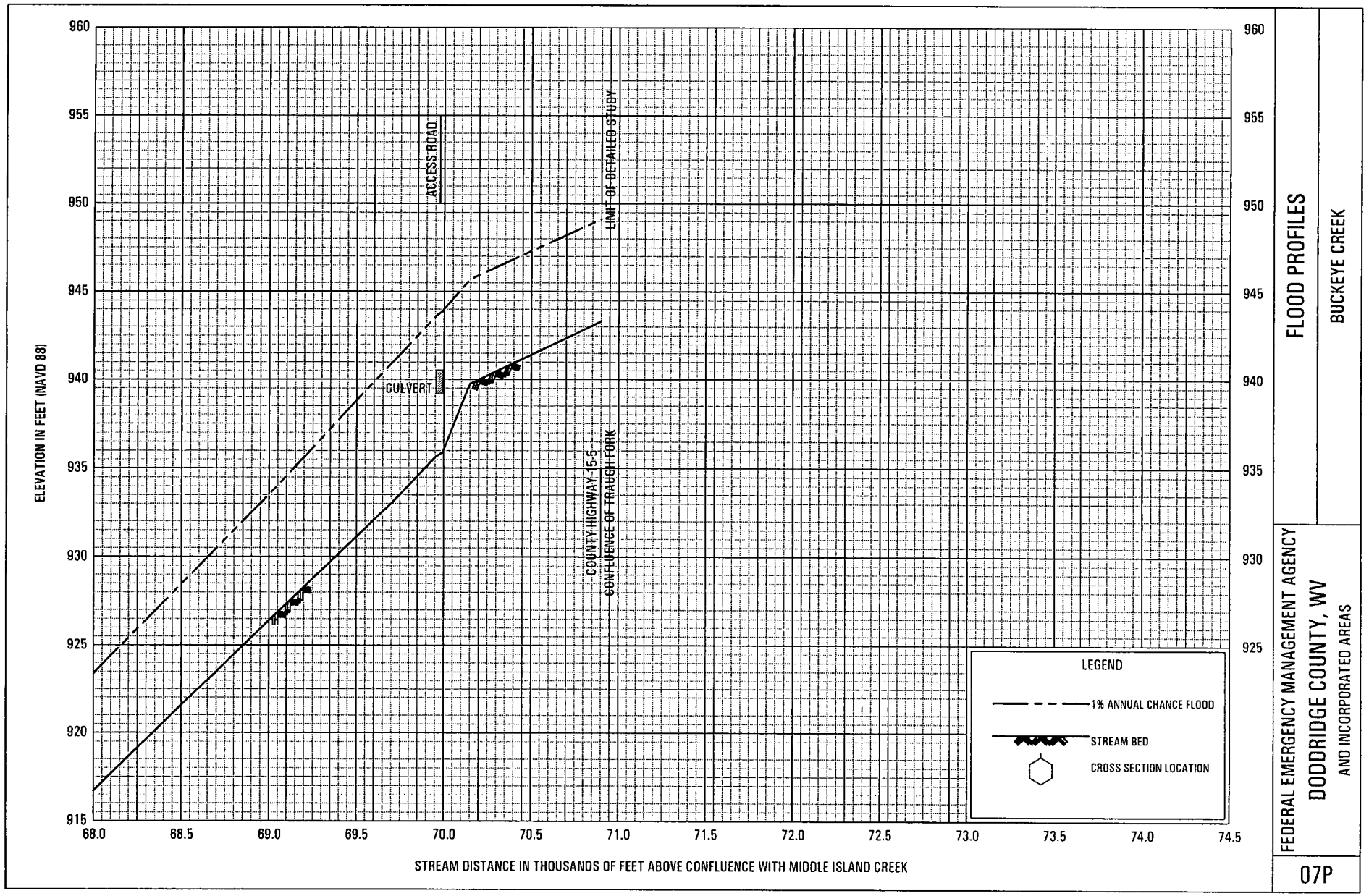
BUCKEYE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

06P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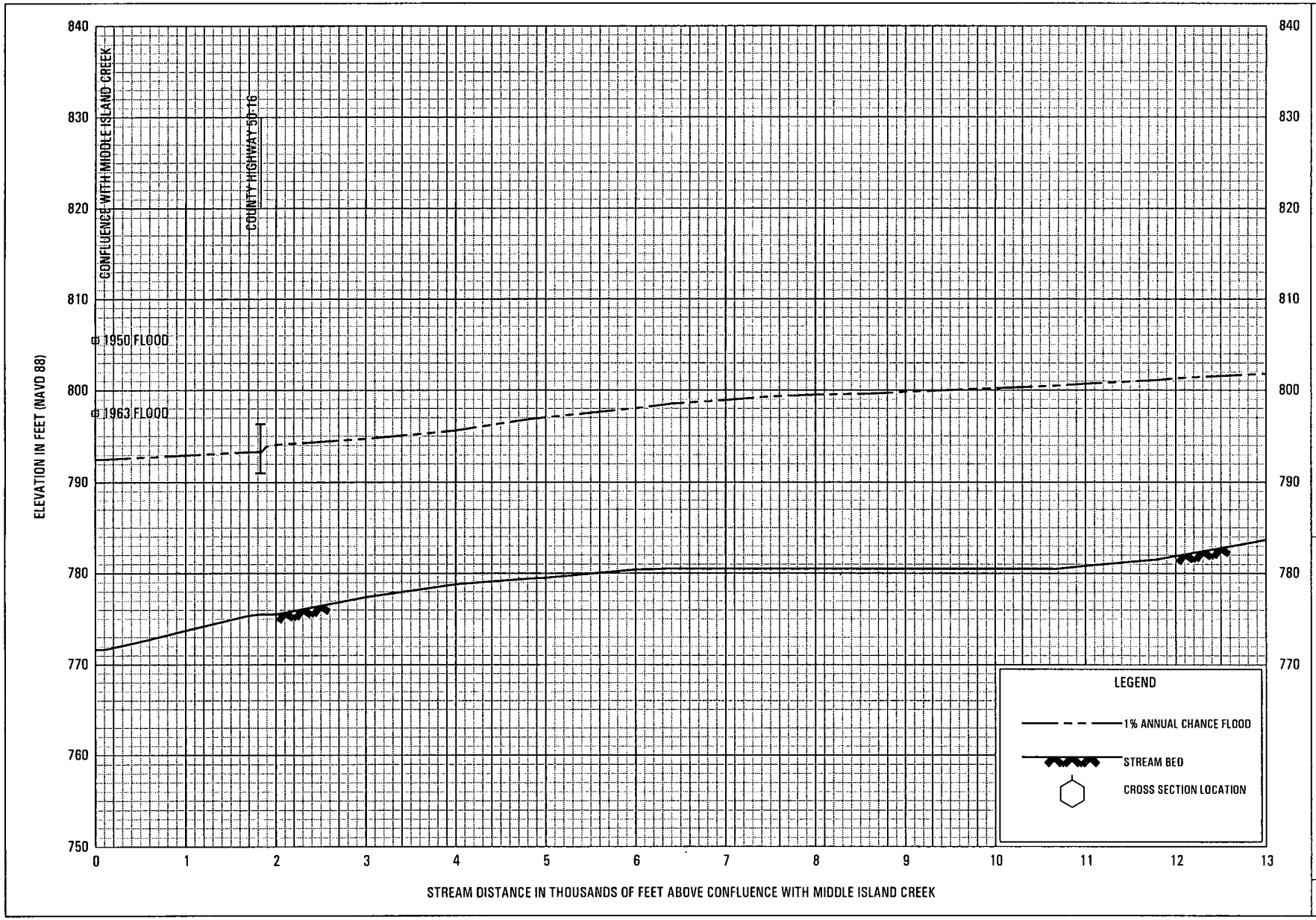
74.0
74.5
ELEVATION IN FEET (NAVD 88)
STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH MIDDLE ISLAND CREEK
ACCESS ROAD
CULVERT
COUNTY HIGHWAY 15-5
CONFLUENCE OF TRAUGH FORK
LIMIT OF DETAILED STUDY
LEGEND
1% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
BUCKEYE CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
DODDRIDGE COUNTY, WV
AND INCORPORATED AREAS
07P



FLOOD PROFILES

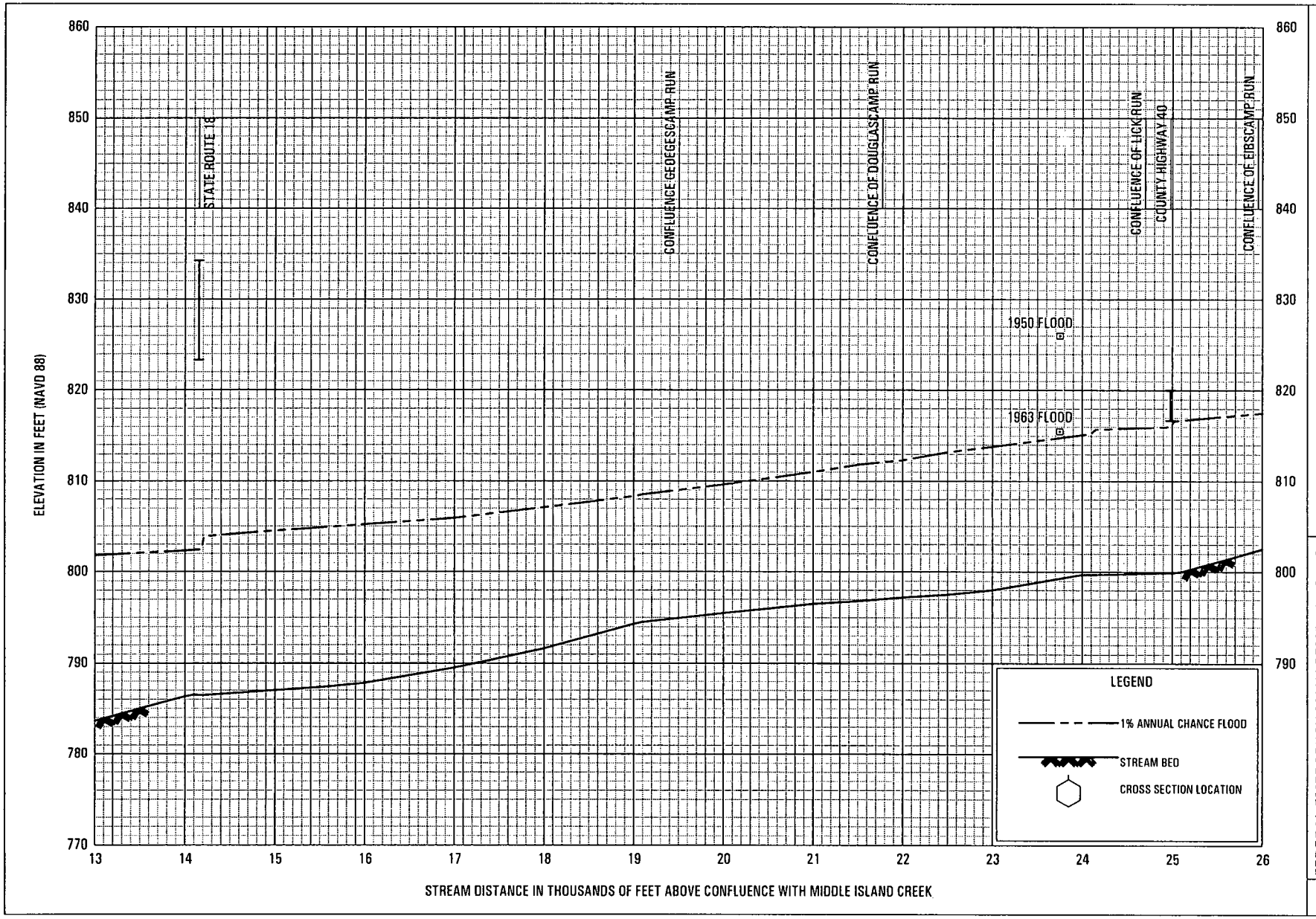
MEATHOUSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

15P



FLOOD PROFILES

MEATHOUSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

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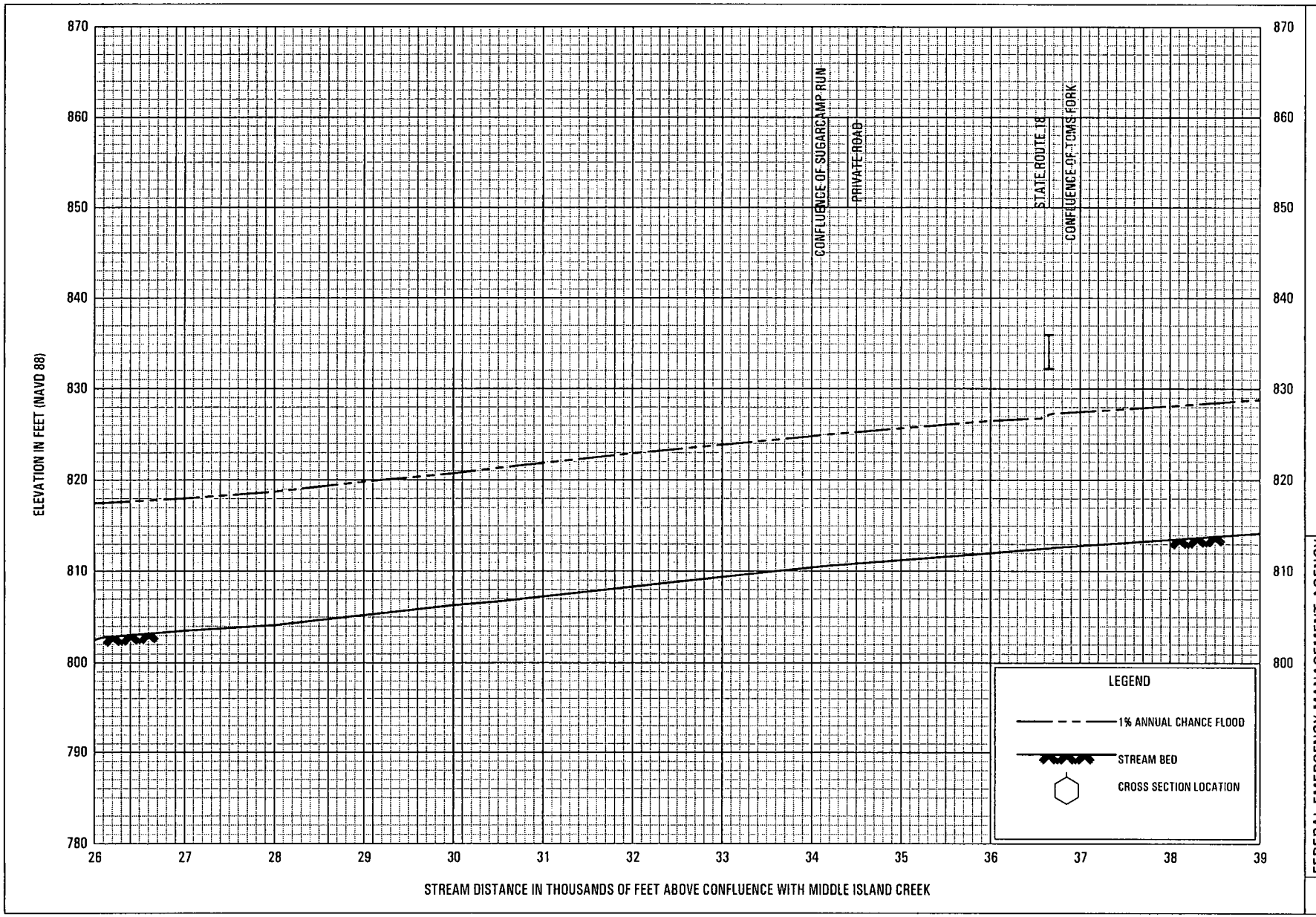


FLOOD PROFILES

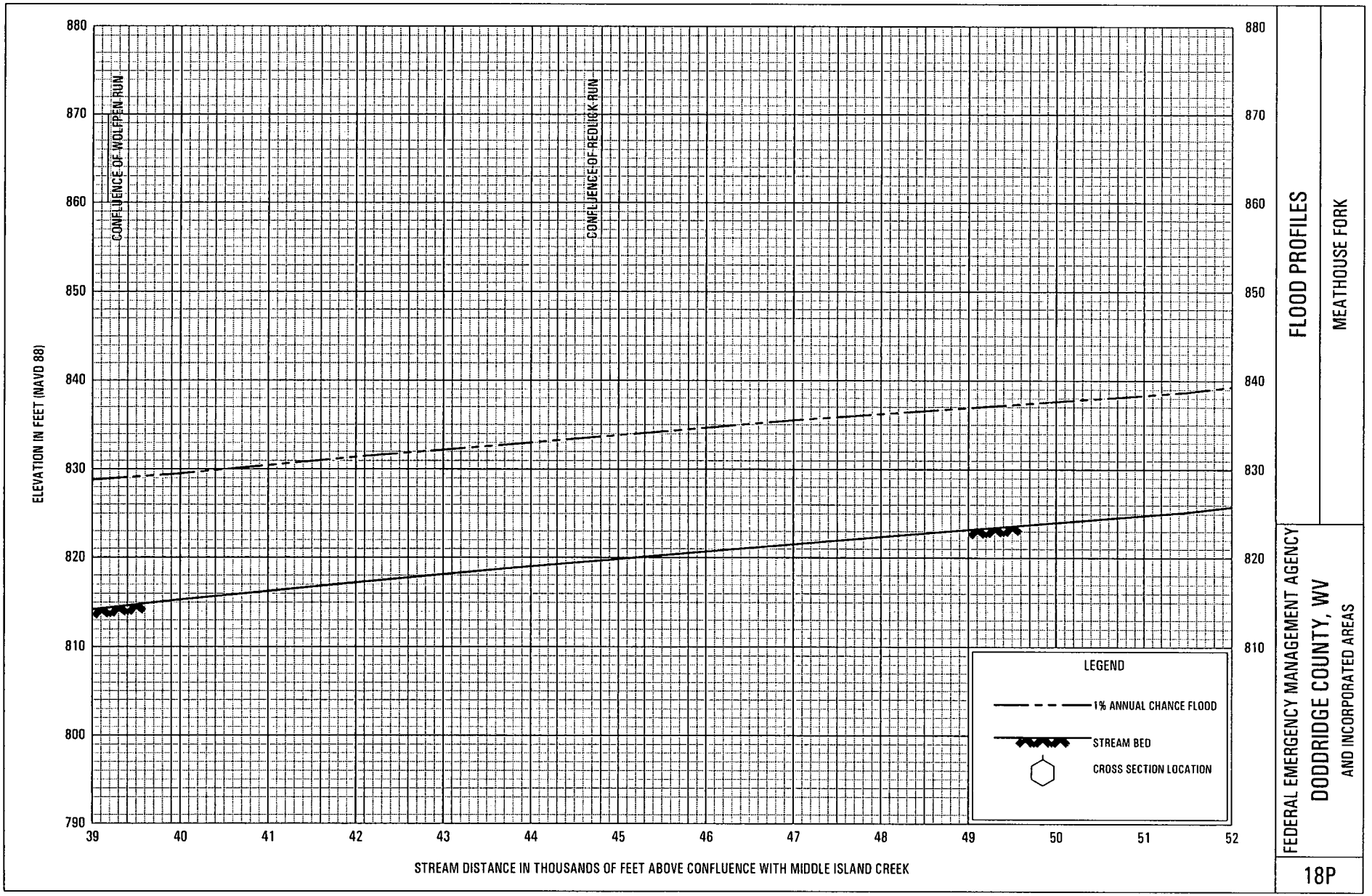
MEATHOUSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

17P



FLOOD PROFILES

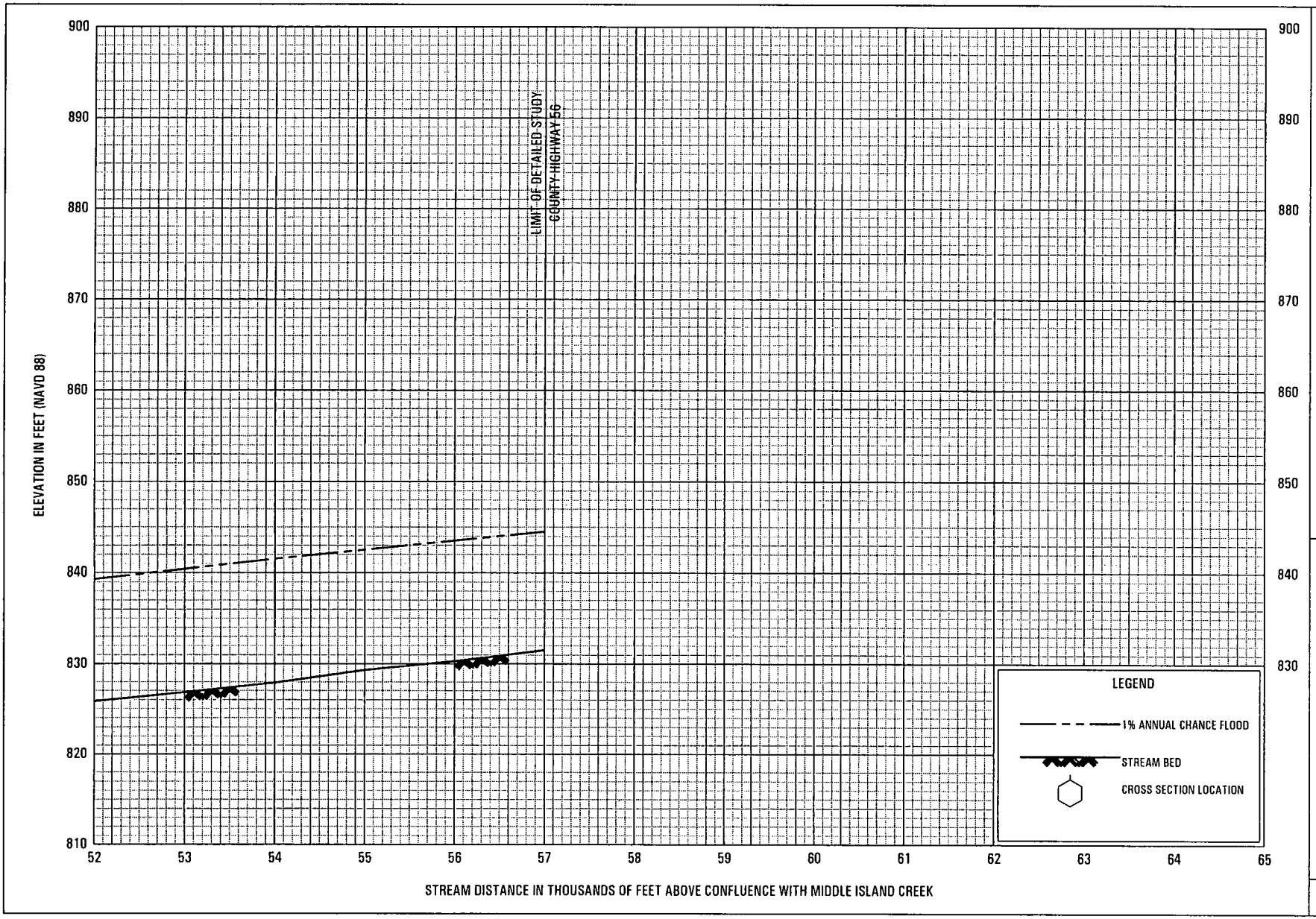
MEATHOUSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

18P



FLOOD PROFILES

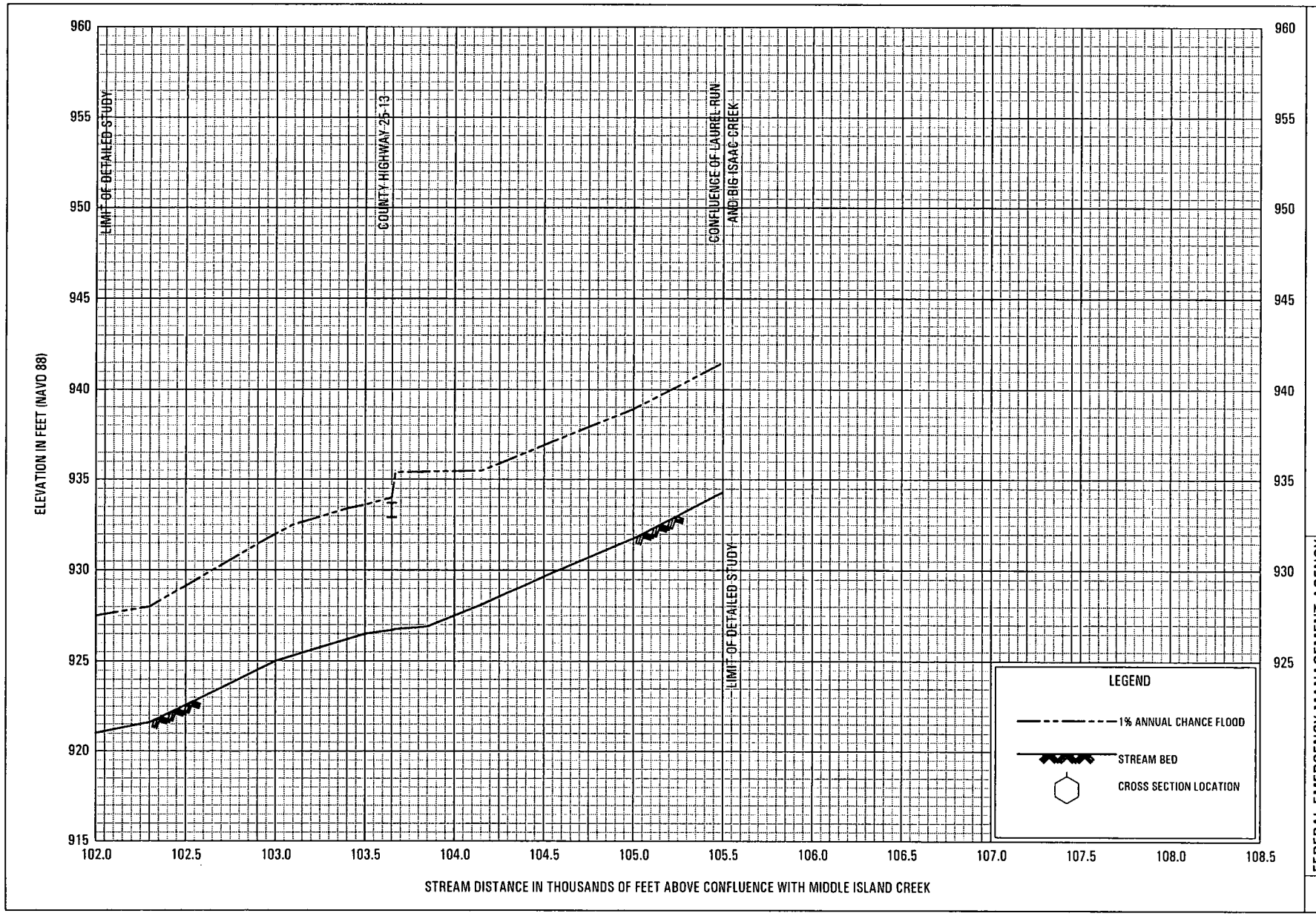
MEATHOUSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

19P



FLOOD PROFILES

MEATHOUSE FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

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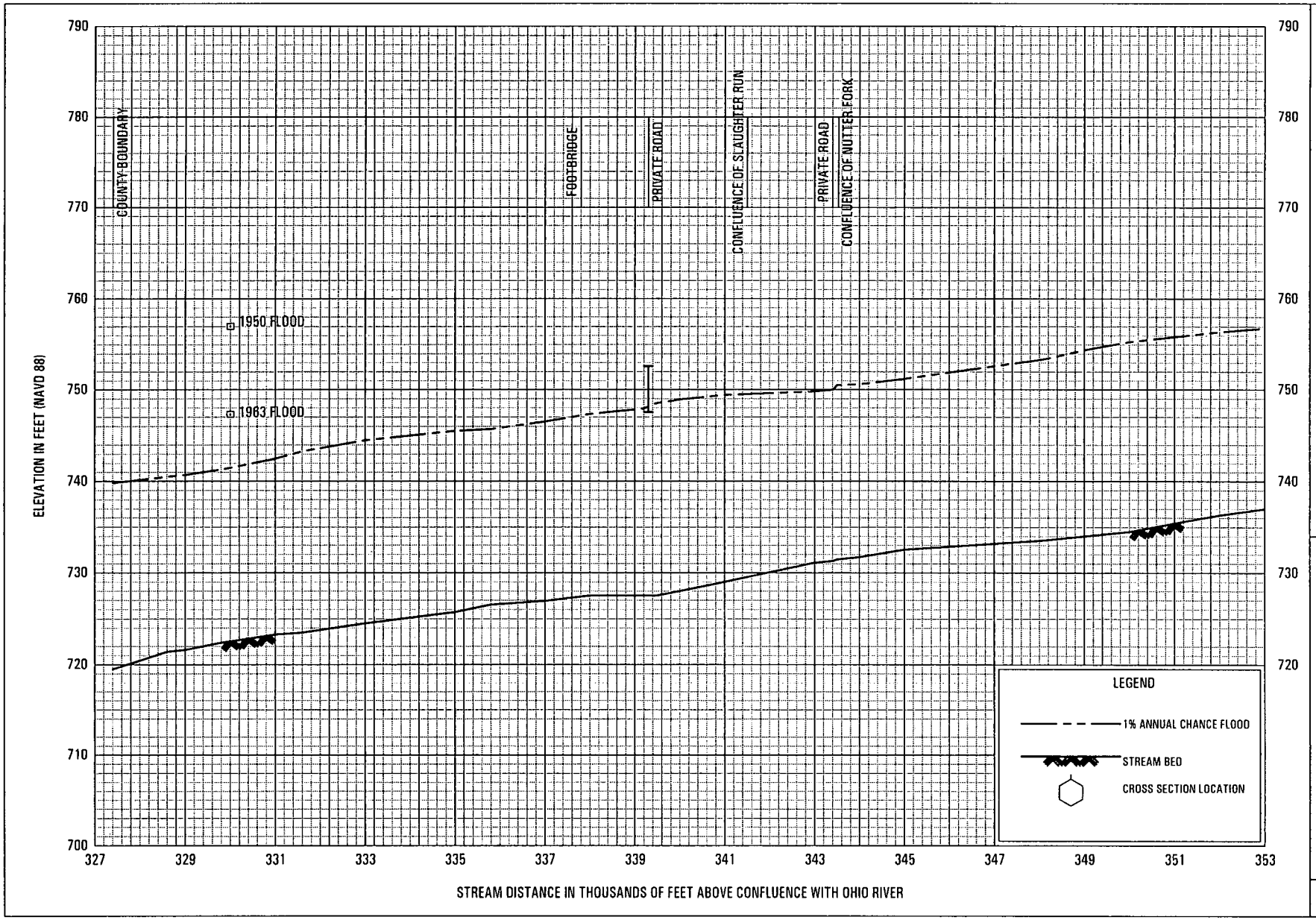


FLOOD PROFILES

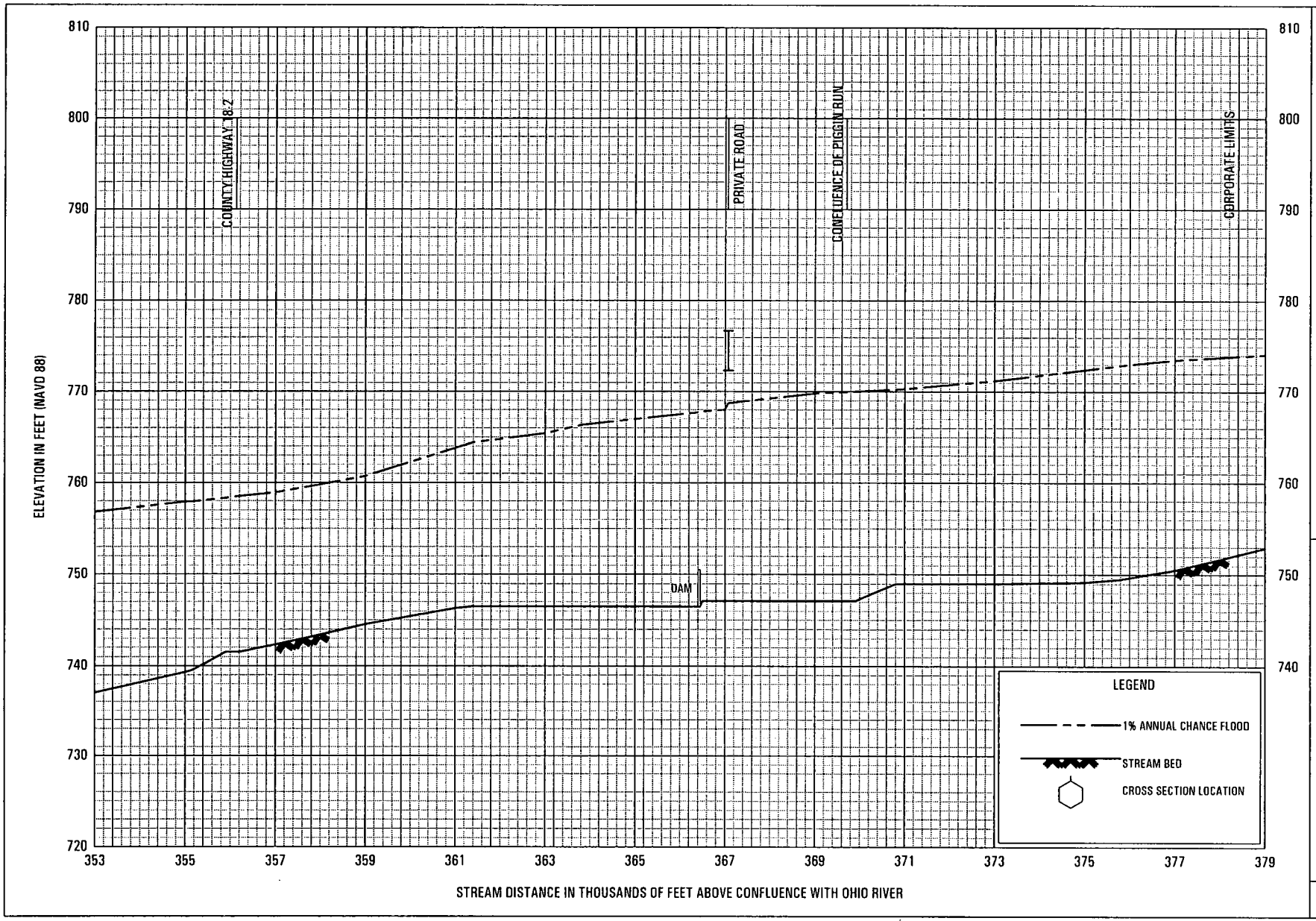
MIDDLE ISLAND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

21P



FLOOD PROFILES

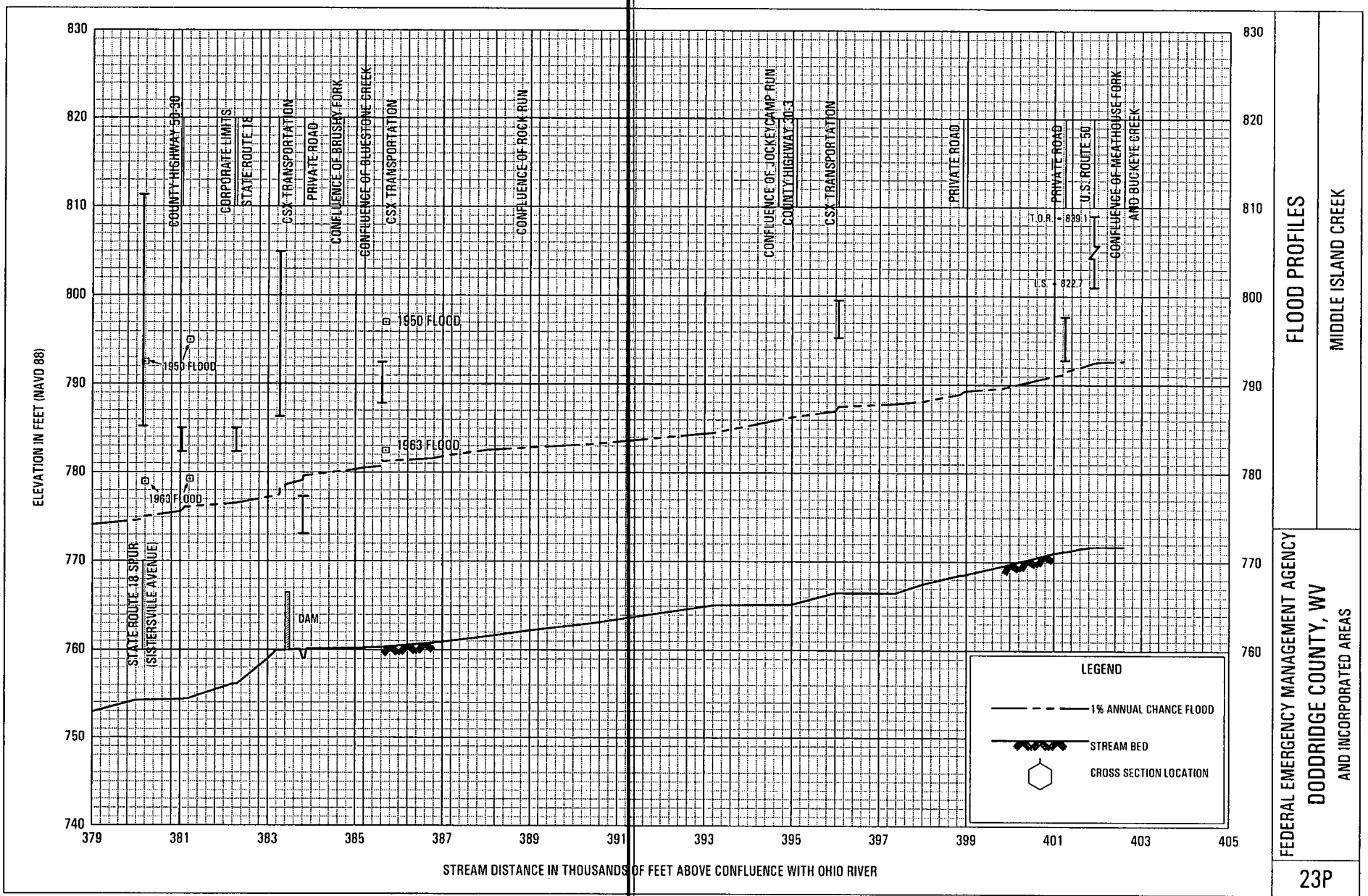
MIDDLE ISLAND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

22P



FLOOD PROFILES

MIDDLE ISLAND CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV

AND INCORPORATED AREAS

23P

NOTES TO USERS

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

FLOODWAY AREAS IN ZONE AE

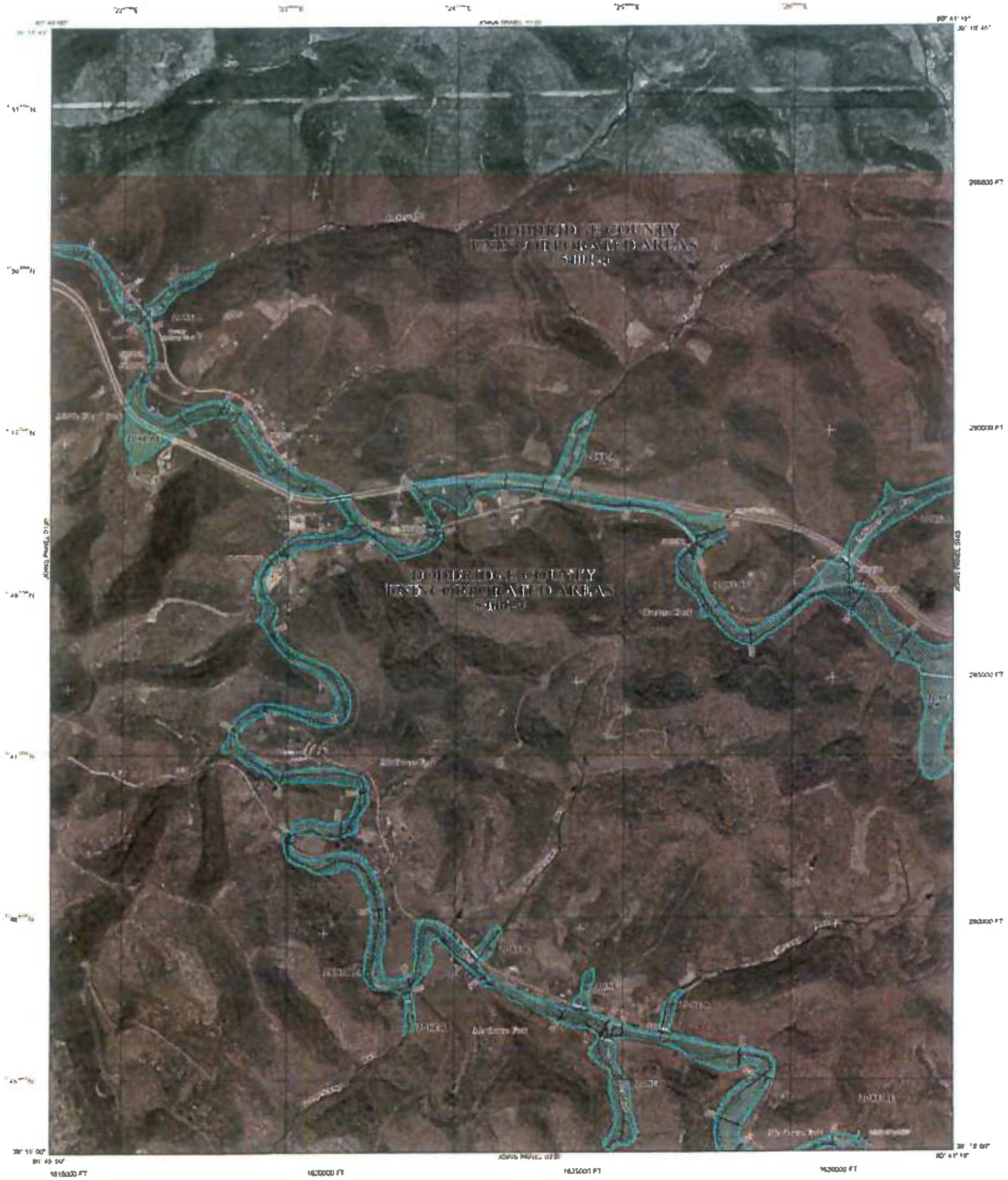
OTHER FLOOD AREAS

OTHER AREAS

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

MAP SCALE 1" = 1000'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0140C

FIRM

FLOOD INSURANCE RATE MAP

DODDRIDGE COUNTY, WEST VIRGINIA AND INCORPORATED AREAS

PANEL 140 OF 325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

MAP NUMBER 54017C0140C

MAP REVISED OCTOBER 4, 2011

Federal Emergency Management Agency

Appendix C

APPENDIX C

HYDRAULIC CALCULATIONS FOR EXISTING AND PROPOSED CONDITIONS

Prepared By: ARC 7/12/13

Checked By: CJR 7/12/2013

Existing

HEC-RAS Plan: Existing Profile: PF 1

River	Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
				(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Meathouse Fork	Meathouse Fork	1500	PF 1	794.59	794.27	0.32	0.06	0.01	136.97	7249.30	2213.73	366.98
Meathouse Fork	Meathouse Fork	1400	PF 1	794.52	794.08	0.44	0.07	0.01	88.35	7182.11	2329.54	373.70
Meathouse Fork	Meathouse Fork	1300	PF 1	794.44	794.02	0.42	0.07	0.00	48.72	7261.03	2290.26	355.02
Meathouse Fork	Meathouse Fork	1200	PF 1	794.37	793.95	0.42	0.07	0.00	111.20	7547.79	1941.02	348.23
Meathouse Fork	Meathouse Fork	1100	PF 1	794.30	793.89	0.42	0.07	0.01	177.03	7015.82	2407.15	307.98
Meathouse Fork	Meathouse Fork	1000	PF 1	794.22	793.70	0.52	0.07	0.04	210.80	7593.81	1795.39	290.93
Meathouse Fork	Meathouse Fork	900	PF 1	794.11	793.73	0.38	0.07	0.00	295.96	7492.66	1811.38	325.26
Meathouse Fork	Meathouse Fork	800	PF 1	794.04	793.61	0.42	0.06	0.02	301.75	6953.45	2344.80	292.63
Meathouse Fork	Meathouse Fork	700	PF 1	793.95	793.59	0.36	0.06	0.02	434.80	7137.33	2027.87	324.12
Meathouse Fork	Meathouse Fork	600	PF 1	793.88	793.57	0.31	0.05	0.00	834.39	7045.48	1720.14	358.43
Meathouse Fork	Meathouse Fork	500	PF 1	793.82	793.53	0.29	0.05	0.00	1083.45	6500.95	2015.60	381.15
Meathouse Fork	Meathouse Fork	400	PF 1	793.77	793.46	0.32	0.06	0.01	1769.35	7174.03	656.62	401.85
Meathouse Fork	Meathouse Fork	300	PF 1	793.71	793.32	0.39	0.06	0.03	3332.08	5809.95	457.97	386.39
Meathouse Fork	Meathouse Fork	200	PF 1	793.62	793.32	0.29	0.09	0.04	2710.42	6254.57	635.01	575.51
Meathouse Fork	Meathouse Fork	100	PF 1	793.48	792.78	0.70	0.13	0.01	4765.46	11210.23	974.31	482.68
Meathouse Fork	Meathouse Fork	0	PF 1	793.34	792.50	0.84			5184.04	11327.47	438.48	388.02
Buckeye Creek	Buckeye Creek	1300	PF 1	794.44	793.97	0.47	0.10	0.02	54.55	6752.38	543.07	172.72
Buckeye Creek	Buckeye Creek	1200	PF 1	794.32	793.60	0.72	0.12	0.01	57.07	7064.47	228.46	153.05
Buckeye Creek	Buckeye Creek	1100	PF 1	794.19	793.49	0.70	0.12	0.01	51.96	7111.58	186.47	151.72
Buckeye Creek	Buckeye Creek	1000	PF 1	794.06	793.40	0.66	0.11	0.01	91.67	6962.48	295.85	192.08
Buckeye Creek	Buckeye Creek	900	PF 1	793.94	793.33	0.62	0.09	0.05	62.68	6918.27	369.05	185.59
Buckeye Creek	Buckeye Creek	800	PF 1	793.80	793.36	0.44	0.08	0.01	790.15	5784.85	775.00	218.23
Buckeye Creek	Buckeye Creek	700	PF 1	793.71	793.20	0.51	0.08	0.02	50.66	6802.94	496.40	162.34
Buckeye Creek	Buckeye Creek	600	PF 1	793.61	793.17	0.45	0.08	0.00	47.76	6060.69	1241.54	171.15
Buckeye Creek	Buckeye Creek	500	PF 1	793.53	793.03	0.50	0.08	0.04	90.38	5732.83	1526.79	145.59
Buckeye Creek	Buckeye Creek	400	PF 1	793.41	793.04	0.37	0.09	0.02	447.34	5172.18	1730.49	194.33
Buckeye Creek	Buckeye Creek	300	PF 1	793.30	792.72	0.58	0.11	0.00	663.11	5837.02	849.87	165.37
Buckeye Creek	Buckeye Creek	200	PF 1	793.19	792.62	0.57	0.12	0.02	949.09	6335.39	65.53	172.48
Buckeye Creek	Buckeye Creek	100	PF 1	793.06	792.30	0.75	0.09	0.12	971.85	6127.12	251.04	218.67
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Existing Conditions

130-359-H&H(existing report).txt

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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PROJECT DATA
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Project File : 130-359-H&H.prj
Run Date and Time: 7/12/2013 1:15:03 PM

Project in English units

Project Description:
Flood Study

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Geometry Title: Existing
Geometry File : p:\2013\130-359\-Calculations\Phase 2\H&H\130-359-H&H.g02

Flow Title : Flow 01
Flow File : p:\2013\130-359\-Calculations\Phase 2\H&H\130-359-H&H.f01

Plan Summary Information:

Number of:	Cross Sections =	30	Multiple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	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: Flow 01
Flow File : p:\2013\130-359\-Calculations\Phase 2\H&H\130-359-H&H.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Buckeye Creek	Buckeye Creek	1300	7350
Buckeye Creek	Buckeye Creek	0	7350
Meathouse Fork	Meathouse Fork	1500	9600
Meathouse Fork	Meathouse Fork	200	9600
Meathouse Fork	Meathouse Fork	100	16950
Meathouse Fork	Meathouse Fork	0	16950

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Buckeye Creek	Buckeye Creek	PF 1		
Known WS = 792.5				
Meathouse Fork	Meathouse Fork	PF 1		
Known WS = 792.5				

GEOMETRY DATA

Geometry Title: Existing
Geometry File : p:\2013\130-359\-Calculations\Phase 2\H&H\130-359-H&H.g02

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 1300

INPUT
Description: Cross Section DD
Station Elevation Data num= 94

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-99.86	824	-99.27	823.56	-97.19	822	-95.12	820.44	-94.55	820
-94.09	819.65	-91.91	818	-89.65	816.29	-89.26	816	-88.62	815.51
-86.64	814	-85.81	813.37	-84.01	812	-82.28	810.67	-81.4	810
-80.83	809.51	-79.01	808	-77.42	806.33	-77.1	806	-75.34	804.16
-75.19	804	-73.68	802.42	-73.28	802	-73.22	801.94	-71.35	800
-71	799.64	-69.4	798	-68.73	797.31	-67.46	796	-66.4	794.94
-65.5	794	-64.04	792.53	-63.52	792	-61.59	790.07	-61.52	790
-61.25	789.73	-59.49	788	-59.14	787.66	-57.44	786	-54.45	784.5
-53.38	784	-46.91	782.38	-45.46	782	-42	781.27	-39.92	780.86
-35.37	780	-14.08	780	-4.69	780	-.01	780	.574	780
3.34	780	25.92	780	26.73	780.83	28.06	782	29.25	783.22
30.14	784	31.11	784.92	32.19	786	42.22	786.91	55.03	788
64.65	789.75	66.07	790	68.53	790.51	75.78	792	81.73	792.37
93.48	793.1	107.72	794	129.57	794.78	136.29	795.01	141.26	795.18
141.73	795.19	150.67	795.49	150.98	795.5	151.32	795.51	156.2	795.65

156.75	795.67	157.4	795.69	165.58	796	174.82	796.47	176.48	796.55
178.75	796.66	197.62	797.61	206.82	798	227.57	798.89	232.15	799.08
236.42	799.26	240.46	799.42	244.33	799.58	248.01	799.73	256.19	800.05
260.02	800.2	262.85	800.31	266.3	800.45	287.07	801.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-99.86	.05	-57.44	.04	32.19	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-57.44	32.19	109.3	100	94.14	.1 .3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 1200

INPUT
Description: Cross Section CC
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-91.14	826	-90.13	825.34	-88.09	824	-86.75	823.12	-85.05	822
-83.3	820.85	-82	820	-79.75	818.53	-78.94	818	-76.08	816.13
-75.88	816	-75.06	815.46	-72.8	814	-72.12	813.56	-69.71	812
-68.52	811.25	-66.59	810	-64.33	808.15	-64.14	808	-63.99	807.85
-62.21	806	-61.91	805.69	-60.27	804	-59.84	803.56	-58.33	802
-57.79	801.45	-56.39	800	-55.76	799.35	-54.45	798	-53.74	797.27
-52.51	796	-51.72	795.2	-50.56	794	-49.71	793.13	-48.62	792
-47.71	791.08	-46.67	790	-45.72	789.03	-44.72	788	-43.73	786.98
-42.78	786	-39.57	784.7	-37.88	784	-32.49	782.1	-32.22	782
-31.93	781.9	-26.56	780	-25.28	779.95	-2.09	779.95	0	779.96
21.4	779.95	21.95	780	24.66	781.47	25.79	782	26.67	782.42
29.71	784	33.01	784.57	40.89	786	45.21	787.33	47.33	788
50.02	788.75	54.91	790	58.82	790.87	63.57	792	98.62	793.43
112.59	794	153.45	795.65	162.02	796	189.97	797.72	192.93	797.9
194.65	798	202.82	798.16	221.63	798.59	289.09	801.15		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-91.14	.05	-42.78	.04	40.89	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.78	40.89	100.9	100	93.5	.1 .3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 1100

INPUT
Description: Cross Section BB
Cross Section BB
Station Elevation Data num= 143

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-92.44	824	-90.21	822.69	-89.03	822	-85.76	820.08	-85.63	820
-85.25	819.78	-82.25	818	-81.1	817.31	-78.9	816	-76.42	814.51
-75.56	814	-73.44	812.72	-72.24	812	-71.73	811.66	-69.25	810
-68.1	808.76	-67.4	808	-66.86	807.4	-65.57	806	-64.4	804.71
-63.75	804	-61.96	802.02	-61.94	802	-61.88	801.93	-60.14	800
-59.54	799.32	-58.35	798	-57.21	796.71	-56.57	796	-54.96	794.18
-54.79	794	-54.12	793.24	-53.02	792	-52.8	791.75	-51.26	790

-50.7	789.37	-49.49	788	-48.41	786.97	-47.45	786	-42.45	784.44
-41.02	784	-38.6	783.25	-34.54	782	-27.99	780.01	-27.97	780
-26.01	779.91	-24.53	779.84	-23.05	779.78	-21.72	779.71	-20.54	779.64
-19.41	779.57	-18.29	779.52	-17.02	779.47	-15.82	779.43	0	779.43
1.12	779.43	18.25	779.45	18.89	779.5	19.68	779.56	20.37	779.63
20.94	779.69	21.3	779.76	21.54	779.83	21.77	779.91	21.79	780
21.86	780.05	24.88	782	26.15	782.8	28.06	784	29.57	784.35
32.69	785.073	36.69	786	38.54	786.73	41.66	788	45.39	789.27
47.46	790	50.14	790.69	50.89	790.79	54.59	791.27	60.33	792
83.12	792.86	85.65	792.98	88.04	793.08	91.52	793.24	93.45	793.33
98.26	793.53	99.48	793.59	110.3	794	124.18	794.53	124.64	794.55
125.11	794.57	135.94	794.89	136.44	794.92	137.07	794.96	139.06	795.03
156.71	796	158.87	796.1	161.39	796.2	162.26	796.24	162.92	796.26
173.17	796.7	174.71	796.76	183.39	797.1	183.73	797.11	187.47	797.22
189.06	797.27	191.6	797.34	193.05	797.38	195.36	797.44	196.01	797.46
196.34	797.47	196.47	797.48	196.52	797.5	196.64	797.52	196.92	797.53
197.46	797.55	200.43	797.6	201.44	797.63	202.25	797.65	202.86	797.68
203.35	797.71	203.76	797.74	204.63	797.81	205.24	797.86	206.09	797.91
207.28	797.97	207.37	797.97	208.01	798	215.46	798.22	220.55	798.37
224.9	798.52	230.84	798.7	250.12	799.32	270.53	800	286.52	801.08
287.73	801.16	289.16	801.23	290.5	801.29	293.9	801.42	294.32	801.46
295.06	801.51	295.36	801.53	302.44	802				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-92.44	.05	-47.45	.04	36.69	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-47.45	36.69	100.5	100	99.8	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 1000

INPUT
Description: Cross Section AA
Station Elevation Data num= 173

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-95.12	824	-94.32	823.56	-91.55	822	-90.67	821.52	-87.9	820
-85.89	818.9	-84.22	818	-83.4	817.55	-80.54	816	-78.4	814.84
-76.86	814	-73.83	812.35	-73.19	812	-72.6	811.62	-70.44	810.21
-70.11	810	-70.06	809.95	-68.35	808	-67.51	807.07	-66.57	806
-64.82	804.06	-64.77	804	-64.67	803.9	-62.91	802	-61.35	800.35
-61.02	800	-60.62	799.58	-59.06	798	-57.85	796.79	-57.06	796
-55.8	794.75	-55.04	794	-54.72	793.7	-52.99	792	-51.97	791.01
-50.93	790	-49.24	788.29	-48.95	788	-48.28	787.68	-44.83	786
-42.17	784.99	-39.6	784	-36.12	782.66	-34.38	782	-31.8	781.03
-29.27	780	-28.53	779.97	-25.56	779.83	-22.98	779.73	-20.29	779.63
-17.89	779.54	-15.81	779.44	-14.86	779.4	-13.99	779.35	-13.19	779.31
-12.46	779.27	-11.22	779.21	-10.28	779.17	-9.34	779.13	-8.5	779.09
-7.75	779.04	-7.03	779	-6.32	778.97	-5.51	778.94	-4.75	778.91
0	778.91	6.01	778.91	16.98	778.93	17.39	778.96	17.9	779
18.34	779.04	18.71	779.08	18.94	779.13	19.09	779.17	19.24	779.22
19.25	779.28	19.37	779.34	19.6	779.41	19.78	779.47	20.1	779.56
20.62	779.66	21.5	779.78	22.91	779.91	24.71	780	27.23	781.54
27.96	782	31.1	783.92	31.23	784	31.48	784.15	31.5	784.17
32.2	784.55	32.55	784.72	32.92	784.89	33.66	785.27	34.01	785.42
34.27	785.52	34.5	785.6	34.79	785.69	36.41	786	36.6	786.03
36.61	786.03	38.16	786.29	38.19	786.3	38.37	786.34	38.42	786.35
38.47	786.36	41.48	787.02	42.07	787.06	43.37	787.26	50.98	787.92
51.1	787.93	51.42	787.97	51.62	788	51.74	788.04	51.77	788.05

52.18	788.23	52.54	788.41	55.17	790	68.75	791.84	69.93	792
70.53	792.01	77.99	792.17	125.99	793.16	166.35	794	219.82	795.98
220.23	796	220.37	796.02	221.98	796.24	223.04	796.36	226.11	796.66
226.99	796.76	227.54	796.86	228.25	796.99	228.96	797.09	229.51	797.18
230.19	797.29	230.37	797.31	230.5	797.33	230.81	797.36	231.32	797.4
232.15	797.49	232.39	797.53	232.61	797.56	234.28	798	243.9	798.85
245.85	799	247.34	799.12	248.63	799.23	250.7	799.37	256.71	799.83
257.86	799.89	260.67	800	268.56	800.38	268.72	800.39	269.57	800.43
270.49	800.46	271.55	800.48	271.73	800.49	277.76	800.59	277.96	800.6
278.17	800.6	279.32	800.62	282.45	800.7	284.4	800.74	287.05	800.79
287.68	800.81	288.92	800.86	289.34	800.87	289.47	800.87	290.7	800.91
291.43	800.94	292.11	800.98	299.82	802				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-95.12	.05	-44.83	.04	36.41	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.83	36.41	93.5	100	108.8	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 900

INPUT
Description: Cross Section Z
Station Elevation Data num= 211

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-108.67	824	-102.86	822.95	-100.02	822.4	-98.22	822	-91.24	820.53
-90.17	820.29	-89.2	820	-86.7	818.87	-85.32	818.22	-84.88	818
-84.78	817.95	-80.92	816	-80.82	815.95	-80.44	815.76	-77.76	814.4
-76.96	814	-75.13	813.05	-73.08	812	-72.61	811.58	-71.09	810
-70.67	809.6	-69	808	-68.55	807.56	-66.96	806	-65.76	804.85
-64.87	804	-63.24	802.47	-62.75	802	-62.09	801.37	-60.7	800
-59.08	798.45	-58.59	798	-58.05	797.48	-56.53	796	-55.22	794.75
-54.44	794	-52.34	792.02	-52.33	792	-52.29	791.96	-50.24	790
-49.39	789.28	-47.77	788	-45.72	786.36	-45.24	786	-42.7	784.03
-42.66	784	-40.23	782.15	-40.04	782	-39.78	781.8	-37.4	780
-33.92	779.84	-27.89	779.58	-24.05	779.41	-19.65	779.24	-16.17	779.13
-12.08	779.02	-9.4	778.93	-7.48	778.86	-6.14	778.79	-4.97	778.75
-3.76	778.71	-2.68	778.66	-1.75	778.62	-1.33	778.6	-.94	778.58
-.59	778.56	-.26	778.55	0	778.53	.27	778.52	.68	778.5
1.07	778.49	1.44	778.47	1.76	778.45	2.07	778.43	2.37	778.42
2.72	778.41	3.05	778.39	7.77	778.4	12.67	778.41	12.86	778.42
13.09	778.44	13.29	778.46	13.45	778.48	13.56	778.5	13.63	778.52
13.69	778.54	13.7	778.57	13.75	778.59	13.86	778.62	13.94	778.65
14.09	778.69	14.32	778.74	14.72	778.79	15.36	778.85	16.88	778.92
19.04	779.01	21.37	779.12	22.86	779.26	23.74	779.43	24.14	779.62
24.96	779.89	25.37	780	27.22	781.23	28.35	782	31.26	783.99
31.27	784	31.28	784.01	33.98	786	36.13	787.47	36.91	787.76
37.66	788	40.77	788.29	44.35	788.62	46.6	788.82	48.1	788.96
50.28	789.14	50.63	789.17	54.26	789.43	59.67	790	67.91	790.65
68.13	790.66	70.4	790.83	72.3	790.96	72.64	790.98	77.11	791.27
78.1	791.31	82.02	791.48	82.52	791.51	82.98	791.54	83.75	791.56
84.21	791.6	85.01	791.62	85.91	791.63	87.46	791.75	88.5	791.82
88.88	791.83	89.24	791.83	89.27	791.83	89.31	791.83	89.37	791.83
93.8	791.85	97.8	791.88	98.18	791.89	98.84	791.89	99.03	791.89
99.28	791.89	99.63	791.9	100.13	791.91	103.05	792	114.7	792.56
115.94	792.63	116.61	792.66	116.89	792.68	116.92	792.68	130.36	793.26
135.62	793.49	137.89	793.54	138.15	793.54	138.34	793.55	138.5	793.55
139.66	793.59	139.76	793.59	139.87	793.6	140.73	793.63	140.84	793.64

152.61	794	173.44	794.56	174.14	794.58	174.76	794.6	177.91	794.7
178.92	794.74	179.79	794.76	180.36	794.79	180.74	794.8	181.16	794.82
181.87	794.84	183.13	794.88	201.16	795.43	204.51	795.54	206.79	795.62
216.94	796	218.43	796.12	220.26	796.25	221.74	796.35	223.02	796.43
225.28	796.56	227.11	796.66	227.76	796.69	228.22	796.71	228.53	796.72
228.74	796.71	228.89	796.68	229.58	796.37	229.89	796.3	230.27	796.26
230.68	796.25	231.1	796.26	231.5	796.29	234.02	796.53	234.7	796.59
235.78	796.7	237.08	796.83	238.9	797.02	239.82	797.11	241.37	797.26
243.64	797.46	248.51	798	254.21	799.98	254.25	800	263.1	800.87
283.8	802								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-108.67	.05	-45.24	.04	33.98	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45.24	33.98	144.5	100	92.5	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 800

INPUT
Description: Cross Section Y
Station Elevation Data num= 172

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-153.71	823.13	-148.3	822	-145.45	821.35	-139.57	820	-136.49	819.29
-131.1	818	-129.19	817.55	-122.72	816	-119.21	815.07	-115.04	814
-109.22	812.31	-108.14	812	-106.84	811.6	-101.5	810	-97.65	808.76
-95.31	808	-91.7	806.88	-89.16	806	-86.33	804.85	-84.23	804
-79.96	802.02	-79.91	802	-79.69	801.89	-75.86	800	-73.79	798.55
-72.95	798	-71.58	796.73	-70.83	796	-70.78	795.94	-68.51	794
-68.12	793.67	-65.79	792	-63.8	790.74	-62.9	790	-60.42	788.16
-60.17	788	-59.99	787.87	-57.39	786	-57	785.66	-54.72	784
-51.84	782.02	-51.82	782	-50.24	780.92	-48.8	780	-48.71	780
-48.04	780	-47.72	780	-46.7	780	-46.01	780.47	-43.68	782
-43.17	782.41	-43.11	782.46	-40.4	784	-37.05	784.43	-36.96	784.43
-36.89	784.44	-36.81	784.44	-36.29	784.44	-36.22	784.44	-36.13	784.43
-36	784.43	-35.09	784.38	-35.02	784.37	-34.99	784.37	-34.31	784
-32.57	782.35	-32.14	782	-31.69	781.63	-29.81	780	-28.2	778.57
-27.52	778	-26.65	778	-11.97	778	0	778	22.03	778
22.75	778	23.96	778	24.41	778.42	26.17	780	27.54	781.4
28.14	782	30.31	783.22	31.61	784	36.05	785.62	36.91	786
46.44	786.98	47	787.03	47.58	787.08	48.95	787.2	50.29	787.31
50.8	787.34	51.17	787.37	51.45	787.38	51.65	787.39	51.91	787.39
52.98	787.42	53.15	787.43	53.32	787.44	57.95	788	76.52	789.35
84.26	790	86.27	790.01	86.71	790.01	87.12	790.01	87.43	790.01
87.76	790.01	88.04	790	101.44	790.63	101.52	790.62	102.01	790.65
109.41	791.08	112.73	791.28	121.08	791.79	124.64	792	126.91	792.12
133.63	792.45	136.74	792.62	144.89	793.05	149.88	793.33	150.41	793.35
150.65	793.37	152.71	793.48	158.89	793.8	159.28	793.82	159.88	793.85
164.85	794	167.04	794.05	173.27	794.15	174.04	794.17	174.07	794.17
174.64	794.19	179.45	794.38	181.28	794.46	183.47	794.54	185.59	794.63
215.75	795.87	218.97	796	221.18	796.23	223.03	796.37	224.49	796.42
225.76	796.42	228.67	796.29	229.24	796.28	229.68	796.28	230.09	796.3
232.43	796.67	233.49	796.76	234.69	796.88	235.22	796.97	236.67	797.15
236.95	797.19	237.13	797.22	240.95	798	250.52	798.9	251.11	798.96
252.6	799.12	252.8	799.14	260.79	800	292.5	801.14	301.59	801.48
302.26	801.5	302.42	801.51	304.72	801.58	305.32	801.6	307.74	801.69
308.16	801.7	308.55	801.71	308.92	801.72	309.26	801.73	310.39	801.76
314.31	802	314.54	802						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-153.71	.05	-36.81	.04	31.61	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-36.81	31.61	78.3	100	100.6	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 700

INPUT
Description: Cross Section X
Station Elevation Data num= 106

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-115.64	824	-113.75	824	-113.15	824	-111.77	823.53	-107.6	822
-100.75	820.36	-100.43	820.28	-99.61	820	-97.99	819.46	-93.64	818
-91.62	817.29	-88.56	816	-87.1	815.28	-84.77	814	-83.36	813.06
-81.78	812	-79.51	810.53	-78.6	810	-75.24	808.24	-74.8	808
-71.96	806.71	-70.41	806	-70.04	805.64	-68.21	804	-67.21	802.51
-66.85	802	-66.51	801.49	-65.57	800	-64.93	799.02	-64.35	798
-63.75	796.92	-63.17	796	-62.45	794.83	-61.89	794	-60.87	792.74
-60.24	792	-59.21	790.7	-58.69	790	-56.55	788.17	-56.33	788
-56.09	787.82	-53.82	786	-51.9	784.34	-51.56	784	-51.17	783.66
-49.11	782	-46.31	781.33	-41.36	780	-30.74	778.58	-30.54	778.55
-29.78	778.47	-25.57	778	-7.81	778	-3.23	778	.01	778
13.33	778	16.07	778	17.93	778	18.19	778.21	20.74	780
21.83	780.98	23.08	782	24.24	783.23	24.83	784	26.44	785.16
28.8	786	36.17	786.7	47.41	788	64.03	789.42	66.68	789.64
70.82	790	81.94	791.81	83.06	792	105.49	793.49	113.88	794
132.77	795.39	140.62	796	145.21	796.33	145.71	796.36	159.74	797.34
160.54	797.39	170.9	798	176.92	798.2	181.9	798.37	185.33	798.48
194.36	798.76	195.78	798.81	199.71	798.97	201.4	799.04	206.14	799.25
207.99	799.33	209.21	799.38	211.28	799.47	213.76	799.57	216.77	799.7
221.62	799.89	224.18	800	226.38	800.06	227.53	800.09	228.64	800.11
229.74	800.14	230.84	800.16	234.5	800.24	235.95	800.27	239.68	800.36
242.76	800.43								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-115.64	.05	-53.82	.04	28.8	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-53.82	28.8	88.9	100	96.1	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 600

INPUT
Description: Cross Section W
Station Elevation Data num= 131

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-142.4	824	-136.93	822	-136.92	822	-136.04	821.93	-135.12	821.87
-134.21	821.83	-133.38	821.8	-131.91	821.76	-127.65	821.39	-120.8	820.99
-119.76	820.91	-118.91	820.85	-118.24	820.79	-112.18	820	-104.88	818.74
-100.95	818	-91.13	816.35	-89.11	816	-86.3	815.46	-77.72	814
-72.99	812.83	-69.6	812	-68.08	811.58	-62.95	810	-60.65	808.74

-59.2	808	-58.59	807.67	-56.21	806	-52.78	804.1	-52.6	804
-52.53	803.92	-51.52	802	-51.43	801.81	-50.72	800	-50.29	798.69
-50.02	798	-49.8	797.23	-49.29	796	-48.97	795.15	-48.59	794
-47.68	792.32	-47.5	792	-47.3	791.74	-45.56	790	-43.56	788.09
-43.47	788	-43.37	787.93	-40.96	786	-39.3	784.6	-38.5	784
-36.8	782.8	-35.67	782	-34.95	781.55	-32.61	780	-25.79	778.33
-24.7	778	-24.62	778	-24.46	778	-24.45	778	-24.43	778
-24.18	778	-23.5	778	-23.12	778	-6.01	778	-.7	778
0	778	9.81	778	23.27	778	26.27	779.6	26.89	780
27.2	780.24	29.72	782	30.18	782.41	31.56	784	32.66	785.05
33.59	786	56.96	786.75	71.47	787.23	71.74	787.24	71.94	787.24
72.14	787.25	72.37	787.25	72.67	787.26	73.07	787.27	74.55	787.33
79.1	787.37	83.11	787.41	83.28	787.4	83.72	787.4	84.34	787.41
90.79	787.6	93.61	787.69	97.08	787.82	101.66	788	109.01	789.16
114.02	790	116.61	790.64	117.65	790.93	120.44	792	122.82	793.09
125.08	794	138.29	795.82	139.82	796	141.66	796.08	141.76	796.08
141.85	796.09	157.57	796.79	158.54	796.83	160.64	796.89	163.3	796.99
164	797.01	164.94	797.05	165.75	797.08	175.44	797.48	176.92	797.53
176.95	797.54	176.97	797.54	177.04	797.54	177.07	797.54	179.31	797.62
179.79	797.64	185.2	798	198.65	798.6	199.96	798.67	217.17	799.6
217.5	799.62	217.8	799.63	218.28	799.66	218.49	799.67	218.91	799.69
224.21	800								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-142.4	.05	-40.96	.04	33.59	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.96	33.59	103.2	100	97.3	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 500

INPUT
Description: Cross Section V
Station Elevation Data num= 104

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-188.22	824	-179.43	822.72	-175.27	822	-172.1	821.38	-166.95	820
-162.49	818.24	-162.19	818.14	-161.92	818.08	-161.72	818.09	-161.62	818.16
-159.03	818.28	-156.6	818.28	-154.4	818	-151.03	817.55	-138.26	816
-135.85	815.59	-125.16	814	-120.97	813.48	-108.83	812	-104.23	811.28
-96.26	810	-86.28	808.41	-83.78	808	-81.28	807.54	-73.03	806
-64	804.28	-62.39	804	-61.08	803.68	-59.03	803.34	-58.34	803.21
-57.08	802.99	-56.23	802.83	-55.67	802.74	-54.06	802.49	-52.11	802.17
-51.06	802	-50.83	801.9	-46.38	800	-43.47	798.1	-43.36	798
-43.28	797.93	-41.01	796	-40.48	795.16	-39.3	794	-38.71	792.5
-38.4	792	-38.13	791.59	-37.28	790	-36.79	789.22	-36.05	788
-33.95	786.31	-33.59	786	-32.68	785.31	-30.88	784	-30.31	783.48
-28.66	782	-27.66	781.1	-26.55	780	-24.16	778.23	-23.83	778
-13.52	778	-.34	778	0	778	.309	778	2.06	778
10.73	778	24.04	778	26	779.57	26.65	780	27.42	780.45
29.95	782	32.86	783.3	34.5	784	39.51	784.5	39.74	784.52
39.95	784.54	40.76	784.58	41.08	784.6	41.7	784.63	42.04	784.65
42.42	784.68	42.88	784.72	43.39	784.72	46.79	785.01	47.15	785
53.18	784.97	59.1	784.98	81.82	785.97	82.48	786	82.98	786.08
97.23	788	99.92	789.56	100.7	790	103.77	791.72	104.32	792
108.84	793.98	108.88	794	111.65	794.47	118.79	795.67	120.77	796
121.04	796.02	151.8	798	170.26	799.02	190.35	800		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-188.22	.05	-30.88	.04	34.5	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-30.88	34.5	91.1	100	88.3	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 400

INPUT
Description: Cross Section U
Station Elevation Data num= 135

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-253.59	824	-242.77	822	-241.27	821.81	-226.57	820	-226.47	819.99
-225.7	819.87	-214.58	818.21	-213.23	818	-211.78	817.68	-202.59	816
-199.49	814.79	-197.41	814	-197.13	813.99	-196.78	813.99	-196.31	814
-196.22	814	-195.53	814	-195.52	814	-195.37	814	-195.15	814
-194.55	814.01	-193.42	814.02	-192.64	814.01	-192.03	814.01	-191.25	814.01
-190.33	814	-182.79	813.42	-181.65	813.31	-172.32	812	-162.28	810.03
-162.14	810	-161.99	809.97	-161.08	809.83	-150.16	808.14	-149.2	808
-141.05	806.9	-134.38	806	-131.49	805.52	-122.53	804	-113.7	802.18
-112.88	802	-104.6	800.24	-103.46	800	-102.77	799.86	-94.1	798
-91.88	797.52	-84.08	796	-76.18	794.07	-75.93	794	-75.83	793.97
-69.14	792	-62.98	790	-57.59	788	-43.86	786.64	-36.59	786
-35.75	785.6	-31.94	784	-30.42	782.04	-30.38	782	-30.11	781.64
-29.2	780.43	-28.99	780	-28.86	779.86	-26.99	778	-6.65	778
0	778	.44	778	19.54	778	23.69	778	26.05	778
26.2	778.19	27.63	780	28.9	781.11	29.97	782	32.68	783.96
32.73	784	33.09	784.01	46.54	784.54	64.87	784.98	74.78	785.21
74.98	785.13	75.08	785.11	75.2	785.11	76.05	785.08	82.06	786
83.27	786.13	83.29	786.13	83.3	786.14	83.33	786.14	85.06	786.26
85.63	786.29	86.11	786.32	86.44	786.33	86.65	786.34	86.77	786.33
86.92	786.32	92.09	786.2	96.08	786.03	96.23	786.02	96.4	786
97.79	785.51	98.15	785.45	98.54	785.42	99.01	785.44	99.55	785.49
99.78	785.53	101.26	785.81	101.35	785.84	101.9	785.99	101.92	786
102.19	786.11	106.79	788	110.1	788.95	113.57	790	113.85	790.11
114.28	790.29	118.94	792	120.51	792.63	124.24	794	126.76	794.95
128.96	795.66	129.39	795.81	130.13	796	134.62	797.6	135.87	798
142.69	798.56	143.12	798.6	143.44	798.62	146.82	798.84	158.39	799.67
158.54	799.68	159.21	799.74	159.32	799.75	159.4	799.75	163.23	800

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-253.59	.05	-31.94	.04	32.73	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-31.94	32.73	108.1	100	112.1	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 300

INPUT
Description: Cross Section T
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-322.32	824	-319.4	823.36	-313.1	822	-305.29	820.76	-300.77	820
-298.1	819.59	-286.95	818	-276.74	816.51	-273.35	816	-271.6	815.75

-259.36	814	-254.83	813	-248.95	812	-246.24	811.1	-246.05	811.09
-245.79	811.11	-245.67	811.11	-245.48	811.1	-245.15	811.09	-241.46	810.93
-240.46	810.87	-239.21	810.78	-237.37	810.64	-234.27	810.36	-230.36	810
-228.01	809.68	-223.11	809	-220.93	808.69	-216.39	808	-212.82	807.39
-205.62	806.2	-204.45	806	-203.71	805.87	-192.2	804	-189.64	803.78
-173.07	802	-155.49	800.06	-155.07	800.03	-154.74	800.01	-154.65	800
-145.04	798.4	-141.14	798	-136.67	797.41	-126.74	796.22	-125.79	796.09
-125.57	796.07	-124.79	796	-114.88	795.03	-104.99	794	-94.07	792.37
-91.46	792	-80.59	790.77	-75.43	790	-69.51	788.61	-66.82	788
-56.43	787.37	-33.12	786	-32.58	785.25	-31.1	784	-30.61	782.89
-30.26	782	-29.9	781.08	-29.4	780	-27.58	778.17	-27.42	778
-23.61	778	-1.42	778	-.01	778	6.65	778	14.36	778
25.23	778	26.01	779.13	26.7	780	27.73	781.44	28.2	782
29.39	783.67	29.67	784	53.86	785.72	57.17	786	60.36	787.25
62.3	788	62.67	788.22	65.12	790	67.18	791.43	67.89	792
68.27	792.27	70.79	794	71.36	794.32	73.89	796	74.83	796.62
76.79	798								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-322.32	.05	-31.1	.04	29.67	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-31.1	29.67	95.9	100	100.2	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 200

INPUT
Description: Cross Section S
Station Elevation Data num= 104

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-380.64	824	-377.69	823.27	-372.88	822	-363.95	820.06	-363.71	820
-363.22	819.92	-352.83	818	-343.07	816.33	-341.24	816	-329.85	814.08
-329.41	814	-328.92	813.92	-315.12	812	-311.05	811.09	-306.85	810
-300.62	809.04	-291.42	808	-287.79	806.68	-287.6	806.69	-287.32	806.78
-287.11	806.82	-286.76	806.86	-286.17	806.86	-285.26	806.84	-284.08	806.79
-280.22	806.6	-279.18	806.53	-278.02	806.44	-276.36	806.29	-273.56	806.02
-273.32	806	-272.83	805.9	-269.28	805.15	-268.15	804.9	-263.33	804
-260.94	803.76	-237.6	802	-235.91	801.89	-234.57	801.82	-230.88	801.58
-229.27	801.5	-228.29	801.44	-227.05	801.36	-225.31	801.25	-222.53	801.08
-206.05	800	-205.55	799.96	-204.56	799.9	-204.19	799.88	-203.37	799.82
-198.55	799.49	-176.49	798	-174.99	797.85	-158.12	796	-149.39	795.1
-138.74	794	-131.26	793	-128.56	792.65	-126.54	792.4	-122.73	792
-112.48	790.76	-111.57	790.66	-109.47	790.45	-103.48	790	-94.1	788.46
-92.77	788.23	-91.34	788	-67.56	787.1	-54.52	786.63	-37.91	786
-37.43	785.38	-36.6	784	-35.33	782.25	-35.2	782	-35.11	781.84
-34.19	780	-33.11	779.17	-31.84	778	-6.67	778	-4.33	778
0	778	13.17	778	22.2	778	22.84	778.56	24.64	780
26.17	781.19	27.06	782	28.83	783.25	29.66	784	31.3	784.72
34.67	786	37.9	787.83	38.21	788	38.31	788.08	40.81	790
41.35	790.48	43.24	792	44.38	792.8	46.09	794	48.41	795.67
48.93	796	49.11	796.13	51.95	798	59.17	798.21		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-380.64	.05	-37.91	.04	34.67	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-37.91	34.67	97.7	100	101.8	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 100

INPUT
Description: Cross Section R
Station Elevation Data num= 120

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-435.31	824	-429	822.44	-427.16	822	-425.52	821.63	-418.46	820
-411.42	818.48	-409.26	818	-405.67	817.27	-399.22	816	-391.51	814.6
-388.27	814	-378.47	812.22	-377.27	812	-374.95	811.63	-365.08	810
-357.94	808.29	-357.28	808.15	-356.48	808	-356.44	807.99	-352.82	807.44
-345.81	806.17	-345.08	806.05	-344.84	806	-342.36	805.71	-341.88	805.66
-341.49	805.62	-341.13	805.58	-339.81	805.46	-325.1	804	-323.14	803.99
-323.09	803.99	-317.19	803.32	-302.24	802	-297.51	801.65	-279.74	800
-266.19	798.67	-259.3	798	-257.01	797.67	-255.21	797.45	-254.48	797.36
-254.31	797.34	-254.03	797.3	-245.51	796.34	-243.46	796.1	-243.27	796.08
-242.37	796	-239.92	795.87	-239.6	795.85	-229.32	795.35	-218.55	794.49
-212.6	794	-210.99	793.93	-165.76	792	-160.07	791.76	-158.87	791.71
-157.8	791.68	-156.63	791.64	-153.35	791.54	-151.43	791.48	-149.73	791.42
-146.85	791.38	-144.96	791.34	-142.52	791.29	-132.62	791.07	-130.64	791.03
-101.92	790.33	-95.39	790.16	-88.98	790	-88.49	789.93	-86.66	789.67
-80.07	788.84	-74.1	788	-61.45	786.41	-57.88	786	-48.54	785.24
-33.31	784	-32.55	783.41	-30.67	782	-28.99	780.88	-27.82	780
-25.82	778.84	-24.51	778	-11.02	778	-10.77	778	-10.46	778
-6.31	778	-5.59	778	-2.06	778	0	778	17.55	778
18.79	778	19.98	778	20.09	778	20.18	778	22.28	779.99
22.28	780	22.29	780	22.48	780.14	22.75	780.32	22.91	780.44
23.1	780.6	24.5	782	25.76	783.21	26.59	784	27.89	784.71
30.47	786	33.02	786.59	36.19	787.36	38.52	788	41.81	789.78
42.19	790	43.09	790.59	45.35	792	46.09	792.54	48.16	794
50.5	795.72	50.87	796	51.18	796.24	53.66	798	61.32	798.32

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-435.31	.05	-33.31	.04	26.59	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-33.31	26.59	78.5	100	93.6	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 0

INPUT
Description: Cross Section Q
Station Elevation Data num= 168

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-480.29	824	-474.56	822.65	-471.98	822	-469.6	821.45	-462.85	820
-454.07	818.03	-453.93	818	-453.75	817.97	-452.35	817.74	-441.55	816
-436.69	814.89	-436.27	814.79	-436.04	814.73	-432.95	814	-423.3	812.3
-421.63	812	-416.89	811.33	-407.21	810	-399.48	808.97	-392.17	808
-383.25	806.86	-377.19	806	-371.17	805.46	-362.32	804.75	-359.1	804.49
-353.11	804	-346.32	803.25	-331.35	802	-320.82	800.49	-320.73	800.48
-320.67	800.47	-320.6	800.46	-320.53	800.45	-320.47	800.43	-318.22	800
-315.66	799.74	-304.78	798.61	-298.81	798	-293.77	797.4	-283.83	796
-274.81	794.62	-268.35	794	-247.69	792.83	-233.45	792	-223.34	791.77
-220.6	791.71	-214.5	791.59	-212.74	791.56	-210.78	791.53	-208.45	791.5

-195.83	791.36	-195.68	791.36	-192.51	791.31	-189.7	791.27	-187.41	791.23
-187.09	791.23	-182.91	791.21	-182.02	791.2	-181.03	791.19	-179.89	791.17
-178.68	791.15	-174.83	791.09	-174.56	791.08	-174.01	791.08	-173.72	791.07
-173.43	791.07	-173.12	791.06	-168.31	790.95	-164.44	790.87	-158.47	790.75
-155.98	790.69	-152.83	790.62	-143.73	790.4	-142.55	790.38	-127.18	790
-104.42	788.22	-101.74	788	-101.18	787.83	-100.02	787.56	-90.7	786
-86.46	785.72	-83.94	785.61	-82.57	785.52	-82.02	785.5	-81.07	785.43
-80.47	785.41	-74.31	785.25	-73.45	785.23	-72.56	785.2	-69.72	785.09
-67.42	785.01	-64.4	784.88	-60.54	784.72	-55.59	784.49	-49.11	784.17
-45.76	784	-44.77	783.82	-44.66	783.8	-44.56	783.78	-44.44	783.76
-43.86	783.63	-42.43	783.31	-41.55	783.11	-39.82	782.69	-37.02	782
-36.6	781.71	-35.94	781.26	-35.37	780.84	-35.14	780.64	-34.21	780
-33.59	779.7	-33.41	779.61	-33.14	779.46	-32.61	779.16	-31.78	778.69
-30.76	778.07	-30.64	778	-30.54	778	-30.51	778	-29.01	778
-28.96	778	-27.58	778	-27.49	778	-26.23	778	-18.44	778
-.22	778	0	778	2.92	778	3.9	778	12.67	778
12.87	778	13.06	778	13.25	778	17.51	778	19	778
19.12	778	19.37	778	20.01	778	26.95	778	30.3	779.37
31.79	780	34.08	781.47	35.09	782	37.1	783.88	37.26	784
38.98	785.53	39.66	786	40.55	786	46.1	786	49.38	785.96
51.87	785.93	52.3	785.92	52.73	785.93	57.46	786	61.35	786.96
65.51	788	67.87	789.28	69.26	790	70.59	790.75	72.85	792
74.06	792.95	75.31	794	76.59	794.99	77.82	796	80.08	797.76
80.38	798	80.7	798.05	91.74	800				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-480.29	.05	-45.76	.04	37.26	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45.76	37.26	0	0	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1500

INPUT
Description: Cross Section P
Station Elevation Data num= 174

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-109.57	824.86	-103.4	824.54	-101.2	824.43	-97.62	824.32	-92.11	824
-87.23	822.16	-86.92	822.04	-86.81	822	-86.76	821.97	-83.9	820
-83.43	819.66	-81.21	818	-80.94	817.81	-79.39	816	-78.61	815.11
-77.4	814	-76.28	812.92	-75.35	812	-74.13	810.79	-73.28	810
-72.36	809.06	-71.33	808	-69.63	806.34	-69.27	806	-69.09	805.81
-67.36	804	-66.04	802.63	-65.38	802	-63.79	800.37	-63.45	800
-63.16	799.68	-61.61	798	-59.65	796.03	-59.62	796	-59.58	795.97
-59.41	795.85	-56.62	794	-56.03	793.67	-53.26	792	-51.53	791.08
-49.77	790	-48.48	789.14	-46.61	788	-45	786.91	-43.64	786
-40.77	784.31	-40.21	784	-39.68	783.71	-37.09	782	-35.85	781.27
-34.11	780	-33.96	779.93	-30.74	776.426	-15.53	776.426	-3.66	776.426
-.68	776.426	0	776.426	.43	776.426	9.24	776.426	9.46	776.426
9.85	776.426	13.26	776.426	14.87	776.426	14.96	776.426	15.29	776.426
18.14	776.426	18.69	776.426	20.41	776.426	27.01	776.426	35.23	779.58
36.5	780	37.11	780.5	39.14	782	40.61	783.3	41.61	784
44.91	784.41	45.68	784.48	46.55	784.56	55.23	785.15	59.27	785.03
62.66	784.97	74.99	785.79	78.13	786	88.83	786.64	92.41	786.86
94.84	787.01	111.68	788	120.37	788.01	124.23	788.02	130.32	788.01
133.36	788.01	135.02	788	138.31	788	147.7	787.99	152.09	787.99
152.48	787.99	152.78	787.99	153.27	787.99	157.27	787.99	165.96	787.99
170.03	788	173.29	788	187.21	789.34	194.53	790	203.11	790.98

211.69	792	252.18	792.86	257.35	792.98	281.86	793.51	289.32	793.67
293.06	793.76	297.92	793.88	299.4	793.91	302.94	794	315.73	794.49
324.39	794.82	329.72	795.02	333.14	795.14	335.56	795.22	341.17	795.4
341.93	795.42	342.45	795.43	342.75	795.43	342.96	795.43	343.24	795.42
343.73	795.43	344.48	795.46	355.42	795.87	355.68	795.88	358.73	796
381.7	797.28	382.2	797.31	396.13	798	397.47	798.05	400.18	798.14
402.22	798.2	404.18	798.26	420.47	798.67	420.48	798.67	420.49	798.67
421.54	798.7	424.06	798.81	432.46	799.15	444.55	799.72	450.39	800
462.5	800.8	474.76	802	477.7	802.26	488.11	803.14	495.56	803.78
498.38	804	502.72	804.62	512.34	806	516.21	806.56	526.22	808
529.48	808.51	529.92	808.6	535.21	809.6	536.76	809.89	537.25	810
538.58	810.19	538.81	810.22	553.15	812	566.25	813.67	568.97	814
570.65	814.22	578.39	815.14	584.68	816	591.69	817.07	592.48	817.2
597.11	818	603.46	819.29	606.68	820	614.37	822		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-109.57	.05	-40.77	.04	44.91	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.77	44.91	116.8	100	100.5	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1400

INPUT
Description: Cross Section 0
Station Elevation Data num= 186

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-98.26	826	-93.64	825.43	-86.17	824.53	-84.11	824.26	-82.91	824.1
-82.2	824	-81.79	823.89	-81.06	823.67	-80	823.32	-78.91	822.9
-76.95	822	-73.47	820.46	-73.41	820.43	-72.56	820	-72.1	819.78
-68.64	818	-67.23	816.86	-66.64	816	-66.37	815.62	-65.21	814
-64.91	813.59	-63.76	812	-63.52	811.66	-62.32	810	-61.81	809.33
-60.91	808	-60.56	807.5	-59.5	806	-59.09	805.4	-58.16	804
-57.47	803	-56.75	802	-55.73	800.66	-55.3	800	-54.13	798.34
-53.88	798	-52.62	796.22	-52.46	796	-52.3	795.8	-51.05	794
-50.87	793.76	-49.83	792	-48.9	790.59	-48.57	790	-47.77	788.95
-47.16	788	-46.24	786.58	-45.85	786	-44.36	784.93	-43.1	784
-39.66	782.64	-38.07	782	-33.85	780.38	-32.85	780	-28.53	778.58
-28.22	778.67	-27.78	778.82	-27.77	778.88	-27.46	779.37	-27.16	779.59
-26.75	779.73	-26.42	779.63	-26.06	779.67	-25.88	779.61	-25.62	779.5
-25.17	779.28	-24.78	779.18	-23.77	778.53	-23.56	778.43	-22.99	776.426
-17.01	776.426	-15.62	776.426	-10.95	776.426	-1.13	776.426	.36	776.426
9.77	776.426	20.55	776.426	21.86	779.74	22.05	780	22.33	780.24
25.22	782	29.8	783.11	32.65	784	54.46	785.34	65.3	786
67.69	786.1	79.78	786.57	81.51	786.62	82.84	786.64	84	786.65
85.22	786.64	88.36	786.58	90.29	786.57	92.34	786.57	94.29	786.62
94.57	786.61	94.74	786.61	94.82	786.6	94.85	786.58	102.22	786.66
112.18	786.79	120.04	787.06	138.1	787.68	147.5	788	154.36	788.99
161.34	790	167.51	791.43	170.1	792	187.69	792.26	237.18	792.99
256.33	793.26	269.47	793.45	286.87	793.6	296.89	793.68	296.93	793.67
297.41	793.65	297.99	793.63	299.3	793.61	299.47	793.6	313.38	793.99
313.75	794	316.36	794.06	318.01	794.09	318.85	794.09	319.82	794.05
320.53	794.03	321.6	794.02	323.15	794.04	323.38	794.04	323.54	794.05
323.63	794.05	324.16	794.07	324.68	794.08	324.89	794.09	325.13	794.1
325.76	794.12	326.16	794.13	331.57	794.3	332.49	794.33	334.62	794.39
335.79	794.43	337.04	794.48	340.86	794.61	344.95	794.76	353.94	795.07
362.49	795.37	365.57	795.47	376.38	795.83	381.17	796	384.21	796.15
387.69	796.31	388.37	796.34	389.72	796.41	413.47	797.54	422.02	798

434.53	798.97	447.41	800	451.72	800.64	461.68	802	465.81	802.38
482.59	804	485.47	804.65	490.74	806	498.68	807.3	503.03	808
507.12	808.79	513.12	810	517.96	811.11	521.95	812	530.88	813.97
531.04	814	531.39	814.08	539.98	816	543.36	816.78	548.89	818
552.76	818.87	554.08	819.16	555.76	819.5	557.17	819.79	558.29	820
563.74	821.17	565.33	821.51	566.21	821.69	567.54	822	568.21	822.15
575.94	824								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-98.26	.05	-43.1	.04	32.65	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.1	32.65	104.4	100	100.5	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1300

INPUT
Description: Cross Section N
Station Elevation Data num= 188

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-92.26	832	-89.72	830.89	-87.74	830	-86.44	829.36	-83.69	828
-80.75	826.55	-79.62	826	-75.68	824.12	-75.45	824	-75.16	823.86
-71.35	822	-69.97	821.07	-68.38	820	-67.43	818.84	-66.74	818
-65.78	816.82	-65.11	816	-64.12	814.79	-63.48	814	-63.11	813.55
-61.84	812	-61.2	811.21	-60.22	810	-59.68	809.34	-58.59	808
-58.03	807.31	-56.96	806	-55.79	804.58	-55.32	804	-54.81	803.38
-53.7	802	-52.63	800.7	-52.08	800	-51.65	799.46	-50.46	798
-50	797.43	-48.83	796	-48.35	795.4	-47.23	794	-46.07	792.6
-45.57	792	-45.18	791.53	-44	790	-43.33	789.21	-42.35	788
-40.87	786.79	-40.04	786	-39.04	785.19	-37.59	784	-36.23	782.9
-35.14	782	-32.82	780.34	-32.39	780	-31.3	779.39	-30.08	778.71
-28.91	776.426	-21.36	776.426	-15.38	776.426	-1.59	776.426	0	776.426
3.95	776.426	20.74	776.426	25.84	776.426	28.32	779.87	28.51	780
29.31	780.57	31.14	782	33.54	783.75	33.88	784	34.23	784.15
34.68	784.5	35.24	784.92	36.74	786	38.24	786	39.7	786
42.35	786	43.65	786	43.68	785.92	56.41	785.96	61.98	785.94
64.83	785.93	70.91	785.95	86.14	786	113.98	787.08	137.88	788
147.86	789.76	149.29	790	151.74	790.52	158.62	792	171.67	792
182	792.01	182.16	792.01	194.88	792	203.97	792	212.9	792
214.27	792	217.6	791.7	222.99	791.24	226.26	791.03	227	790.99
227.88	790.96	228.9	790.92	232.45	790.83	234.57	790.8	238.28	790.74
238.62	790.74	238.88	790.75	242.27	790.92	242.55	790.94	242.7	790.96
243.16	791.03	245.96	791.39	246.21	791.42	246.49	791.44	246.87	791.46
248.86	791.57	252.34	791.79	253.53	791.86	255.02	791.93	256.57	792
259.16	792.1	282.03	793	294.08	793.47	294.94	793.5	295.73	793.53
299.95	793.67	300.64	793.69	300.75	793.7	302.22	793.76	302.34	793.76
302.87	793.79	303.72	793.83	307.32	794	335.26	795	338.52	795.09
350.2	795.41	350.58	795.42	350.91	795.43	352.63	795.45	356.17	795.49
357.47	795.55	357.95	795.56	367.22	796	371.94	796.28	374.82	796.45
398.39	798	409.55	799.71	411.34	800	416.07	800.72	420.61	801.41
423.13	801.79	424.54	802	426.88	802.38	436.95	804	446.25	804.83
446.57	804.86	446.81	804.87	447.02	804.88	447.21	804.89	447.4	804.89
447.58	804.88	447.77	804.87	447.96	804.84	449.79	804.39	449.98	804.36
450.16	804.36	453.67	805.52	453.77	805.54	453.92	805.59	455.1	806
455.98	806.24	462.85	808	468.33	809.24	472.05	810	476.92	811.1
480.59	812	484.49	812.96	489.04	814	492.21	815.06	495.34	816
498.73	817.26	500.66	818	502.52	818.67	506.1	820	511.58	821.94
511.76	822	511.98	822.06	519.56	824				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-92.26	.05	-40.04	.04	36.74	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.04	36.74	99.6	100	102.2	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1200

INPUT
Description: Cross Section M
Station Elevation Data num= 171

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100.65	828	-99.42	827.95	-98.03	827.85	-97.99	827.84	-96.56	827.7
-96.24	827.68	-95.15	827.62	-90.64	827.2	-89.54	827.11	-87.5	826.98
-84.21	826.75	-83.31	826.68	-82.44	826.61	-81.49	826.52	-76.37	826
-75.2	825.48	-73.14	824.66	-72.06	824	-70.34	823.07	-68.64	822
-66.84	820.97	-65.24	820	-63.08	818.7	-61.81	818	-61.21	817.09
-59.94	816	-58.92	814.26	-58.76	814	-57.62	812.02	-57.62	812
-57.6	811.99	-56.6	810	-56.21	809.39	-55.62	808	-55.01	806.91
-54.55	806	-53.85	804.59	-53.51	804	-52.5	802.27	-52.37	802
-52.3	801.85	-51.41	800	-51	799.16	-50.4	798	-49.66	796.54
-49.39	796	-48.55	794.31	-48.39	794	-47.51	792.24	-47.39	792
-47.15	791.52	-46.4	790	-44.92	788.51	-44.39	788	-43.89	787.64
-41.62	786	-39.53	784.47	-38.87	784	-37.49	782.98	-36.12	782
-35.74	781.69	-33.14	780	-31.41	778.7	-30.35	776.426	-15.27	776.426
-.46	776.426	-.01	776.426	6.55	776.426	20.57	776.426	29.87	776.426
31.45	776.426	31.74	776.426	32.29	776.426	32.38	776.426	32.47	776.426
32.5	776.426	33.63	778.78	34.58	779.5	34.99	780	36.76	781.87
36.86	782	36.88	782.01	37.13	782.27	39.16	784	58.45	784.91
81.24	785.85	84.63	785.98	85.19	786	85.85	786.01	91.75	786.09
92.58	786.1	93.24	786.11	93.82	786.11	97.68	786.08	98.15	786.07
98.43	786.06	98.55	786.05	98.6	786.02	98.61	786	100.24	786
101.26	786	102.83	786	104.8	786	107.07	786	110.49	786.28
112.73	786.47	114.66	786.64	116.31	786.8	128.5	788	137.22	789.43
140.78	790	143.75	790.63	150.07	792	163.86	792	164.99	792
168.92	792	198.38	792.01	199.36	792.01	208.03	792.01	212.38	792.01
212.99	792.01	213.22	792.01	213.78	792.01	214.02	792.01	215	792.01
215.49	792.01	215.74	792.01	220.92	792.01	221.27	792.01	221.55	792.01
260.87	793.05	274.52	793.41	288.32	793.69	297.36	793.87	297.4	793.87
297.48	793.87	297.6	793.87	301.33	794	313.29	794.73	333.05	795.93
334.09	796	334.46	796.04	351.82	798	355.58	798.59	358.69	799.05
363.45	799.76	365.37	800	373.92	801.32	377.89	802	393.9	803.5
399.04	804	400.17	804.61	402.56	806	410.01	807.8	410.8	808
411.89	808.27	418.74	810	423.4	811.3	425.99	812	427.71	812.59
431.89	814	436.27	815.54	437.67	816	442.54	817.82	442.97	818
445.42	818.94	448.31	820	450.95	820.88	451.57	821.13	453.7	822
461.64	824								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100.65	.05	-38.87	.04	39.16	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-38.87	39.16	100.5	100	108.7	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1100

INPUT
Description: Cross Section L
Station Elevation Data num= 193

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-96.72	820.23	-92.59	820.01	-92.43	820	-90.23	819.69	-78.04	818
-76.58	816.77	-75.67	816	-73.48	814.21	-73.23	814	-73.06	813.86
-70.84	812	-70.47	811.7	-68.54	810	-66.92	808.69	-66.11	808
-64.28	806.49	-63.67	806	-61.48	804.08	-61.39	804	-61.35	803.97
-59.14	802	-58.05	801.05	-56.83	800	-55.99	799.28	-54.54	798
-53	796.64	-52.33	796	-51.34	795.17	-49.88	794	-48.3	792.58
-47.57	792	-45.49	790.18	-45.27	790	-45	789.78	-42.9	788
-40.79	786.27	-40.47	786	-40.06	785.66	-38.06	784	-37.31	783.39
-35.64	782	-33.93	780.58	-33.2	780	-31.67	779.43	-28.6	776.426
-5.84	776.426	-1.13	776.426	.01	776.426	14.65	776.426	26.98	776.426
28.22	778.76	30.1	780	32.69	781.61	33.26	782	34.67	782.23
35.01	782.25	35.25	782.25	35.36	782.24	35.42	782.23	35.5	782.22
35.64	782.22	36.08	782.22	36.29	782.22	36.42	782.22	36.44	782.2
37.87	782.24	40.07	782.31	77.44	784	80.58	785.03	83.76	786
86.94	787.32	88.79	788	103.22	789.23	109.37	789.74	115.26	790
117.49	790.15	124.87	790.55	125.12	790.56	125.28	790.57	125.55	790.57
125.81	790.58	125.92	790.58	126.03	790.58	126.14	790.58	126.25	790.59
126.41	790.59	132.86	790.63	144	790.7	145.07	790.72	145.94	790.73
150.16	790.85	151.92	790.9	153.58	790.94	155.06	790.97	156.43	790.98
157.75	790.99	159.06	791	161.67	791	164.4	791	165.27	790.99
165.76	790.99	166.19	790.98	166.85	790.97	171.12	790.9	171.96	790.87
174.64	790.78	178.14	790.67	178.81	790.66	179.19	790.67	179.71	790.66
180.12	790.66	180.68	790.66	181	790.65	181.45	790.65	182.12	790.63
188.32	790.47	188.64	790.47	199.3	790.16	199.53	790.15	199.95	790.12
200.16	790.11	200.34	790.11	200.45	790.11	200.58	790.1	200.77	790.1
201.08	790.1	201.55	790.09	211.24	790.01	214.5	790	214.51	790
214.52	790	214.53	790	214.54	790	214.55	790	214.56	790
214.57	790	214.58	790	214.59	790	214.62	790.01	218	790.08
219.43	790.19	222.65	790.44	229.71	790.95	241.9	792	251.27	793.09
259.22	794	262.44	794.31	271.58	795.03	280.49	795.78	283.96	796
297.88	797.15	306.41	798	313.63	799.69	314.99	800	318.8	800.95
319.1	801.04	319.35	801.11	322.96	802	340.1	803.44	346.75	804
348.52	805.02	350.73	806	359.08	807.78	360.15	808	362.02	808.4
365.21	809.07	369.08	809.88	369.69	810	377.16	811.55	378.83	811.9
379.22	811.98	379.31	812	379.89	812.15	387.68	814	392.22	814.97
394.35	815.39	394.75	815.46	395.01	815.5	395.23	815.53	396.01	815.6
396.31	815.63	398.87	816	406.81	817.8	407.55	818	411.52	818.96
416.11	820	417.43	820.41	421.86	822	425.35	823.48	426.65	824
429.21	825.16	429.95	825.45	431.41	826				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-96.72	.05	-35.64	.04	35.25	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-35.64	35.25	95.2	100	103.1	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1000

INPUT
Description: Cross Section K

Station Elevation Data num= 182

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100.97	815	-100.34	814.96	-99.6	814.9	-98.3	814.78	-95.24	814.32
-93.24	814	-92.09	813.31	-91.26	812.73	-89.46	812	-86.13	810.03
-86.07	810	-86.01	809.96	-82.6	808	-82	807.62	-79.16	806
-78.15	805.39	-75.71	804	-74.43	803.22	-72.25	802	-70.22	800.95
-68.51	800	-66.81	799.06	-64.85	798	-61.31	796.08	-61.18	796
-61.09	795.95	-57.6	794	-55.27	792.73	-53.89	792	-52.13	791.26
-49.1	790	-47.73	789.42	-44.31	788	-40.31	786.32	-39.52	786
-37.22	784.43	-36.64	784	-36.14	783.53	-34.48	782	-32.94	780.59
-32.32	780	-31.56	779.34	-30.08	776.426	-7.71	776.426	-1.61	776.426
0	776.426	11.44	776.426	27.59	776.426	28.87	779.1	29.84	780
32.02	781.89	32.19	782	32.59	782.23	35.24	784	35.59	784
35.64	784	37.57	784	37.7	784	37.81	784	37.82	784
41.65	784	42.98	784	49.59	784.01	55.97	784.03	57.5	784.02
63.06	784.01	63.48	784.01	64.01	784.01	67.66	784	69.86	784
73.97	784	78.14	784	82.47	784	86.44	784	88.85	785.26
90.28	786	92.06	787	94.06	788	96.35	789.18	97.95	790
107.81	791.8	109.14	792	110.34	792	110.55	792	110.78	792
114.25	792	118.66	792	123.18	792	125.95	792	141.17	792
156.2	792	157.32	792	163.48	792	164.59	792	166.32	792
166.86	792	168.27	792	169.84	791.92	171.15	791.84	172.16	791.76
175.7	791.36	176.74	791.24	176.91	791.23	177.19	791.21	177.6	791.2
178.15	791.18	178.88	791.16	179.77	791.14	180.76	791.12	181.76	791.11
182.69	791.1	183.52	791.09	184.29	791.09	185.07	791.09	185.93	791.1
186.92	791.11	187.97	791.12	189.01	791.14	189.94	791.16	190.69	791.18
191.83	791.22	192.37	791.24	192.98	791.25	193.66	791.25	195.93	791.27
200.47	791.3	201.4	791.31	202.23	791.33	202.94	791.34	203.54	791.37
204.07	791.39	211.9	791.83	214.91	792	227.97	793.16	237.22	794
246.06	794.59	269.1	796	285.83	797.45	286.25	797.46	294.74	797.99
295.09	797.99	295.58	797.99	295.9	797.99	296.05	797.99	298.64	798
304.09	799.44	306.18	800	311.29	801.26	314.62	802	317.77	802.99
321.04	804	324.72	805.24	327.1	806	329.63	806.85	332.75	808
336.16	809.19	338.72	810	342.75	811.3	345.13	812	349.38	813.35
351.24	814	353.82	815.33	355.1	816	356.58	816.79	358.88	818
360.97	819.11	362.64	820	365.56	821.55	366.44	822	367.41	822.55
370.29	824	372.61	825.26	374.21	826	376.25	827.03	379.03	828
382.93	828.84	387.55	830	390.68	830.79	394.99	831.71	396.47	832
404.41	833.27	409.46	834						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100.97	.05	-36.64	.04	35.59	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-36.64	35.59	99.2	100	103	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 900

INPUT
Description: Cross Section J
Station Elevation Data num= 157

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-119.53	804.67	-111.12	804.33	-109.05	804.18	-108.99	804.19	-108.13	804.19
-105.35	804	-103.09	803.76	-101.13	803.38	-95.93	802	-93.63	801.46
-92.94	801.25	-91.39	800.69	-89.82	800	-86.28	798.62	-84.67	798
-79.52	796.82	-77.22	796	-74.07	795.13	-73.94	795.06	-73.76	794.97
-73.55	794.88	-72.45	794.43	-72.18	794.33	-72.06	794.28	-71.36	794
-66.38	792.64	-65.05	792.28	-64.88	792.24	-64.75	792.2	-64.65	792.18

-64.12	792.05	-63.94	792	-63.35	791.85	-57.76	790.49	-56.24	790
-53.05	789.1	-48.97	788	-43.9	786.58	-41.64	786	-40.04	785.34
-36.88	784	-35.52	782.98	-34.01	782	-32.01	780.59	-31.23	780
-30.46	779.41	-28.6	776.426	-11.65	776.426	0	776.426	.62	776.426
12.24	776.426	22.1	776.426	29.76	776.426	31.98	779.35	33.05	780
36.15	781.5	37.18	782	39.45	782.34	50.82	784	58.68	784.02
59	784.02	65.82	784	67.48	784	79.1	784	79.9	784
89.42	784	92.29	784	93.94	784.71	96.76	786	100.82	787.75
101.42	788	104.01	788.98	106.91	790	107.07	790.01	107.82	790.06
108.41	790.07	110.84	790.04	120.67	790.14	121.17	790.21	121.27	790.23
128.49	790.1	128.51	790.1	128.55	790.1	128.6	790.1	134.42	790.09
134.68	790.1	144.95	790.35	147.44	790.37	156.37	790.23	158.16	790.26
168.81	790.16	169.78	790.18	181.64	790.53	184.72	790.62	187.08	790.68
195.41	791.09	203.26	791.22	205.39	791.29	209.86	791.36	215.46	791.27
216.58	791.22	218.96	791.19	219.82	791.13	220.79	791.03	221.17	791.01
221.64	791.03	222.21	791.07	222.86	791.13	224.15	791.29	224.34	791.29
224.39	791.29	226.62	791.65	226.66	791.65	228.78	791.93	229.01	791.96
229.36	792	243.63	792.62	244.22	792.7	244.41	792.72	246.92	792.81
250.73	792.99	256.42	794	260.02	794.31	269.23	795.06	274.96	795.54
280.27	796	281.14	796.51	283.71	798	284.73	798.5	287.75	800
288.33	800.29	289.95	801.09	291.49	801.86	291.53	801.88	291.77	802
295.46	803.85	295.81	804	296.12	804.13	300.45	806	304.6	807.65
305.44	808	305.7	808.11	310.47	810	310.91	810.18	315.25	812
318.99	813.53	320.4	814	325.39	815.85	325.79	816	328.44	816.92
331.54	818	335.08	818.98	338.72	820	343.96	821.32	346.45	822
348.28	822.48	354.26	824						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-119.53	.05	-36.88	.04	50.82	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-36.88	50.82	95.9	100	104.9	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 800

INPUT
Description: Cross Section I
Station Elevation Data num= 115

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-179.63	810	-169.01	808.68	-168.01	808.55	-166.89	808.37	-164.56	808
-160.91	807.53	-149.56	806	-145.22	805.33	-144.92	805.28	-137.33	804
-132.87	802.58	-131.11	802	-125.58	800.23	-124.89	800	-124.36	799.85
-118.47	798	-106.64	796.14	-105.75	796	-102.66	795.58	-91.35	794
-73.49	792.11	-72.48	792	-71.71	791.93	-51.46	790	-50.87	789.81
-45.03	788	-39.91	786.41	-38.61	786	-36.93	785.25	-34.37	784
-32.94	782.65	-32.27	782	-31.19	780.96	-30.11	780	-29.28	779.23
-27.94	776.426	-4.36	776.426	0	776.426	.87	776.426	8.38	776.426
19.14	776.426	29.9	776.426	31.04	778.91	32.53	780	34.36	781.61
34.77	782	35.89	783.02	37	784	37.07	784	46.25	784.02
53.58	784.03	57.53	784.04	60.11	784.05	63.06	784.04	73.07	784.02
82.3	784	87.32	784	87.99	784	89.42	784	92.34	784
94.36	784	108.5	785.86	109.44	786	109.74	786.12	114.2	788
117.61	788.68	123.75	790	162.21	791.15	192.41	792	206.4	793.8
206.77	793.84	207.7	793.95	207.72	793.95	210.92	794	211.58	794
211.84	794	213.03	793.99	213.7	793.99	215.34	793.99	215.82	793.99
216.19	793.99	219.42	794	222.98	794	229.5	795.45	231.89	796
233.35	796.34	240.75	798	246.77	799.55	248.56	800	253.87	801.55
255.57	802	259.5	803.18	262.31	804	264.42	804.65	266.08	805.14

268.25	805.75	269.21	806	270.36	806.3	276.74	808	281.81	809.31
284.55	810	292.1	811.9	292.5	812	292.95	812.13	297.81	813.5
299.61	814	304.78	815.51	306.47	816	308.4	816.6	312.95	818
317.86	819.48	319.69	820	325.3	821.46	327.42	822	333.85	824

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-179.63	.05	-34.37	.04	37	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-34.37	37	95	100	102	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 700

INPUT
Description: Cross Section H
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-173.38	798	-173.15	797.98	-163.76	797.06	-154.87	796.45	-153.49	796.34
-153.05	796.31	-151.8	796.23	-149.51	796	-130.32	794.72	-128.99	794.62
-120.07	794	-113.62	793.63	-90.07	792	-76.15	790.44	-72.07	790
-64.32	789.34	-48.32	788	-44.6	787.19	-37.54	786	-36.41	785.03
-35.2	784	-34.43	783.39	-32.79	782	-31.24	780.66	-30.35	780
-28.95	778.95	-27.76	776.426	-19.07	776.426	-13.32	776.426	.21	776.426
.87	776.426	12.51	776.426	29.54	776.426	32.01	779.35	32.62	779.74
33.01	780	33.82	780.29	39.15	782	48.07	783.84	48.71	784
50.23	784	52.54	784	57.21	784.01	58.7	784.01	68.27	784.02
72.79	784.02	87.68	784	92.43	784	95.6	783.99	100.42	784
103.79	784	106.33	784.42	116.6	786	120.23	787.54	121.33	788
136.23	789.89	137.1	790	144.83	790.29	190.08	792	209.7	793.49
216.55	794	222.52	795.42	224.98	796	226.07	796.27	232.7	798
236.52	799.38	238.4	800	241.17	800.87	244.73	802	251.89	803.78
252.21	803.86	252.8	804	253.17	804.1	260.45	806	265.73	807.55
267.26	808	272.85	809.56	274.45	810	277.85	810.99	281.45	812
287.6	813.86	288.05	814	292.93	815.47	294.71	816	295.12	816.13
301.48	818	304.3	818.84	308.43	820	314.27	821.82	314.9	822
321.45	824								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-173.38	.05	-35.2	.04	48.71	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-35.2	48.71	96.8	100	98.9	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 600

INPUT
Description: Cross Section G
Station Elevation Data num= 124

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-177.84	794.61	-177.42	794.6	-176.54	794.58	-175.26	794.53	-174.92	794.52
-174.59	794.5	-174.45	794.5	-174.09	794.48	-164.5	794	-157.86	793.68
-154.74	793.5	-147.1	793.08	-135.08	792.37	-132.13	792.22	-128.26	792
-117.13	791.33	-97.01	790	-79.08	788	-76.81	787.87	-76.21	787.84

-60.19	786.96	-38.97	786.07	-38	786.03	-37.44	786	-36.69	785.4
-34.96	784.02	-34.93	784	-34.76	783.84	-32.49	782	-29.98	779.96
-28.69	778.88	-27.7	776.426	-23.87	776.426	-23.34	776.426	-23.14	776.426
-10.75	776.426	-4.74	776.426	-4.17	776.426	-.71	776.426	0	776.426
1.39	776.426	7.39	776.426	26.49	776.426	30.38	779.79	30.47	779.83
30.6	779.88	31.28	780.19	34.33	781.51	35.48	782	37.82	782.29
38.41	782.33	38.67	782.35	38.86	782.36	45.95	782.92	52.54	783.49
55.05	783.65	57.63	783.79	59.18	783.92	62.09	784	62.37	784
62.74	784	63.56	784	63.93	784	64.15	784	66.35	784
76.11	784	80.73	784	83.42	784	83.87	784	85.96	784
87.02	784	87.45	784	88.09	784	88.36	784	88.49	784
90.37	784	90.58	784	99.48	783.99	106.43	784	110.71	784
112.63	784.72	115.99	786	120.03	787.37	121.86	788	136.36	789.39
142.43	790	158.17	790.73	184.49	792	195.19	792.93	207.27	794
210.09	795.25	211.7	796	213.82	796.66	218.3	798	225.55	799.58
227.57	800	228.64	800.26	235.53	802	240.87	803.16	242.09	803.42
242.45	803.49	245.03	804	254.57	805.93	254.91	806	256.3	806.25
266.42	808	272.36	808.94	279.32	810	284.05	810.76	291.66	811.9
292.34	812	294.29	812.37	301.69	813.75	303.02	814	305.07	814.47
311.86	816	313.44	816.44	319.07	818	324.73	819.59	326.19	820
331.07	821.51	332.61	822	334.59	822.65	338.6	824		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-177.84	.05	-34.93	.04	59.18	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-34.93	59.18	90.7	100	98.3	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 500

INPUT
Description: Cross Section F
Station Elevation Data num= 190

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-244.34	794.51	-223.9	794	-215.56	793.64	-210.73	793.38	-205.19	793.11
-203.96	793.05	-203.2	793	-202.66	792.96	-186.13	792.05	-186.07	792.05
-186.01	792.05	-185.2	792	-182.68	791.79	-182.48	791.77	-180.55	791.59
-180.15	791.56	-179	791.44	-178.36	791.36	-177.99	791.31	-177.7	791.28
-177.29	791.25	-171.44	790.91	-170.57	790.87	-170.09	790.86	-169.85	790.87
-169.76	790.9	-169.69	790.94	-169.57	790.98	-169.38	791.01	-169.11	791.04
-168.8	791.07	-168.45	791.1	-167.86	791.06	-167.53	791.09	-166.94	791.12
-166.2	791.09	-166.02	791.09	-165.9	791.1	-165.81	791.09	-165.74	791.09
-162.08	791.02	-161.98	791.02	-154.39	790.69	-149.83	790.43	-148.63	790.36
-142.48	790	-135.87	789.39	-126.03	788.13	-125.3	788.04	-124.98	788
-96.48	786.88	-95.47	786.83	-94.69	786.8	-94.02	786.77	-93.33	786.75
-85.88	786.45	-70.26	786	-69.4	785.53	-66.92	784	-66.29	783.65
-63.56	782	-63.14	781.76	-60.13	780	-58.67	779.33	-58.42	779.18
-56.05	776.426	-45.48	776.426	-42.95	776.426	-39.04	776.426	-31.42	776.426
-25.2	776.426	-20	776.426	-19.9	776.426	-5.43	776.426	6.21	776.426
9.12	779.81	9.4	780	9.75	780.21	12.59	782	12.78	782.1
13.24	782.65	13.73	782.66	13.99	782.67	14.37	782.65	16.26	782.48
17.05	782.42	19.58	782.29	20.46	782.23	22.4	782.09	23.41	782
26.38	781.97	31.68	781.73	37.85	781.58	46.73	782	55.76	783.91
56.34	784	58.03	784.18	74.22	786	83.68	787.77	84.98	788
86.18	788.13	87.27	788.22	91.68	788.65	94.29	788.85	101.3	789.46
109.66	790	114.3	790.21	116.74	790.32	119.26	790.43	132.6	791.07
133.64	791.12	134.86	791.18	148.86	792	150.48	792.27	150.74	792.28
150.96	792.27	151.13	792.26	151.34	792.23	151.36	792.23	151.38	792.23

151.44	792.23	151.57	792.23	151.68	792.24	151.86	792.25	152.18	792.27
152.74	792.31	173.38	794	174.26	794.42	177.32	796	179.73	796.83
183.52	798	186.31	798.54	192.72	800	195	800.59	196.44	800.99
197.97	801.38	200.51	802	201.31	802.14	201.81	802.22	208.64	803.34
209.78	803.51	210.37	803.59	213.07	804	221.65	805.01	222.64	805.14
223.87	805.27	224.29	805.32	224.39	805.33	224.47	805.34	224.58	805.34
225.95	805.48	227.56	805.56	229.97	805.8	232.33	806	234.11	806.12
234.65	806.15	235.15	806.17	235.2	806.17	239.33	806.32	241.86	806.5
248.95	806.87	250.04	806.94	251	807	251.68	807.06	254.85	807.21
255.38	807.26	256.43	807.33	257.52	807.41	258.69	807.52	259.91	807.66
263.21	808	268.92	808.67	269.83	808.79	278.17	810	281.66	810.63
282.56	810.83	287.52	812	290.02	812.56	296.21	814	297.37	814.27
300.76	815.09	304.32	816	306.8	816.61	312.44	818	318.81	819.62
320.4	820	323.05	820.65	328.11	822	330.94	822.78	335.88	824

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-244.34	.05	-63.56	.04	13.99	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-63.56	13.99	102.7	100	103.6	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 400

INPUT
Description: Cross Section E
Station Elevation Data num= 190

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-352.7	795.42	-351.82	795.38	-349.7	795.31	-349.1	795.29	-343.16	795.18
-331.71	794.99	-324.83	794.88	-322.28	794.83	-320.12	794.79	-318.06	794.74
-315.64	794.69	-312.08	794.61	-286.18	794	-275.9	793.34	-271.51	793.24
-262.26	792.8	-260.94	792.79	-260.28	792.79	-259.53	792.74	-259.41	792.76
-259.38	792.85	-259.36	792.93	-250.96	792.84	-246.1	792.79	-245.92	792.78
-245.69	792.78	-245.38	792.77	-228.5	792.42	-223.41	792.32	-205.81	792
-200.47	791.74	-200.01	791.71	-191.41	791.22	-184.72	790.94	-184.62	790.93
-184.52	790.92	-184.44	790.92	-182.06	790.81	-182.02	790.81	-166.92	790
-165.06	789.85	-164.09	789.78	-157.64	789.26	-157	789.22	-149.29	788.8
-143.54	788.49	-140.6	788.33	-137.59	788	-130.82	787.38	-130.79	787.39
-95.49	786.02	-95.32	786.02	-94.77	786.02	-92.58	786.02	-73.01	786
-72.97	786	-72.87	786	-72.7	786	-72.05	785.93	-53.74	784
-49.73	783.24	-41.7	782	-39.21	780.45	-38.37	780	-37.45	779.48
-35.04	776.426	-26.51	776.426	-24.74	776.426	-22.8	776.426	-22.19	776.426
-12.24	776.426	-7.43	776.426	-1.23	776.426	0	776.426	3.31	776.426
4.64	776.426	13.39	776.426	30.25	776.426	35.36	776.426	36.41	778.66
38.4	780	40.49	781.1	43.68	782	47.3	782.67	50.34	782.84
50.81	782.88	51.22	782.92	51.65	782.99	53.26	783.25	54.45	783.41
57.99	784	62.09	784.53	71.9	786	73.68	786.83	76.1	788
81.13	790	81.15	790	81.18	790.01	92.58	792	106.31	792.7
110.91	792.93	113.69	793.05	115.53	793.12	116.83	793.16	119.55	793.23
119.96	793.24	134.56	794	135.78	794.09	135.92	794.1	136.06	794.11
136.21	794.11	149.62	795.01	150.33	795.04	150.91	795.04	151.39	795.03
152.33	795.01	152.93	795	153.59	795.01	155.44	795.02	155.49	795.03
155.52	795.03	155.58	795.03	158.4	795.23	159.07	795.27	171.27	796
185.92	797.19	187.23	797.31	189.14	797.46	195.99	798	210.81	799.55
213.99	799.93	214.59	800	216.35	800.2	222.95	800.94	232.59	802
234.49	802.42	234.58	802.44	234.67	802.46	234.75	802.47	244.74	804
244.9	804.03	245.02	804.05	248.09	804.61	249.94	804.91	253.6	805.38
254.63	805.53	258.93	806	261.06	806.1	268.07	806.62	281.26	807.44
282.22	807.5	282.29	807.51	282.34	807.51	285.79	808	293.62	808.4

295.57	808.5	297.4	808.59	299.22	808.67	300.92	808.73	302.4	808.79
303.61	808.83	305.28	808.88	306	808.91	307.74	809.05	308.46	809.09
310.39	809.25	314.22	809.55	315.8	809.68	318.18	809.87	319.24	809.96
319.63	810	320.35	810.13	321.84	810.42	324.11	810.87	325.11	811.07
330.66	812	333.86	812.61	336.45	813.12	341.61	814	351.17	815.63
353.47	816	363.22	817.87	363.89	818	365	818.22	372.87	819.76
374.04	820	380.53	821.36	383.68	822	384.77	822.24	393.14	824

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-352.7	.05	-41.7	.04	43.68	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.7	43.68	101.3	100	168.7	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 300

INPUT
Description: Cross Section D
Station Elevation Data num= 174

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-385.65	794.17	-375.87	794	-372.67	793.96	-372.64	793.96	-356.88	793.77
-356.73	793.76	-353.34	793.71	-353.16	793.71	-350.59	793.66	-350.39	793.66
-349	793.64	-346.98	793.58	-346.74	793.57	-346.3	793.57	-342.19	793.54
-337.96	793.51	-337.89	793.51	-337.83	793.51	-337.64	793.51	-331.66	793.43
-331.49	793.43	-331.32	793.43	-330.32	793.44	-329.63	793.44	-328.64	793.43
-327.28	793.42	-325.63	793.4	-319.22	793.32	-318.44	793.31	-317.47	793.29
-316.13	793.27	-301.4	793.04	-293.65	792.92	-283.49	792.75	-270.41	792.54
-253.83	792.26	-238.71	792	-235.96	791.82	-232.86	791.61	-225.48	791.34
-220.99	791.1	-217.95	790.93	-187.87	790	-172.68	788.66	-165.69	788
-157.46	787.11	-148.65	786	-142.05	785.99	-141.2	785.98	-140.34	785.98
-139.94	785.99	-138.4	785.99	-136.61	785.99	-135.59	785.99	-132.57	786
-131.4	786	-131.17	786	-126.29	786	-120.02	786	-118.89	786
-107.9	786	-95.64	785.32	-74.72	784	-69.44	783.53	-58.81	782.57
-52.69	782	-42.92	781.02	-41.35	780.87	-37.61	780.54	-31.55	780
-30.02	778.9	-28.85	776.426	-20.98	776.426	-18.09	776.426	-12.16	776.426
-1.69	776.426	0	776.426	7.92	776.426	23.09	776.426	23.75	778.63
24.88	780	26.65	781.23	27.61	782	28.54	782.74	30.39	784
33.75	785.19	36.51	786	39.96	786.94	43.29	788	47.21	789.16
49.96	790	55.26	791.43	57.37	792	70.25	793.68	72.56	794
76.97	794.14	81.58	794.27	85.3	794.37	98.72	794.71	100.74	794.76
102.46	794.79	103.89	794.81	105.15	794.81	106.36	794.81	110.47	794.77
117.42	794.68	124.22	794.57	124.76	794.59	132.99	794.45	133.22	794.47
133.54	794.48	133.65	794.49	133.74	794.5	134.21	794.56	134.41	794.58
136.08	794.72	143.42	794.48	143.55	794.47	148.01	795.33	148.04	795.33
148.08	795.33	148.12	795.33	148.16	795.33	148.2	795.34	150.04	795.65
150.06	795.65	150.09	795.66	150.11	795.66	152.24	796	159.09	796.02
160.94	796.02	162.65	796.02	168.07	796	168.17	796	168.22	796
168.26	796	168.45	796	169.45	796	170.14	796	174.35	796
178.94	796.85	185.15	798	196.88	799.66	199.34	800	203.59	800.51
215.53	802	223.65	803.17	229.13	804	244.13	805.86	245.27	806
246.3	806.09	267.03	808	281.39	809.62	282.53	809.75	284.74	810
293.59	811.98	293.68	812	294.71	812.14	295.61	812.25	296.64	812.37
297.95	812.51	301.25	812.86	311.54	814	312.95	814.17	326.12	816
332.07	816.81	336.8	817.51	340.04	818	341.06	818.17	352.57	820
362.29	821.68	364.04	822	367.16	822.64	373.9	824		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

-385.65	.05	-31.55	.04	24.88	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-31.55	24.88	92.7	100	105.3	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 200

INPUT
Description: Cross Section C
Station Elevation Data num= 241

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-536.17	798	-531.04	796.73	-527.71	796	-518.36	795.68	-516.19	795.61
-514.46	795.56	-513.05	795.53	-511.82	795.51	-505.93	795.41	-501.42	795.32
-500.89	795.31	-499.19	795.29	-498.32	795.27	-497.27	795.25	-496.15	795.23
-495.05	795.2	-494.07	795.17	-493.19	795.13	-490.39	795	-488.17	794.91
-488.01	794.9	-487.85	794.89	-487.59	794.88	-487.16	794.87	-486.53	794.86
-484.74	794.82	-481.56	794.78	-480.19	794.71	-479.76	794.69	-479.53	794.69
-479.22	794.68	-478.97	794.67	-478.42	794.65	-477.04	794.63	-476.87	794.62
-462.39	794.36	-440.43	794.02	-439.43	794.01	-438.59	794	-438.56	794
-437.52	793.99	-437.45	793.99	-437.44	793.99	-437.43	793.99	-437.42	793.99
-437.4	793.99	-437.3	793.99	-435.98	793.97	-435.58	793.96	-432.3	793.91
-432.05	793.9	-430.89	793.88	-424.92	793.77	-421.51	793.71	-417.12	793.64
-406.36	793.48	-405.85	793.47	-392.8	793.28	-392.27	793.26	-389.6	793.22
-389.06	793.2	-387.08	793.16	-386.54	793.15	-382.73	793.09	-381.24	793.04
-380.62	793.03	-379.5	793.02	-368.62	792.91	-356.43	792.79	-356.24	792.79
-356.07	792.78	-355.48	792.78	-336.21	792.49	-335.61	792.48	-335.03	792.48
-331.53	792.49	-329.08	792.47	-325.48	792.44	-320.4	792.38	-314.06	792.29
-293.63	792	-291.56	791.93	-291.49	791.93	-290.61	791.9	-290.49	791.89
-289.55	791.85	-289.38	791.85	-288.23	791.8	-288.01	791.79	-280.77	791.44
-278.54	791.41	-276.46	791.31	-270.64	791.23	-269.85	791.23	-269.12	791.22
-268.45	791.23	-267.06	791.25	-263.83	791.27	-260.88	791.27	-259.23	791.26
-257.44	791.25	-255.52	791.23	-253.43	791.2	-251.19	791.17	-248.89	791.13
-242.35	791.03	-241.86	791.02	-241.45	791.01	-240.73	791	-227.22	790.77
-225.26	790.73	-222.1	790.67	-216.83	790.57	-199.11	790.22	-188.39	790
-177.57	788	-172.49	787.14	-166.27	786	-156.97	785.76	-155.95	785.73
-155.46	785.72	-153.95	785.69	-151.87	785.64	-145.81	785.52	-137.26	785.35
-129.89	785.2	-114.11	784.87	-73.32	784	-69.46	783.72	-68.77	783.67
-67.58	783.58	-65.48	783.42	-53.35	782.52	-50.61	782.31	-47.6	782.08
-46.45	782	-45.76	781.91	-37.8	780.92	-33.29	780	-30.89	778.64
-29.66	776.426	-19.02	776.426	-14.31	776.426	-3.5	776.426	-2.01	776.426
0	776.426	1.89	776.426	10.45	776.426	23.37	776.426	25.89	779.6
26.43	780	26.98	780.34	29.65	782	30.79	782.57	33.08	784
44.69	785.14	52.55	786	56.42	787.07	59.54	788	63.01	788.73
69.31	790	87.37	791.54	88.28	791.61	89.05	791.67	91.18	791.84
91.2	791.84	91.21	791.84	91.22	791.84	91.24	791.84	91.28	791.85
91.36	791.85	91.47	791.86	91.97	791.88	93.62	792	105.34	792.41
105.38	792.41	105.42	792.41	105.47	792.41	107.73	792.38	117.86	792.23
125.55	792.11	125.63	792.11	125.71	792.11	125.79	792.12	132.68	792
135.86	791.84	139.78	791.63	142.35	791.57	143.84	791.56	145.29	791.56
146.07	791.56	147.02	791.57	148.25	791.59	149.86	791.61	151.93	791.65
154.53	791.7	157.8	791.77	161.91	791.87	166.88	791.99	167.2	792
179.16	793.28	189.56	794	197.27	794.85	208.28	796	209.86	796.12
209.95	796.13	210.11	796.14	212.88	796.38	214.39	796.51	215.83	796.65
217.68	796.82	230.24	798	237.48	798.61	254.09	799.99	254.18	800
254.25	800.01	254.28	800.01	254.34	800.01	254.53	800.03	277.75	802
283.52	802.72	294.66	804	299.85	804.58	311.49	806	320.58	807.1
328.35	808	340.65	809.77	342.29	810	352.51	811.66	354.66	812
355.91	812.23	364.75	814	371.92	815.34	375.35	816	377.23	816.31
387.4	818	388.06	818.13	396.57	820	400.12	820.75	405.97	822

413.28 824

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-536.17	.05	-46.45	.04	29.65	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.45	29.65	89.3	100	191	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 100

INPUT
Description: Cross Section B
Station Elevation Data num= 190

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-474.74	794	-454.25	793.83	-435.64	793.7	-434.92	793.69	-434.32	793.69
-433.39	793.68	-430.01	793.62	-429.41	793.6	-428.85	793.59	-428.35	793.58
-427.49	793.56	-422.27	793.42	-421.22	793.41	-411.54	793.15	-409.32	793.11
-406.48	793.03	-405.74	793.02	-402.03	792.95	-399.95	792.91	-397.31	792.87
-391.06	792.76	-389.7	792.72	-382.78	792.61	-381.67	792.58	-380.36	792.55
-379.31	792.52	-378.38	792.5	-377.34	792.48	-369.95	792.35	-369.44	792.33
-368.28	792.32	-366.16	792.29	-344.82	792.04	-341.82	792	-328.6	791.78
-328.46	791.77	-328.33	791.77	-328.15	791.76	-328.01	791.76	-327.88	791.75
-327.44	791.74	-327.3	791.74	-317.31	791.44	-316.99	791.44	-316.52	791.43
-313.05	791.43	-311.37	791.41	-307.59	791.34	-305.83	791.32	-304.15	791.28
-298.36	791.16	-296.69	791.12	-295.55	791.09	-294.39	791.05	-293.18	791.01
-291.88	790.96	-285.15	790.69	-281.68	790.57	-279.86	790.5	-279.62	790.49
-277.76	790.43	-277.53	790.42	-275.65	790.37	-275.41	790.36	-273.54	790.32
-272.19	790.25	-264.84	790.14	-264.62	790.13	-256.21	790	-250.53	789.91
-250.25	789.91	-250.15	789.91	-250.04	789.91	-249.93	789.9	-248.33	789.88
-246.65	789.88	-244.77	789.88	-240.01	789.9	-239.32	789.89	-239.22	789.88
-239.14	789.88	-239.06	789.88	-238.65	789.85	-228.8	789.89	-228.68	789.88
-228.53	789.87	-221.05	789.83	-220.86	789.82	-217.57	789.77	-216.23	789.72
-213.18	789.65	-210.63	789.57	-208.68	789.47	-206.42	789.38	-205.18	789.31
-204.61	789.27	-202.74	789.17	-201.34	789.09	-201.13	789.07	-187.35	788.01
-187.33	788	-187.28	788	-185.57	787.81	-184.16	787.63	-173.14	786
-165.72	785.28	-164.36	785.22	-163.03	785.18	-161.86	785.16	-157.85	784.83
-156.64	784.82	-155.78	784.82	-151.72	784.51	-150.96	784.51	-150.34	784.52
-149.71	784.55	-146.7	784.73	-146.59	784.76	-139.58	784.82	-133.15	784.86
-116.82	784.59	-104.05	784.36	-85.12	784	-82.7	783.75	-82.02	783.69
-81.7	783.67	-81.24	783.64	-76.28	783.14	-74.96	783.07	-70.87	782.9
-65.98	782.49	-63.43	782.43	-62.05	782.34	-59.96	782.32	-59.66	782.3
-58.34	782.32	-57.69	782.35	-57.2	782.42	-56.8	782.44	-56.06	782.43
-54.86	782.4	-52.98	782.34	-43.6	782	-42.37	781.3	-40.16	780
-38.54	778.86	-37.06	778	-34.12	777.491	-33.79	777.491	-33.53	777.491
-32.57	777.491	-10.6	777.491	-10	777.491	-9.16	777.491	-8.63	777.491
-7.98	777.491	0	777.491	5.56	777.491	18.29	777.491	19.63	777.491
21.05	777.491	43.9	777.491	45.32	777.491	47.4	779.82	47.62	780
50.13	781.72	50.52	782	50.58	782.06	52.66	784	75.62	785.72
76.33	785.71	77.1	785.7	77.12	785.69	78.36	785.86	79.26	786
79.57	786.17	82.69	788	85.85	789.76	86.25	790	87.53	790.8
89.37	792	89.65	792.23	91.83	794	93.51	795.32	94.35	796
96.63	797.83	96.84	798	97.82	798.19	102.01	798.84	109.58	800

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-474.74	.05	-43.6	.04	50.52	.05

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

-43.6	50.52		85.74	100	88.32		.1		.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 0

INPUT
Description: Cross Section A
Cross Section A
Station Elevation Data num= 169

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-441	794	-438.76	793.97	-435.61	793.94	-427.87	793.87	-423.97	793.83
-419.54	793.78	-415.12	793.73	-412.82	793.69	-408.54	793.64	-400.24	793.5
-395.95	793.44	-392.39	793.38	-383.92	793.23	-379.53	793.16	-376.89	793.12
-376.18	793.11	-375.71	793.1	-375.35	793.1	-374.63	793.09	-372.95	793.07
-360.44	792.95	-349.7	792.86	-349.3	792.86	-348.96	792.85	-348.44	792.85
-334.62	792.58	-332.11	792.53	-329.76	792.48	-327.59	792.43	-323.9	792.34
-310.62	792	-275.55	790.65	-271.23	790.46	-263.9	790.16	-262.95	790.13
-259.76	790	-257.14	789.89	-251.75	789.66	-247.9	789.51	-245.02	789.4
-242.82	789.33	-241.11	789.27	-239.73	789.23	-238.52	789.2	-227.63	788.94
-219.91	788.75	-218.5	788.68	-216.76	788.61	-215.93	788.58	-215.22	788.55
-213.23	788.49	-212.65	788.47	-212.14	788.45	-200.82	788.22	-199.82	788.18
-199.63	788.17	-199.46	788.17	-199.3	788.16	-199.14	788.16	-198.58	788.15
-197.1	788.13	-196.33	788.11	-190.43	788.06	-188.16	788.02	-187.01	788
-186.02	787.94	-184.31	787.81	-182.93	787.8	-172.77	787.25	-167.62	787.22
-166.61	787.17	-165.83	787.13	-164.3	787.11	-162.71	787.08	-161.95	787.06
-161.13	787.03	-160.14	786.99	-158.81	786.92	-156.9	786.83	-142.2	786
-140.44	785.83	-139.25	785.76	-139	785.74	-137.85	785.64	-119.33	784
-113.28	783.4	-107.66	783.17	-100.29	782.63	-92.2	782.45	-81.15	782.13
-80.2	782.09	-79.16	782.04	-79.08	782.03	-79.02	782.03	-78.96	782.03
-78.92	782.03	-78.88	782.02	-78.85	782.02	-78.83	782.02	-78.81	782.02
-78.8	782.02	-78.78	782.02	-78.65	782.02	-78.64	782.03	-78.62	782.03
-78.61	782.03	-78.49	782.03	-78.01	782	-76.23	781.91	-73.88	781.81
-71.39	781.64	-68.43	781.49	-57.63	781.02	-48.12	780	-46.83	779.64
-41.19	778	-39.4	777.58	-37.71	777.64	-37.39	777.6	-35.96	777.65
-32.89	777.4	-27.11	776.95	-22.13	777.04	-17.13	776.81	-14.9	776.69
-12.92	776.58	-11.19	776.5	-10.11	776.45	-9.14	776.41	-9.07	776.41
-9.02	776.4	-8.83	776.284	0	776.284	6.14	776.284	6.69	776.45
7.62	776.51	9.25	776.59	11.35	776.69	14.94	776.87	20.37	777.13
21.11	777.17	22.24	777.24	31.19	777.76	32.57	777.75	33.79	777.74
35.48	778	36.38	779	37.31	780	38.16	780.94	38.96	782
43.1	783.49	44.47	784	45.05	784.39	47.54	786	50.52	787.95
50.6	788	50.67	788.04	53.82	790	55.47	791.17	56.72	792
58.67	793.63	59.21	794	59.76	794.38	61.8	796	64.22	797.74
64.6	798	66.44	798.28	77.39	800	82.9	800.35		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-441	.05	-48.12	.04	37.31	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-48.12	37.31	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Buckeye Creek

Reach	River Sta.	n1	n2	n3

Buckeye Creek	1300	.05	.04	.05
Buckeye Creek	1200	.05	.04	.05
Buckeye Creek	1100	.05	.04	.05
Buckeye Creek	1000	.05	.04	.05
Buckeye Creek	900	.05	.04	.05
Buckeye Creek	800	.05	.04	.05
Buckeye Creek	700	.05	.04	.05
Buckeye Creek	600	.05	.04	.05
Buckeye Creek	500	.05	.04	.05
Buckeye Creek	400	.05	.04	.05
Buckeye Creek	300	.05	.04	.05
Buckeye Creek	200	.05	.04	.05
Buckeye Creek	100	.05	.04	.05
Buckeye Creek	0	.05	.04	.05

River:Meathouse Fork

Reach	River Sta.	n1	n2	n3
Meathouse Fork	1500	.05	.04	.05
Meathouse Fork	1400	.05	.04	.05
Meathouse Fork	1300	.05	.04	.05
Meathouse Fork	1200	.05	.04	.05
Meathouse Fork	1100	.05	.04	.05
Meathouse Fork	1000	.05	.04	.05
Meathouse Fork	900	.05	.04	.05
Meathouse Fork	800	.05	.04	.05
Meathouse Fork	700	.05	.04	.05
Meathouse Fork	600	.05	.04	.05
Meathouse Fork	500	.05	.04	.05
Meathouse Fork	400	.05	.04	.05
Meathouse Fork	300	.05	.04	.05
Meathouse Fork	200	.05	.04	.05
Meathouse Fork	100	.05	.04	.05
Meathouse Fork	0	.05	.04	.05

SUMMARY OF REACH LENGTHS

River: Buckeye Creek

Reach	River Sta.	Left	Channel	Right
Buckeye Creek	1300	109.3	100	94.14
Buckeye Creek	1200	100.9	100	93.5
Buckeye Creek	1100	100.5	100	99.8
Buckeye Creek	1000	93.5	100	108.8
Buckeye Creek	900	144.5	100	92.5
Buckeye Creek	800	78.3	100	100.6
Buckeye Creek	700	88.9	100	96.1
Buckeye Creek	600	103.2	100	97.3
Buckeye Creek	500	91.1	100	88.3
Buckeye Creek	400	108.1	100	112.1
Buckeye Creek	300	95.9	100	100.2
Buckeye Creek	200	97.7	100	101.8
Buckeye Creek	100	78.5	100	93.6
Buckeye Creek	0	0	0	0

River: Meathouse Fork

Reach	River Sta.	Left	Channel	Right
Meathouse Fork	1500	116.8	100	100.5
Meathouse Fork	1400	104.4	100	100.5
Meathouse Fork	1300	99.6	100	102.2
Meathouse Fork	1200	100.5	100	108.7
Meathouse Fork	1100	95.2	100	103.1
Meathouse Fork	1000	99.2	100	103
Meathouse Fork	900	95.9	100	104.9
Meathouse Fork	800	95	100	102
Meathouse Fork	700	96.8	100	98.9
Meathouse Fork	600	90.7	100	98.3
Meathouse Fork	500	102.7	100	103.6
Meathouse Fork	400	101.3	100	168.7
Meathouse Fork	300	92.7	100	105.3
Meathouse Fork	200	89.3	100	191
Meathouse Fork	100	85.74	100	88.32
Meathouse Fork	0	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Buckeye Creek

Reach	River Sta.	Contr.	Expan.
Buckeye Creek	1300	.1	.3
Buckeye Creek	1200	.1	.3
Buckeye Creek	1100	.1	.3
Buckeye Creek	1000	.1	.3
Buckeye Creek	900	.1	.3
Buckeye Creek	800	.1	.3
Buckeye Creek	700	.1	.3
Buckeye Creek	600	.1	.3
Buckeye Creek	500	.1	.3
Buckeye Creek	400	.1	.3
Buckeye Creek	300	.1	.3
Buckeye Creek	200	.1	.3
Buckeye Creek	100	.1	.3
Buckeye Creek	0	.1	.3

River: Meathouse Fork

Reach	River Sta.	Contr.	Expan.
Meathouse Fork	1500	.1	.3
Meathouse Fork	1400	.1	.3
Meathouse Fork	1300	.1	.3
Meathouse Fork	1200	.1	.3
Meathouse Fork	1100	.1	.3
Meathouse Fork	1000	.1	.3
Meathouse Fork	900	.1	.3
Meathouse Fork	800	.1	.3
Meathouse Fork	700	.1	.3
Meathouse Fork	600	.1	.3
Meathouse Fork	500	.1	.3
Meathouse Fork	400	.1	.3
Meathouse Fork	300	.1	.3
Meathouse Fork	200	.1	.3

Meathouse Fork	100	.1	.3
Meathouse Fork	0	.1	.3

Prepared By: ARC 7/12/13

Checked By: CJR 7/12/2013

Proposed

HEC-RAS Plan: Proposed Profile: PF 1

River	Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
				(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Meathouse Fork	Meathouse Fork	1500	PF 1	794.60	794.28	0.32	0.06	0.01	137.12	7246.29	2216.59	367.22
Meathouse Fork	Meathouse Fork	1400	PF 1	794.53	794.09	0.44	0.07	0.01	88.41	7179.09	2332.50	374.74
Meathouse Fork	Meathouse Fork	1300	PF 1	794.45	794.03	0.42	0.07	0.00	48.81	7256.13	2295.07	355.37
Meathouse Fork	Meathouse Fork	1200	PF 1	794.38	793.96	0.42	0.07	0.00	111.29	7543.00	1945.71	348.59
Meathouse Fork	Meathouse Fork	1100	PF 1	794.32	793.90	0.42	0.07	0.01	177.18	7010.95	2411.87	308.10
Meathouse Fork	Meathouse Fork	1000	PF 1	794.23	793.71	0.52	0.07	0.04	211.20	7588.35	1800.45	291.10
Meathouse Fork	Meathouse Fork	900	PF 1	794.12	793.74	0.38	0.07	0.01	296.50	7487.40	1816.10	325.38
Meathouse Fork	Meathouse Fork	800	PF 1	794.05	793.62	0.43	0.07	0.02	303.94	6993.85	2302.21	291.26
Meathouse Fork	Meathouse Fork	700	PF 1	793.96	793.60	0.37	0.06	0.00	435.74	7143.62	2020.64	276.10
Meathouse Fork	Meathouse Fork	600	PF 1	793.90	793.55	0.35	0.05	0.02	869.68	7382.10	1348.22	318.64
Meathouse Fork	Meathouse Fork	500	PF 1	793.82	793.55	0.28	0.05	0.00	1064.74	6366.58	2168.69	383.16
Meathouse Fork	Meathouse Fork	400	PF 1	793.77	793.46	0.31	0.06	0.01	1766.67	7160.03	673.30	439.74
Meathouse Fork	Meathouse Fork	300	PF 1	793.71	793.32	0.39	0.06	0.03	3332.08	5809.95	457.97	386.39
Meathouse Fork	Meathouse Fork	200	PF 1	793.62	793.32	0.29	0.09	0.04	2710.42	6254.57	635.01	575.51
Meathouse Fork	Meathouse Fork	100	PF 1	793.48	792.78	0.70	0.13	0.01	4765.46	11210.23	974.31	482.68
Meathouse Fork	Meathouse Fork	0	PF 1	793.34	792.50	0.84			5184.04	11327.47	438.48	388.02
Buckeye Creek	Buckeye Creek	1300	PF 1	794.47	794.00	0.47	0.10	0.02	54.85	6749.26	545.88	173.22
Buckeye Creek	Buckeye Creek	1200	PF 1	794.35	793.64	0.71	0.12	0.01	57.44	7061.29	231.27	153.88
Buckeye Creek	Buckeye Creek	1100	PF 1	794.22	793.53	0.69	0.12	0.01	52.31	7108.36	189.34	152.56
Buckeye Creek	Buckeye Creek	1000	PF 1	794.09	793.44	0.65	0.11	0.01	92.19	6957.68	300.13	193.80
Buckeye Creek	Buckeye Creek	900	PF 1	793.97	793.36	0.61	0.09	0.05	63.13	6912.19	374.68	186.45
Buckeye Creek	Buckeye Creek	800	PF 1	793.83	793.40	0.44	0.08	0.01	790.66	5777.74	781.61	218.89
Buckeye Creek	Buckeye Creek	700	PF 1	793.75	793.24	0.51	0.08	0.02	51.03	6798.84	500.13	162.93
Buckeye Creek	Buckeye Creek	600	PF 1	793.65	793.20	0.44	0.08	0.00	48.11	6053.85	1248.04	171.26
Buckeye Creek	Buckeye Creek	500	PF 1	793.56	793.07	0.49	0.07	0.04	90.75	5727.63	1531.62	145.69
Buckeye Creek	Buckeye Creek	400	PF 1	793.45	793.08	0.36	0.09	0.02	449.65	5165.12	1735.23	194.57
Buckeye Creek	Buckeye Creek	300	PF 1	793.34	792.77	0.57	0.10	0.00	681.48	5817.23	851.29	167.00
Buckeye Creek	Buckeye Creek	200	PF 1	793.23	792.65	0.58	0.12	0.02	894.75	6388.69	66.56	184.41
Buckeye Creek	Buckeye Creek	100	PF 1	793.09	792.28	0.81	0.09	0.13	808.91	6284.88	256.21	247.34
Buckeye Creek	Buckeye Creek	0	PF 1	792.86	792.50	0.36			971.39	5931.01	447.60	319.60

Proposed Conditions

130-359-H&H(proposed report).txt

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X     X
X     X  X        X           X   X    X    X    X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X           X  X      X    X        X
X     X  X        X    X      X   X     X    X        X
X     X  XXXXXX    XXXX       X    X    X    X   XXXXX
```

PROJECT DATA
Project Title: 130-359-H&H
Project File : 130-359-H&H.prj
Run Date and Time: 7/12/2013 2:56:38 PM

Project in English units

Project Description:
Flood Study

PLAN DATA

Plan Title: Proposed
Plan File : p:\2013\130-359\-Calculations\Phase 2\H&H\130-359-H&H.p10

Geometry Title: Proposed
Geometry File : p:\2013\130-359\-Calculations\Phase 2\H&H\130-359-H&H.g03

Flow Title : Flow 01
Flow File : p:\2013\130-359\-Calculations\Phase 2\H&H\130-359-H&H.f01

Plan Summary Information:

Number of:	Cross Sections	= 30	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	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: Flow 01
Flow File : p:\2013\130-359\-Calculations\Phase 2\H&H\130-359-H&H.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Buckeye Creek	Buckeye Creek	1300	7350
Buckeye Creek	Buckeye Creek	0	7350
Meathouse Fork	Meathouse Fork	1500	9600
Meathouse Fork	Meathouse Fork	200	9600
Meathouse Fork	Meathouse Fork	100	16950
Meathouse Fork	Meathouse Fork	0	16950

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Buckeye Creek	Buckeye Creek	PF 1		
Known WS = 792.5				
Meathouse Fork	Meathouse Fork	PF 1		
Known WS = 792.5				

GEOMETRY DATA

Geometry Title: Proposed
Geometry File : p:\2013\130-359\-Calculations\Phase 2\H&H\130-359-H&H.g03

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 1300

INPUT
Description: Cross Section DD
Station Elevation Data num= 94

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-99.86	824	-99.27	823.56	-97.19	822	-95.12	820.44	-94.55	820
-94.09	819.65	-91.91	818	-89.65	816.29	-89.26	816	-88.62	815.51
-86.64	814	-85.81	813.37	-84.01	812	-82.28	810.67	-81.4	810
-80.83	809.51	-79.01	808	-77.42	806.33	-77.1	806	-75.34	804.16
-75.19	804	-73.68	802.42	-73.28	802	-73.22	801.94	-71.35	800
-71	799.64	-69.4	798	-68.73	797.31	-67.46	796	-66.4	794.94
-65.5	794	-64.04	792.53	-63.52	792	-61.59	790.07	-61.52	790
-61.25	789.73	-59.49	788	-59.14	787.66	-57.44	786	-54.45	784.5
-53.38	784	-46.91	782.38	-45.46	782	-42	781.27	-39.92	780.86
-35.37	780	-14.08	780	-4.69	780	-.01	780	.574	780
3.34	780	25.92	780	26.73	780.83	28.06	782	29.25	783.22
30.14	784	31.11	784.92	32.19	786	42.22	786.91	55.03	788
64.65	789.75	66.07	790	68.53	790.51	75.78	792	81.73	792.37
93.48	793.1	107.72	794	129.57	794.78	136.29	795.01	141.26	795.18
141.73	795.19	150.67	795.49	150.98	795.5	151.32	795.51	156.2	795.65

156.75	795.67	157.4	795.69	165.58	796	174.82	796.47	176.48	796.55
178.75	796.66	197.62	797.61	206.82	798	227.57	798.89	232.15	799.08
236.42	799.26	240.46	799.42	244.33	799.58	248.01	799.73	256.19	800.05
260.02	800.2	262.85	800.31	266.3	800.45	287.07	801.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-99.86	.05	-57.44	.04	32.19	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-57.44	32.19	109.3	100	94.14	.1 .3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 1200

INPUT
Description: Cross Section CC
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-91.14	826	-90.13	825.34	-88.09	824	-86.75	823.12	-85.05	822
-83.3	820.85	-82	820	-79.75	818.53	-78.94	818	-76.08	816.13
-75.88	816	-75.06	815.46	-72.8	814	-72.12	813.56	-69.71	812
-68.52	811.25	-66.59	810	-64.33	808.15	-64.14	808	-63.99	807.85
-62.21	806	-61.91	805.69	-60.27	804	-59.84	803.56	-58.33	802
-57.79	801.45	-56.39	800	-55.76	799.35	-54.45	798	-53.74	797.27
-52.51	796	-51.72	795.2	-50.56	794	-49.71	793.13	-48.62	792
-47.71	791.08	-46.67	790	-45.72	789.03	-44.72	788	-43.73	786.98
-42.78	786	-39.57	784.7	-37.88	784	-32.49	782.1	-32.22	782
-31.93	781.9	-26.56	780	-25.28	779.95	-2.09	779.95	0	779.96
21.4	779.95	21.95	780	24.66	781.47	25.79	782	26.67	782.42
29.71	784	33.01	784.57	40.89	786	45.21	787.33	47.33	788
50.02	788.75	54.91	790	58.82	790.87	63.57	792	98.62	793.43
112.59	794	153.45	795.65	162.02	796	189.97	797.72	192.93	797.9
194.65	798	202.82	798.16	221.63	798.59	289.09	801.15		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-91.14	.05	-42.78	.04	40.89	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.78	40.89	100.9	100	93.5	.1 .3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 1100

INPUT
Description: Cross Section BB
Cross Section BB
Station Elevation Data num= 143

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-92.44	824	-90.21	822.69	-89.03	822	-85.76	820.08	-85.63	820
-85.25	819.78	-82.25	818	-81.1	817.31	-78.9	816	-76.42	814.51
-75.56	814	-73.44	812.72	-72.24	812	-71.73	811.66	-69.25	810
-68.1	808.76	-67.4	808	-66.86	807.4	-65.57	806	-64.4	804.71
-63.75	804	-61.96	802.02	-61.94	802	-61.88	801.93	-60.14	800
-59.54	799.32	-58.35	798	-57.21	796.71	-56.57	796	-54.96	794.18
-54.79	794	-54.12	793.24	-53.02	792	-52.8	791.75	-51.26	790

-50.7	789.37	-49.49	788	-48.41	786.97	-47.45	786	-42.45	784.44
-41.02	784	-38.6	783.25	-34.54	782	-27.99	780.01	-27.97	780
-26.01	779.91	-24.53	779.84	-23.05	779.78	-21.72	779.71	-20.54	779.64
-19.41	779.57	-18.29	779.52	-17.02	779.47	-15.82	779.43	0	779.43
1.12	779.43	18.25	779.45	18.89	779.5	19.68	779.56	20.37	779.63
20.94	779.69	21.3	779.76	21.54	779.83	21.77	779.91	21.79	780
21.86	780.05	24.88	782	26.15	782.8	28.06	784	29.57	784.35
32.69	785.073	36.69	786	38.54	786.73	41.66	788	45.39	789.27
47.46	790	50.14	790.69	50.89	790.79	54.59	791.27	60.33	792
83.12	792.86	85.65	792.98	88.04	793.08	91.52	793.24	93.45	793.33
98.26	793.53	99.48	793.59	110.3	794	124.18	794.53	124.64	794.55
125.11	794.57	135.94	794.89	136.44	794.92	137.07	794.96	139.06	795.03
156.71	796	158.87	796.1	161.39	796.2	162.26	796.24	162.92	796.26
173.17	796.7	174.71	796.76	183.39	797.1	183.73	797.11	187.47	797.22
189.06	797.27	191.6	797.34	193.05	797.38	195.36	797.44	196.01	797.46
196.34	797.47	196.47	797.48	196.52	797.5	196.64	797.52	196.92	797.53
197.46	797.55	200.43	797.6	201.44	797.63	202.25	797.65	202.86	797.68
203.35	797.71	203.76	797.74	204.63	797.81	205.24	797.86	206.09	797.91
207.28	797.97	207.37	797.97	208.01	798	215.46	798.22	220.55	798.37
224.9	798.52	230.84	798.7	250.12	799.32	270.53	800	286.52	801.08
287.73	801.16	289.16	801.23	290.5	801.29	293.9	801.42	294.32	801.46
295.06	801.51	295.36	801.53	302.44	802				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-92.44	.05	-47.45	.04	36.69	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-47.45	36.69	100.5	100	99.8	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 1000

INPUT
Description: Cross Section AA
Station Elevation Data num= 173

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-95.12	824	-94.32	823.56	-91.55	822	-90.67	821.52	-87.9	820
-85.89	818.9	-84.22	818	-83.4	817.55	-80.54	816	-78.4	814.84
-76.86	814	-73.83	812.35	-73.19	812	-72.6	811.62	-70.44	810.21
-70.11	810	-70.06	809.95	-68.35	808	-67.51	807.07	-66.57	806
-64.82	804.06	-64.77	804	-64.67	803.9	-62.91	802	-61.35	800.35
-61.02	800	-60.62	799.58	-59.06	798	-57.85	796.79	-57.06	796
-55.8	794.75	-55.04	794	-54.72	793.7	-52.99	792	-51.97	791.01
-50.93	790	-49.24	788.29	-48.95	788	-48.28	787.68	-44.83	786
-42.17	784.99	-39.6	784	-36.12	782.66	-34.38	782	-31.8	781.03
-29.27	780	-28.53	779.97	-25.56	779.83	-22.98	779.73	-20.29	779.63
-17.89	779.54	-15.81	779.44	-14.86	779.4	-13.99	779.35	-13.19	779.31
-12.46	779.27	-11.22	779.21	-10.28	779.17	-9.34	779.13	-8.5	779.09
-7.75	779.04	-7.03	779	-6.32	778.97	-5.51	778.94	-4.75	778.91
0	778.91	6.01	778.91	16.98	778.93	17.39	778.96	17.9	779
18.34	779.04	18.71	779.08	18.94	779.13	19.09	779.17	19.24	779.22
19.25	779.28	19.37	779.34	19.6	779.41	19.78	779.47	20.1	779.56
20.62	779.66	21.5	779.78	22.91	779.91	24.71	780	27.23	781.54
27.96	782	31.1	783.92	31.23	784	31.48	784.15	31.5	784.17
32.2	784.55	32.55	784.72	32.92	784.89	33.66	785.27	34.01	785.42
34.27	785.52	34.5	785.6	34.79	785.69	36.41	786	36.6	786.03
36.61	786.03	38.16	786.29	38.19	786.3	38.37	786.34	38.42	786.35
38.47	786.36	41.48	787.02	42.07	787.06	43.37	787.26	50.98	787.92
51.1	787.93	51.42	787.97	51.62	788	51.74	788.04	51.77	788.05

52.18	788.23	52.54	788.41	55.17	790	68.75	791.84	69.93	792
70.53	792.01	77.99	792.17	125.99	793.16	166.35	794	219.82	795.98
220.23	796	220.37	796.02	221.98	796.24	223.04	796.36	226.11	796.66
226.99	796.76	227.54	796.86	228.25	796.99	228.96	797.09	229.51	797.18
230.19	797.29	230.37	797.31	230.5	797.33	230.81	797.36	231.32	797.4
232.15	797.49	232.39	797.53	232.61	797.56	234.28	798	243.9	798.85
245.85	799	247.34	799.12	248.63	799.23	250.7	799.37	256.71	799.83
257.86	799.89	260.67	800	268.56	800.38	268.72	800.39	269.57	800.43
270.49	800.46	271.55	800.48	271.73	800.49	277.76	800.59	277.96	800.6
278.17	800.6	279.32	800.62	282.45	800.7	284.4	800.74	287.05	800.79
287.68	800.81	288.92	800.86	289.34	800.87	289.47	800.87	290.7	800.91
291.43	800.94	292.11	800.98	299.82	802				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-95.12	.05	-44.83	.04	36.41	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.83	36.41	93.5	100	108.8	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 900

INPUT
Description: Cross Section Z
Station Elevation Data num= 211

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-108.67	824	-102.86	822.95	-100.02	822.4	-98.22	822	-91.24	820.53
-90.17	820.29	-89.2	820	-86.7	818.87	-85.32	818.22	-84.88	818
-84.78	817.95	-80.92	816	-80.82	815.95	-80.44	815.76	-77.76	814.4
-76.96	814	-75.13	813.05	-73.08	812	-72.61	811.58	-71.09	810
-70.67	809.6	-69	808	-68.55	807.56	-66.96	806	-65.76	804.85
-64.87	804	-63.24	802.47	-62.75	802	-62.09	801.37	-60.7	800
-59.08	798.45	-58.59	798	-58.05	797.48	-56.53	796	-55.22	794.75
-54.44	794	-52.34	792.02	-52.33	792	-52.29	791.96	-50.24	790
-49.39	789.28	-47.77	788	-45.72	786.36	-45.24	786	-42.7	784.03
-42.66	784	-40.23	782.15	-40.04	782	-39.78	781.8	-37.4	780
-33.92	779.84	-27.89	779.58	-24.05	779.41	-19.65	779.24	-16.17	779.13
-12.08	779.02	-9.4	778.93	-7.48	778.86	-6.14	778.79	-4.97	778.75
-3.76	778.71	-2.68	778.66	-1.75	778.62	-1.33	778.6	-.94	778.58
-.59	778.56	-.26	778.55	0	778.53	.27	778.52	.68	778.5
1.07	778.49	1.44	778.47	1.76	778.45	2.07	778.43	2.37	778.42
2.72	778.41	3.05	778.39	7.77	778.4	12.67	778.41	12.86	778.42
13.09	778.44	13.29	778.46	13.45	778.48	13.56	778.5	13.63	778.52
13.69	778.54	13.7	778.57	13.75	778.59	13.86	778.62	13.94	778.65
14.09	778.69	14.32	778.74	14.72	778.79	15.36	778.85	16.88	778.92
19.04	779.01	21.37	779.12	22.86	779.26	23.74	779.43	24.14	779.62
24.96	779.89	25.37	780	27.22	781.23	28.35	782	31.26	783.99
31.27	784	31.28	784.01	33.98	786	36.13	787.47	36.91	787.76
37.66	788	40.77	788.29	44.35	788.62	46.6	788.82	48.1	788.96
50.28	789.14	50.63	789.17	54.26	789.43	59.67	790	67.91	790.65
68.13	790.66	70.4	790.83	72.3	790.96	72.64	790.98	77.11	791.27
78.1	791.31	82.02	791.48	82.52	791.51	82.98	791.54	83.75	791.56
84.21	791.6	85.01	791.62	85.91	791.63	87.46	791.75	88.5	791.82
88.88	791.83	89.24	791.83	89.27	791.83	89.31	791.83	89.37	791.83
93.8	791.85	97.8	791.88	98.18	791.89	98.84	791.89	99.03	791.89
99.28	791.89	99.63	791.9	100.13	791.91	103.05	792	114.7	792.56
115.94	792.63	116.61	792.66	116.89	792.68	116.92	792.68	130.36	793.26
135.62	793.49	137.89	793.54	138.15	793.54	138.34	793.55	138.5	793.55
139.66	793.59	139.76	793.59	139.87	793.6	140.73	793.63	140.84	793.64

152.61	794	173.44	794.56	174.14	794.58	174.76	794.6	177.91	794.7
178.92	794.74	179.79	794.76	180.36	794.79	180.74	794.8	181.16	794.82
181.87	794.84	183.13	794.88	201.16	795.43	204.51	795.54	206.79	795.62
216.94	796	218.43	796.12	220.26	796.25	221.74	796.35	223.02	796.43
225.28	796.56	227.11	796.66	227.76	796.69	228.22	796.71	228.53	796.72
228.74	796.71	228.89	796.68	229.58	796.37	229.89	796.3	230.27	796.26
230.68	796.25	231.1	796.26	231.5	796.29	234.02	796.53	234.7	796.59
235.78	796.7	237.08	796.83	238.9	797.02	239.82	797.11	241.37	797.26
243.64	797.46	248.51	798	254.21	799.98	254.25	800	263.1	800.87
283.8	802								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-108.67	.05	-45.24	.04	33.98	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45.24	33.98	144.5	100	92.5	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 800

INPUT
Description: Cross Section Y
Station Elevation Data num= 172

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-153.71	823.13	-148.3	822	-145.45	821.35	-139.57	820	-136.49	819.29
-131.1	818	-129.19	817.55	-122.72	816	-119.21	815.07	-115.04	814
-109.22	812.31	-108.14	812	-106.84	811.6	-101.5	810	-97.65	808.76
-95.31	808	-91.7	806.88	-89.16	806	-86.33	804.85	-84.23	804
-79.96	802.02	-79.91	802	-79.69	801.89	-75.86	800	-73.79	798.55
-72.95	798	-71.58	796.73	-70.83	796	-70.78	795.94	-68.51	794
-68.12	793.67	-65.79	792	-63.8	790.74	-62.9	790	-60.42	788.16
-60.17	788	-59.99	787.87	-57.39	786	-57	785.66	-54.72	784
-51.84	782.02	-51.82	782	-50.24	780.92	-48.8	780	-48.71	780
-48.04	780	-47.72	780	-46.7	780	-46.01	780.47	-43.68	782
-43.17	782.41	-43.11	782.46	-40.4	784	-37.05	784.43	-36.96	784.43
-36.89	784.44	-36.81	784.44	-36.29	784.44	-36.22	784.44	-36.13	784.43
-36	784.43	-35.09	784.38	-35.02	784.37	-34.99	784.37	-34.31	784
-32.57	782.35	-32.14	782	-31.69	781.63	-29.81	780	-28.2	778.57
-27.52	778	-26.65	778	-11.97	778	0	778	22.03	778
22.75	778	23.96	778	24.41	778.42	26.17	780	27.54	781.4
28.14	782	30.31	783.22	31.61	784	36.05	785.62	36.91	786
46.44	786.98	47	787.03	47.58	787.08	48.95	787.2	50.29	787.31
50.8	787.34	51.17	787.37	51.45	787.38	51.65	787.39	51.91	787.39
52.98	787.42	53.15	787.43	53.32	787.44	57.95	788	76.52	789.35
84.26	790	86.27	790.01	86.71	790.01	87.12	790.01	87.43	790.01
87.76	790.01	88.04	790	101.44	790.63	101.52	790.62	102.01	790.65
109.41	791.08	112.73	791.28	121.08	791.79	124.64	792	126.91	792.12
133.63	792.45	136.74	792.62	144.89	793.05	149.88	793.33	150.41	793.35
150.65	793.37	152.71	793.48	158.89	793.8	159.28	793.82	159.88	793.85
164.85	794	167.04	794.05	173.27	794.15	174.04	794.17	174.07	794.17
174.64	794.19	179.45	794.38	181.28	794.46	183.47	794.54	185.59	794.63
215.75	795.87	218.97	796	221.18	796.23	223.03	796.37	224.49	796.42
225.76	796.42	228.67	796.29	229.24	796.28	229.68	796.28	230.09	796.3
232.43	796.67	233.49	796.76	234.69	796.88	235.22	796.97	236.67	797.15
236.95	797.19	237.13	797.22	240.95	798	250.52	798.9	251.11	798.96
252.6	799.12	252.8	799.14	260.79	800	292.5	801.14	301.59	801.48
302.26	801.5	302.42	801.51	304.72	801.58	305.32	801.6	307.74	801.69
308.16	801.7	308.55	801.71	308.92	801.72	309.26	801.73	310.39	801.76
314.31	802	314.54	802						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-153.71	.05	-36.81	.04	31.61	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-36.81	31.61	78.3	100	100.6	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 700

INPUT
Description: Cross Section X
Station Elevation Data num= 106

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-115.64	824	-113.75	824	-113.15	824	-111.77	823.53	-107.6	822
-100.75	820.36	-100.43	820.28	-99.61	820	-97.99	819.46	-93.64	818
-91.62	817.29	-88.56	816	-87.1	815.28	-84.77	814	-83.36	813.06
-81.78	812	-79.51	810.53	-78.6	810	-75.24	808.24	-74.8	808
-71.96	806.71	-70.41	806	-70.04	805.64	-68.21	804	-67.21	802.51
-66.85	802	-66.51	801.49	-65.57	800	-64.93	799.02	-64.35	798
-63.75	796.92	-63.17	796	-62.45	794.83	-61.89	794	-60.87	792.74
-60.24	792	-59.21	790.7	-58.69	790	-56.55	788.17	-56.33	788
-56.09	787.82	-53.82	786	-51.9	784.34	-51.56	784	-51.17	783.66
-49.11	782	-46.31	781.33	-41.36	780	-30.74	778.58	-30.54	778.55
-29.78	778.47	-25.57	778	-7.81	778	-3.23	778	.01	778
13.33	778	16.07	778	17.93	778	18.19	778.21	20.74	780
21.83	780.98	23.08	782	24.24	783.23	24.83	784	26.44	785.16
28.8	786	36.17	786.7	47.41	788	64.03	789.42	66.68	789.64
70.82	790	81.94	791.81	83.06	792	105.49	793.49	113.88	794
132.77	795.39	140.62	796	145.21	796.33	145.71	796.36	159.74	797.34
160.54	797.39	170.9	798	176.92	798.2	181.9	798.37	185.33	798.48
194.36	798.76	195.78	798.81	199.71	798.97	201.4	799.04	206.14	799.25
207.99	799.33	209.21	799.38	211.28	799.47	213.76	799.57	216.77	799.7
221.62	799.89	224.18	800	226.38	800.06	227.53	800.09	228.64	800.11
229.74	800.14	230.84	800.16	234.5	800.24	235.95	800.27	239.68	800.36
242.76	800.43								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-115.64	.05	-53.82	.04	28.8	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-53.82	28.8	88.9	100	96.1	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 600

INPUT
Description: Cross Section W
Station Elevation Data num= 151

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-142.4	824	-136.93	822	-136.92	822	-136.04	821.93	-135.12	821.87
-134.21	821.83	-133.38	821.8	-131.91	821.76	-131.14	821.69	-130.81	821.8
-129.72	822.14	-129.69	822.15	-129.51	822.21	-129.5	822.21	-127.94	821.5
-127.41	821.26	-125.05	820.19	-123.24	819.37	-122.26	819.3	-120.64	819.19
-119.98	819.39	-119.07	819.68	-116.39	820.53	-114.49	821.14	-112.96	821.01

-110.22	820.79	-110.1	820.78	-110.06	820.78	-104.6	820.33	-100.82	820.04
-98.84	819.88	-95.87	819.66	-95.34	819.62	-94.69	819.57	-93.05	818.77
-90.81	817.69	-88.41	816.52	-86.35	815.52	-86.3	815.46	-77.72	814
-72.99	812.83	-69.6	812	-68.08	811.58	-62.95	810	-60.65	808.74
-59.2	808	-58.59	807.67	-56.21	806	-52.78	804.1	-52.6	804
-52.53	803.92	-51.52	802	-51.43	801.81	-50.72	800	-50.29	798.69
-50.02	798	-49.8	797.23	-49.29	796	-48.97	795.15	-48.59	794
-47.68	792.32	-47.5	792	-47.3	791.74	-45.56	790	-43.56	788.09
-43.47	788	-43.37	787.93	-40.96	786	-39.3	784.6	-38.5	784
-36.8	782.8	-35.67	782	-34.95	781.55	-32.61	780	-25.79	778.33
-24.7	778	-24.62	778	-24.46	778	-24.45	778	-24.43	778
-24.18	778	-23.5	778	-23.12	778	-6.01	778	-.7	778
0	778	9.81	778	23.27	778	26.27	779.6	26.89	780
27.2	780.24	29.72	782	30.18	782.41	31.56	784	32.66	785.05
33.59	786	56.96	786.75	71.47	787.23	71.74	787.24	71.94	787.24
72.14	787.25	72.37	787.25	72.67	787.26	73.07	787.27	74.55	787.33
79.1	787.37	83.11	787.41	83.28	787.4	83.72	787.4	84.34	787.41
90.79	787.6	93.61	787.69	97.08	787.82	101.66	788	109.01	789.16
114.02	790	116.61	790.64	117.65	790.93	120.44	792	122.82	793.09
125.08	794	138.29	795.82	139.82	796	141.66	796.08	141.76	796.08
141.85	796.09	157.57	796.79	158.54	796.83	160.64	796.89	163.3	796.99
164	797.01	164.94	797.05	165.75	797.08	175.44	797.48	176.92	797.53
176.95	797.54	176.97	797.54	177.04	797.54	177.07	797.54	179.31	797.62
179.79	797.64	185.2	798	198.65	798.6	199.96	798.67	217.17	799.6
217.5	799.62	217.8	799.63	218.28	799.66	218.49	799.67	218.91	799.69
224.21	800								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-142.4	.05	-40.96	.04	33.59	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.96	33.59	103.2	100	97.3	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 500

INPUT
Description: Cross Section V
Station Elevation Data num= 151

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-188.22	834.26	-187.49	833.97	-182.16	831.84	-181.46	831.56	-180.79	831.29
-180.15	831.03	-179.53	830.79	-178.94	830.55	-178.37	830.32	-171.46	827.56
-170.97	827.37	-170.5	827.18	-170.05	827	-169.62	826.83	-169.21	826.66
-168.81	826.5	-168.43	826.35	-168.06	826.2	-163.11	824.22	-162.81	824.1
-162.52	823.99	-162.24	823.88	-161.97	823.77	-160.18	823.05	-159.94	822.96
-159.71	822.87	-158.21	822.27	-158.01	822.19	-157.81	822.11	-157.22	821.87
-157.04	821.8	-156.87	821.73	-156.7	821.66	-156.54	821.6	-156.38	821.54
-147.02	817.8	-146.98	817.78	-146.93	817.76	-146.9	817.75	-146.86	817.73
-146.82	817.72	-144.37	816.74	-138.26	816	-135.85	815.59	-125.16	814
-120.97	813.48	-114.5	812.69	-110.39	810.78	-110.36	810.76	-108.56	809.92
-107.6	809.47	-106.31	808.87	-105.03	808.27	-104.14	808.21	-102.51	808.09
-102.39	808.14	-102.26	808.18	-99.19	809.18	-97.24	809.82	-96.81	809.78
-95.99	809.71	-93.99	809.53	-89.36	809.13	-85.73	808.81	-80.91	808.39
-80.05	808.31	-79.66	808.28	-79	807.97	-77.47	807.25	-76.46	806.78
-75.99	806.56	-73.03	806	-64	804.28	-62.39	804	-61.08	803.68
-59.03	803.34	-58.34	803.21	-57.08	802.99	-56.23	802.83	-55.67	802.74
-54.06	802.49	-52.11	802.17	-51.06	802	-50.83	801.9	-46.38	800
-43.47	798.1	-43.36	798	-43.28	797.93	-41.01	796	-40.48	795.16
-39.3	794	-38.71	792.5	-38.4	792	-38.13	791.59	-37.28	790

-36.79	789.22	-36.05	788	-33.95	786.31	-33.59	786	-32.68	785.31
-30.88	784	-30.31	783.48	-28.66	782	-27.66	781.1	-26.55	780
-24.16	778.23	-23.83	778	-13.52	778	-.34	778	0	778
.309	778	2.06	778	10.73	778	24.04	778	26	779.57
26.65	780	27.42	780.45	29.95	782	32.86	783.3	34.5	784
39.51	784.5	39.74	784.52	39.95	784.54	40.76	784.58	41.08	784.6
41.7	784.63	42.04	784.65	42.42	784.68	42.88	784.72	43.39	784.72
46.79	785.01	47.15	785	53.18	784.97	59.1	784.98	81.82	785.97
82.48	786	82.98	786.08	97.23	788	99.92	789.56	100.7	790
103.77	791.72	104.32	792	108.84	793.98	108.88	794	111.65	794.47
118.79	795.67	120.77	796	121.04	796.02	151.8	798	170.26	799.02
190.35	800								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-188.22	.05	-30.88	.04	34.5	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-30.88	34.5	91.1	88.3	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 400

INPUT
Description: Cross Section U
Station Elevation Data num= 128

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-253.59	853.47	-236.12	845.14	-236.09	845.14	-236.08	845.14	-236.06	845.14
-236.03	845.14	-236.02	845.14	-230.68	846.22	-226.05	847.15	-186.03	827.18
-147	807.7	-141.05	806.9	-134.38	806	-131.49	805.52	-127.88	804.87
-127.71	804.88	-127.67	804.87	-123.56	802.8	-120.04	801.01	-118.27	800.11
-115.51	798.71	-114.03	798.66	-113.39	798.64	-109.62	800.28	-108.85	800.62
-108.78	800.62	-107.79	800.57	-96.85	800.02	-96.51	800	-95.12	799.94
-94.24	799.89	-94.07	799.88	-93.75	799.72	-93.39	799.54	-90.41	798.03
-87.81	796.72	-87.78	796.7	-87.71	796.67	-87.65	796.65	-84.08	796
-76.18	794.07	-75.93	794	-75.83	793.97	-69.14	792	-62.98	790
-57.59	788	-43.86	786.64	-36.59	786	-35.75	785.6	-31.94	784
-30.42	782.04	-30.38	782	-30.11	781.64	-29.2	780.43	-28.99	780
-28.86	779.86	-26.99	778	-6.65	778	0	778	.44	778
19.54	778	23.69	778	26.05	778	26.2	778.19	27.63	780
28.9	781.11	29.97	782	32.68	783.96	32.73	784	33.09	784.01
46.54	784.54	64.87	784.98	74.78	785.21	74.98	785.13	75.08	785.11
75.2	785.11	76.05	785.08	82.06	786	83.27	786.13	83.29	786.13
83.3	786.14	83.33	786.14	85.06	786.26	85.63	786.29	86.11	786.32
86.44	786.33	86.65	786.34	86.77	786.33	86.92	786.32	92.09	786.2
96.08	786.03	96.23	786.02	96.4	786	97.79	785.51	98.15	785.45
98.54	785.42	99.01	785.44	99.55	785.49	99.78	785.53	101.26	785.81
101.35	785.84	101.9	785.99	101.92	786	102.19	786.11	106.79	788
110.1	788.95	113.57	790	113.85	790.11	114.28	790.29	118.94	792
120.51	792.63	124.24	794	126.76	794.95	128.96	795.66	129.39	795.81
130.13	796	134.62	797.6	135.87	798	142.69	798.56	143.12	798.6
143.44	798.62	146.82	798.84	158.39	799.67	158.54	799.68	159.21	799.74
159.32	799.75	159.4	799.75	163.23	800				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-253.59	.05	-31.94	.04	32.73	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-31.94	32.73	108.1	112.1	.1	.3

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 300

INPUT
Description: Cross Section T
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-322.32	854.17	-304.63	845.33	-303.12	844.58	-302.2	844.76	-293.12	846.58
-279.8	839.92	-261.54	830.79	-251.38	825.72	-249.1	824.58	-215.69	807.88
-212.82	807.39	-205.62	806.2	-204.45	806	-203.71	805.87	-192.2	804
-189.64	803.78	-173.07	802	-155.49	800.06	-155.07	800.03	-154.74	800.01
-154.65	800	-145.04	798.4	-141.14	798	-139.06	797.73	-136.48	796.66
-134.55	795.85	-133.67	795.49	-133.5	795.42	-132.36	794.95	-126.53	792.48
-126.19	792.47	-124.19	792.46	-117.81	795.15	-115.85	796.01	-115.56	796.01
-114.68	796	-108.02	795.93	-104.99	795.9	-104.95	795.9	-101.33	795.82
-101.13	795.81	-100.32	795.8	-99.34	795.31	-93.2	792.25	-91.46	792
-80.59	790.77	-75.43	790	-69.51	788.61	-66.82	788	-56.43	787.37
-33.12	786	-32.58	785.25	-31.1	784	-30.61	782.89	-30.26	782
-29.9	781.08	-29.4	780	-27.58	778.17	-27.42	778	-23.61	778
-1.42	778	-.01	778	6.65	778	14.36	778	25.23	778
26.01	779.13	26.7	780	27.73	781.44	28.2	782	29.39	783.67
29.67	784	53.86	785.72	57.17	786	60.36	787.25	62.3	788
62.67	788.22	65.12	790	67.18	791.43	67.89	792	68.27	792.27
70.79	794	71.36	794.32	73.89	796	74.83	796.62	76.79	798

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-322.32	.05	-31.1	.04	29.67	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-31.1	29.67	95.9	100	100.2	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-322.32	-115.85	796.01	T

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 200

INPUT
Description: Cross Section S
Station Elevation Data num= 140

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-380.64	852.13	-369.56	846.58	-368.83	846.22	-364.72	844.16	-357.54	845.59
-354.7	846.15	-339.33	838.47	-325.64	831.63	-316.74	827.18	-310.48	824.06
-281.27	809.46	-279.95	808.8	-279.07	808.36	-278.43	808.04	-274.59	806.12
-273.56	806.02	-273.32	806	-272.83	805.9	-269.28	805.15	-268.15	804.9
-263.33	804	-260.94	803.76	-237.6	802	-235.91	801.89	-234.57	801.82
-230.88	801.58	-229.27	801.5	-228.29	801.44	-227.05	801.36	-225.31	801.25
-222.53	801.08	-206.05	800	-205.55	799.96	-204.56	799.9	-204.19	799.88
-203.37	799.82	-198.55	799.49	-195.28	799.27	-195.27	799.27	-183.94	793.61
-180.89	792.08	-179.26	792.08	-177.61	792.08	-176.81	792.08	-176.28	792.08
-170.89	792.08	-168.44	793.31	-161.42	796.82	-161.1	796.82	-160.42	796.81
-156.6	796.73	-148.42	796.57	-147.8	796.56	-147.42	796.55	-145.03	795.36
-143.28	794.48	-142.43	794.42	-142.41	794.42	-142.4	794.41	-142.37	794.41
-142.13	794.38	-141.99	794.37	-141.85	794.35	-141.35	794.3	-140.86	794.25
-124.85	792.27	-122.04	791.92	-121.19	792	-120.92	792	-119.33	792

-119.15	792	-117.59	792	-116.09	792	-115.83	792	-114.36	792
-112.86	792	-112.03	792	-111.34	791.94	-111.26	791.93	-109.91	791.78
-109.67	791.75	-109.53	791.73	-109.5	791.73	-109.19	791.68	-109.11	791.67
-107.96	791.5	-107.47	791.42	-106.55	791.26	-105.91	791.14	-105.13	790.98
-104.29	790.81	-103.73	790.7	-103.48	790.64	-101.23	789.68	-101.02	789.6
-101.01	789.6	-100.98	789.59	-100.96	789.58	-100.95	789.58	-100.94	789.58
-94.1	788.46	-92.77	788.23	-91.34	788	-67.56	787.1	-54.52	786.63
-37.91	786	-37.43	785.38	-36.6	784	-35.33	782.25	-35.2	782
-35.11	781.84	-34.19	780	-33.11	779.17	-31.84	778	-6.67	778
-4.33	778	0	778	13.17	778	22.2	778	22.84	778.56
24.64	780	26.17	781.19	27.06	782	28.83	783.25	29.66	784
31.3	784.72	34.67	786	37.9	787.83	38.21	788	38.31	788.08
40.81	790	41.35	790.48	43.24	792	44.38	792.8	46.09	794
48.41	795.67	48.93	796	49.11	796.13	51.95	798	59.17	798.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-380.64	.05	-37.91	.04	34.67	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-37.91	34.67	97.7	100	101.8	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-380.64	-161.42	796.82	T

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 100

INPUT
Description: Cross Section R
Station Elevation Data num= 172

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-435.3	853.07	-434.69	852.77	-427.79	849.33	-426.9	848.89	-419.32	845.11
-419.1	845.01	-416.6	843.76	-412.12	844.64	-406.52	845.75	-405.36	845.17
-398.56	841.78	-392.78	838.91	-387.83	836.45	-383.53	834.31	-362.83	824.01
-358.35	821.78	-354.76	820	-352.67	818.96	-351.79	818.52	-348.99	817.12
-346.67	815.97	-344.73	815.01	-339.1	812.21	-337.76	811.54	-336.62	810.97
-335.64	810.49	-322.47	803.94	-322.45	803.92	-317.19	803.32	-302.24	802
-297.51	801.65	-279.74	800	-266.19	798.67	-259.3	798	-257.01	797.67
-255.21	797.45	-254.48	797.36	-254.31	797.34	-254.03	797.3	-245.51	796.34
-243.92	796.17	-243.61	796.14	-241.69	796.94	-240.06	797.63	-238.98	797.16
-236.86	796.23	-235.74	795.73	-235.17	795.47	-233.66	795.47	-232.92	795.46
-230.96	796.32	-228.16	797.55	-228	797.55	-227.04	797.53	-226.27	797.51
-213.89	797.22	-213.84	797.22	-213.18	797.2	-212.83	797.2	-212.8	797.19
-208	794.94	-205.36	793.69	-205.04	793.67	-205.03	793.68	-205.02	793.68
-205.01	793.68	-204.99	793.68	-204.67	793.66	-204.54	793.66	-203.2	793.03
-201.44	792.2	-201.01	792	-195.36	789.35	-192.95	788.22	-179.67	782
-162.72	782	-153.55	782	-146.76	785.39	-133.49	792	-133.44	792
-133.32	792	-133.18	792	-133.08	792	-133.01	792	-132.95	792
-132.91	792	-132.87	792	-132.84	792	-132.8	792	-132.76	792
-132.71	792	-132.56	792	-132.47	792	-132.37	792	-131.75	792
-131.45	792	-131.14	792	-130.56	792	-130.54	792	-130.46	792
-129.94	792	-129.88	792	-129.4	792	-129.36	792	-128.9	792
-128.82	792	-128.77	792	-128.63	792	-128.62	792	-128.61	792
-128.48	792	-128.31	791.92	-126.31	790.92	-126.3	790.92	-126.27	790.89
-126.27	790.88	-126.26	790.88	-101.92	790.33	-95.39	790.16	-88.98	790
-88.49	789.93	-86.66	789.67	-80.07	788.84	-74.1	788	-61.45	786.41
-57.88	786	-48.54	785.24	-33.31	784	-32.55	783.41	-30.67	782
-28.99	780.88	-27.82	780	-25.82	778.84	-24.51	778	-11.02	778
-10.77	778	-10.46	778	-6.31	778	-5.59	778	-2.06	778

0	778	17.55	778	18.79	778	19.98	778	20.09	778
20.18	778	22.28	779.99	22.28	780	22.29	780	22.48	780.14
22.75	780.32	22.91	780.44	23.1	780.6	24.5	782	25.76	783.21
26.59	784	27.89	784.71	30.47	786	33.02	786.59	36.19	787.36
38.52	788	41.81	789.78	42.19	790	43.09	790.59	45.35	792
46.09	792.54	48.16	794	50.5	795.72	50.87	796	51.18	796.24
53.66	798	61.32	798.32						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-435.3	.05	-33.31	.04	26.59	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-33.31	26.59	78.5	100	93.6	.1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-435.3	-133.49	792	T

CROSS SECTION

RIVER: Buckeye Creek
REACH: Buckeye Creek RS: 0

INPUT
Description: Cross Section Q
Station Elevation Data num= 245

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-480.28	856.77	-480.17	856.72	-478.83	856.05	-477.41	855.34	-475.9	854.6
-474.31	853.8	-472.61	852.96	-470.79	852.06	-462.09	847.73	-461.03	847.21
-459.92	846.66	-458.76	846.08	-457.54	845.48	-456.26	844.84	-454.91	844.17
-453.49	843.46	-453.26	843.35	-447.31	844.53	-443.19	845.34	-439.54	843.53
-431.96	839.75	-426.2	836.89	-417.88	832.75	-411.45	829.55	-365.65	806.78
-364.74	806.32	-364.15	806.03	-363.74	805.82	-363.43	805.67	-363.2	805.56
-361.44	804.68	-361.42	804.67	-359.1	804.49	-353.11	804	-346.32	803.25
-331.35	802	-320.82	800.49	-320.73	800.48	-320.67	800.47	-320.6	800.46
-320.53	800.45	-320.47	800.43	-318.22	800	-315.66	799.74	-311.63	799.32
-311.08	799.07	-309.13	798.17	-309.1	798.15	-304.25	795.96	-303.17	795.96
-302.02	795.95	-297.32	798.04	-297.09	798.14	-297.06	798.14	-295.94	798.11
-287.54	797.93	-285.28	797.89	-281.96	797.81	-281.04	797.79	-280.77	797.78
-280.08	797.49	-279.26	797.14	-276.28	795.9	-272.76	794.44	-272.62	794.43
-272.6	794.42	-272.54	794.42	-272.53	794.42	-271.39	794.39	-270.24	794.35
-270.14	794.35	-268.34	794.29	-267.62	794.27	-267.42	794.26	-266.35	794.23
-266.12	794.22	-266.04	794.21	-264.53	794.24	-264.37	794.22	-264.17	794.21
-261.68	794.26	-261.64	794.26	-261.4	794.24	-259.16	794.25	-259.07	794.24
-258.74	794.21	-256.81	794.22	-256.44	794.18	-256.08	794.12	-255.94	793.93
-255.91	793.9	-255.85	793.86	-255.81	793.85	-255.63	793.8	-255.22	793.7
-254.66	793.6	-253.94	793.49	-253.87	793.49	-253	793.37	-251.6	793.22
-248.19	792.85	-247.83	792.83	-246.76	792.78	-246.35	792.6	-244.93	792
-244.77	791.93	-244.69	791.9	-243.51	791.4	-242.24	790.86	-232.3	786.67
-232.19	786.62	-221.26	782	-216.28	782	-199.94	782	-198.5	782
-198.33	782	-197.02	782.65	-182.37	789.96	-178.27	792	-178.25	792
-178.24	792	-178.23	792	-178.21	792	-177.17	792	-176.08	792
-175.89	792	-175.82	792	-175.51	792	-175.35	792	-175.06	792
-174.91	792	-174.68	792	-174.54	792	-173.91	792	-173.52	792
-173.45	792	-173.44	792	-173.36	792	-173.35	792	-173.33	792
-173.32	792	-173.31	792	-173.3	792	-173.12	791.06	-168.31	790.95
-164.44	790.87	-158.47	790.75	-155.98	790.69	-152.83	790.62	-143.73	790.4
-142.55	790.38	-127.18	790	-104.42	788.22	-101.74	788	-101.18	787.83
-100.02	787.56	-90.7	786	-86.46	785.72	-83.94	785.61	-82.57	785.52
-82.02	785.5	-81.07	785.43	-80.47	785.41	-74.31	785.25	-73.45	785.23
-72.56	785.2	-69.72	785.09	-67.42	785.01	-64.4	784.88	-60.54	784.72
-55.59	784.49	-49.11	784.17	-45.76	784	-44.77	783.82	-44.66	783.8

-44.56	783.78	-44.44	783.76	-43.86	783.63	-42.43	783.31	-41.55	783.11
-39.82	782.69	-37.02	782	-36.6	781.71	-35.94	781.26	-35.37	780.84
-35.14	780.64	-34.21	780	-33.59	779.7	-33.41	779.61	-33.14	779.46
-32.61	779.16	-31.78	778.69	-30.76	778.07	-30.64	778	-30.54	778
-30.51	778	-29.01	778	-28.96	778	-27.58	778	-27.49	778
-26.23	778	-18.44	778	-.22	778	0	778	2.92	778
3.9	778	12.67	778	12.87	778	13.06	778	13.25	778
17.51	778	19	778	19.12	778	19.37	778	20.01	778
26.95	778	30.3	779.37	31.79	780	34.08	781.47	35.09	782
37.1	783.88	37.26	784	38.98	785.53	39.66	786	40.55	786
46.1	786	49.38	785.96	51.87	785.93	52.3	785.92	52.73	785.93
57.46	786	61.35	786.96	65.51	788	67.87	789.28	69.26	790
70.59	790.75	72.85	792	74.06	792.95	75.31	794	76.59	794.99
77.82	796	80.08	797.76	80.38	798	80.7	798.05	91.74	800

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-480.28	.05	-45.76	.04	37.26	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45.76	37.26	0	0	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-480.28	-178.27	792	T

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1500

INPUT
Description: Cross Section P
Station Elevation Data num= 174

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-109.57	824.86	-103.4	824.54	-101.2	824.43	-97.62	824.32	-92.11	824
-87.23	822.16	-86.92	822.04	-86.81	822	-86.76	821.97	-83.9	820
-83.43	819.66	-81.21	818	-80.94	817.81	-79.39	816	-78.61	815.11
-77.4	814	-76.28	812.92	-75.35	812	-74.13	810.79	-73.28	810
-72.36	809.06	-71.33	808	-69.63	806.34	-69.27	806	-69.09	805.81
-67.36	804	-66.04	802.63	-65.38	802	-63.79	800.37	-63.45	800
-63.16	799.68	-61.61	798	-59.65	796.03	-59.62	796	-59.58	795.97
-59.41	795.85	-56.62	794	-56.03	793.67	-53.26	792	-51.53	791.08
-49.77	790	-48.48	789.14	-46.61	788	-45	786.91	-43.64	786
-40.77	784.31	-40.21	784	-39.68	783.71	-37.09	782	-35.85	781.27
-34.11	780	-33.96	779.93	-30.74	776.426	-15.53	776.426	-3.66	776.426
-.68	776.426	0	776.426	.43	776.426	9.24	776.426	9.46	776.426
9.85	776.426	13.26	776.426	14.87	776.426	14.96	776.426	15.29	776.426
18.14	776.426	18.69	776.426	20.41	776.426	27.01	776.426	35.23	779.58
36.5	780	37.11	780.5	39.14	782	40.61	783.3	41.61	784
44.91	784.41	45.68	784.48	46.55	784.56	55.23	785.15	59.27	785.03
62.66	784.97	74.99	785.79	78.13	786	88.83	786.64	92.41	786.86
94.84	787.01	111.68	788	120.37	788.01	124.23	788.02	130.32	788.01
133.36	788.01	135.02	788	138.31	788	147.7	787.99	152.09	787.99
152.48	787.99	152.78	787.99	153.27	787.99	157.27	787.99	165.96	787.99
170.03	788	173.29	788	187.21	789.34	194.53	790	203.11	790.98
211.69	792	252.18	792.86	257.35	792.98	281.86	793.51	289.32	793.67
293.06	793.76	297.92	793.88	299.4	793.91	302.94	794	315.73	794.49
324.39	794.82	329.72	795.02	333.14	795.14	335.56	795.22	341.17	795.4
341.93	795.42	342.45	795.43	342.75	795.43	342.96	795.43	343.24	795.42
343.73	795.43	344.48	795.46	355.42	795.87	355.68	795.88	358.73	796
381.7	797.28	382.2	797.31	396.13	798	397.47	798.05	400.18	798.14
402.22	798.2	404.18	798.26	420.47	798.67	420.48	798.67	420.49	798.67

421.54	798.7	424.06	798.81	432.46	799.15	444.55	799.72	450.39	800
462.5	800.8	474.76	802	477.7	802.26	488.11	803.14	495.56	803.78
498.38	804	502.72	804.62	512.34	806	516.21	806.56	526.22	808
529.48	808.51	529.92	808.6	535.21	809.6	536.76	809.89	537.25	810
538.58	810.19	538.81	810.22	553.15	812	566.25	813.67	568.97	814
570.65	814.22	578.39	815.14	584.68	816	591.69	817.07	592.48	817.2
597.11	818	603.46	819.29	606.68	820	614.37	822		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-109.57	.05	-40.77	.04	44.91	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.77	44.91	116.8	100	100.5	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1400

INPUT
Description: Cross Section O
Station Elevation Data num= 186

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-98.26	826	-93.64	825.43	-86.17	824.53	-84.11	824.26	-82.91	824.1
-82.2	824	-81.79	823.89	-81.06	823.67	-80	823.32	-78.91	822.9
-76.95	822	-73.47	820.46	-73.41	820.43	-72.56	820	-72.1	819.78
-68.64	818	-67.23	816.86	-66.64	816	-66.37	815.62	-65.21	814
-64.91	813.59	-63.76	812	-63.52	811.66	-62.32	810	-61.81	809.33
-60.91	808	-60.56	807.5	-59.5	806	-59.09	805.4	-58.16	804
-57.47	803	-56.75	802	-55.73	800.66	-55.3	800	-54.13	798.34
-53.88	798	-52.62	796.22	-52.46	796	-52.3	795.8	-51.05	794
-50.87	793.76	-49.83	792	-48.9	790.59	-48.57	790	-47.77	788.95
-47.16	788	-46.24	786.58	-45.85	786	-44.36	784.93	-43.1	784
-39.66	782.64	-38.07	782	-33.85	780.38	-32.85	780	-28.53	778.58
-28.22	778.67	-27.78	778.82	-27.77	778.88	-27.46	779.37	-27.16	779.59
-26.75	779.73	-26.42	779.63	-26.06	779.67	-25.88	779.61	-25.62	779.5
-25.17	779.28	-24.78	779.18	-23.77	778.53	-23.56	778.43	-22.99	776.426
-17.01	776.426	-15.62	776.426	-10.95	776.426	-1.13	776.426	.36	776.426
9.77	776.426	20.55	776.426	21.86	779.74	22.05	780	22.33	780.24
25.22	782	29.8	783.11	32.65	784	54.46	785.34	65.3	786
67.69	786.1	79.78	786.57	81.51	786.62	82.84	786.64	84	786.65
85.22	786.64	88.36	786.58	90.29	786.57	92.34	786.57	94.29	786.62
94.57	786.61	94.74	786.61	94.82	786.6	94.85	786.58	102.22	786.66
112.18	786.79	120.04	787.06	138.1	787.68	147.5	788	154.36	788.99
161.34	790	167.51	791.43	170.1	792	187.69	792.26	237.18	792.99
256.33	793.26	269.47	793.45	286.87	793.6	296.89	793.68	296.93	793.67
297.41	793.65	297.99	793.63	299.3	793.61	299.47	793.6	313.38	793.99
313.75	794	316.36	794.06	318.01	794.09	318.85	794.09	319.82	794.05
320.53	794.03	321.6	794.02	323.15	794.04	323.38	794.04	323.54	794.05
323.63	794.05	324.16	794.07	324.68	794.08	324.89	794.09	325.13	794.1
325.76	794.12	326.16	794.13	331.57	794.3	332.49	794.33	334.62	794.39
335.79	794.43	337.04	794.48	340.86	794.61	344.95	794.76	353.94	795.07
362.49	795.37	365.57	795.47	376.38	795.83	381.17	796	384.21	796.15
387.69	796.31	388.37	796.34	389.72	796.41	413.47	797.54	422.02	798
434.53	798.97	447.41	800	451.72	800.64	461.68	802	465.81	802.38
482.59	804	485.47	804.65	490.74	806	498.68	807.3	503.03	808
507.12	808.79	513.12	810	517.96	811.11	521.95	812	530.88	813.97
531.04	814	531.39	814.08	539.98	816	543.36	816.78	548.89	818
552.76	818.87	554.08	819.16	555.76	819.5	557.17	819.79	558.29	820
563.74	821.17	565.33	821.51	566.21	821.69	567.54	822	568.21	822.15
575.94	824								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-98.26	.05	-43.1	.04	32.65	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.1	32.65	104.4	100	100.5	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1300

INPUT
Description: Cross Section N
Station Elevation Data num= 188

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-92.26	832	-89.72	830.89	-87.74	830	-86.44	829.36	-83.69	828
-80.75	826.55	-79.62	826	-75.68	824.12	-75.45	824	-75.16	823.86
-71.35	822	-69.97	821.07	-68.38	820	-67.43	818.84	-66.74	818
-65.78	816.82	-65.11	816	-64.12	814.79	-63.48	814	-63.11	813.55
-61.84	812	-61.2	811.21	-60.22	810	-59.68	809.34	-58.59	808
-58.03	807.31	-56.96	806	-55.79	804.58	-55.32	804	-54.81	803.38
-53.7	802	-52.63	800.7	-52.08	800	-51.65	799.46	-50.46	798
-50	797.43	-48.83	796	-48.35	795.4	-47.23	794	-46.07	792.6
-45.57	792	-45.18	791.53	-44	790	-43.33	789.21	-42.35	788
-40.87	786.79	-40.04	786	-39.04	785.19	-37.59	784	-36.23	782.9
-35.14	782	-32.82	780.34	-32.39	780	-31.3	779.39	-30.08	778.71
-28.91	776.426	-21.36	776.426	-15.38	776.426	-1.59	776.426	0	776.426
3.95	776.426	20.74	776.426	25.84	776.426	28.32	779.87	28.51	780
29.31	780.57	31.14	782	33.54	783.75	33.88	784	34.23	784.15
34.68	784.5	35.24	784.92	36.74	786	38.24	786	39.7	786
42.35	786	43.65	786	43.68	785.92	56.41	785.96	61.98	785.94
64.83	785.93	70.91	785.95	86.14	786	113.98	787.08	137.88	788
147.86	789.76	149.29	790	151.74	790.52	158.62	792	171.67	792
182	792.01	182.16	792.01	194.88	792	203.97	792	212.9	792
214.27	792	217.6	791.7	222.99	791.24	226.26	791.03	227	790.99
227.88	790.96	228.9	790.92	232.45	790.83	234.57	790.8	238.28	790.74
238.62	790.74	238.88	790.75	242.27	790.92	242.55	790.94	242.7	790.96
243.16	791.03	245.96	791.39	246.21	791.42	246.49	791.44	246.87	791.46
248.86	791.57	252.34	791.79	253.53	791.86	255.02	791.93	256.57	792
259.16	792.1	282.03	793	294.08	793.47	294.94	793.5	295.73	793.53
299.95	793.67	300.64	793.69	300.75	793.7	302.22	793.76	302.34	793.76
302.87	793.79	303.72	793.83	307.32	794	335.26	795	338.52	795.09
350.2	795.41	350.58	795.42	350.91	795.43	352.63	795.45	356.17	795.49
357.47	795.55	357.95	795.56	367.22	796	371.94	796.28	374.82	796.45
398.39	798	409.55	799.71	411.34	800	416.07	800.72	420.61	801.41
423.13	801.79	424.54	802	426.88	802.38	436.95	804	446.25	804.83
446.57	804.86	446.81	804.87	447.02	804.88	447.21	804.89	447.4	804.89
447.58	804.88	447.77	804.87	447.96	804.84	449.79	804.39	449.98	804.36
450.16	804.36	453.67	805.52	453.77	805.54	453.92	805.59	455.1	806
455.98	806.24	462.85	808	468.33	809.24	472.05	810	476.92	811.1
480.59	812	484.49	812.96	489.04	814	492.21	815.06	495.34	816
498.73	817.26	500.66	818	502.52	818.67	506.1	820	511.58	821.94
511.76	822	511.98	822.06	519.56	824				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-92.26	.05	-40.04	.04	36.74	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.04	36.74	99.6	100	102.2	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1200

INPUT
Description: Cross Section M
Station Elevation Data num= 171

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100.65	828	-99.42	827.95	-98.03	827.85	-97.99	827.84	-96.56	827.7
-96.24	827.68	-95.15	827.62	-90.64	827.2	-89.54	827.11	-87.5	826.98
-84.21	826.75	-83.31	826.68	-82.44	826.61	-81.49	826.52	-76.37	826
-75.2	825.48	-73.14	824.66	-72.06	824	-70.34	823.07	-68.64	822
-66.84	820.97	-65.24	820	-63.08	818.7	-61.81	818	-61.21	817.09
-59.94	816	-58.92	814.26	-58.76	814	-57.62	812.02	-57.62	812
-57.6	811.99	-56.6	810	-56.21	809.39	-55.62	808	-55.01	806.91
-54.55	806	-53.85	804.59	-53.51	804	-52.5	802.27	-52.37	802
-52.3	801.85	-51.41	800	-51	799.16	-50.4	798	-49.66	796.54
-49.39	796	-48.55	794.31	-48.39	794	-47.51	792.24	-47.39	792
-47.15	791.52	-46.4	790	-44.92	788.51	-44.39	788	-43.89	787.64
-41.62	786	-39.53	784.47	-38.87	784	-37.49	782.98	-36.12	782
-35.74	781.69	-33.14	780	-31.41	778.7	-30.35	776.426	-15.27	776.426
-.46	776.426	-.01	776.426	6.55	776.426	20.57	776.426	29.87	776.426
31.45	776.426	31.74	776.426	32.29	776.426	32.38	776.426	32.47	776.426
32.5	776.426	33.63	778.78	34.58	779.5	34.99	780	36.76	781.87
36.86	782	36.88	782.01	37.13	782.27	39.16	784	58.45	784.91
81.24	785.85	84.63	785.98	85.19	786	85.85	786.01	91.75	786.09
92.58	786.1	93.24	786.11	93.82	786.11	97.68	786.08	98.15	786.07
98.43	786.06	98.55	786.05	98.6	786.02	98.61	786	100.24	786
101.26	786	102.83	786	104.8	786	107.07	786	110.49	786.28
112.73	786.47	114.66	786.64	116.31	786.8	128.5	788	137.22	789.43
140.78	790	143.75	790.63	150.07	792	163.86	792	164.99	792
168.92	792	198.38	792.01	199.36	792.01	208.03	792.01	212.38	792.01
212.99	792.01	213.22	792.01	213.78	792.01	214.02	792.01	215	792.01
215.49	792.01	215.74	792.01	220.92	792.01	221.27	792.01	221.55	792.01
260.87	793.05	274.52	793.41	288.32	793.69	297.36	793.87	297.4	793.87
297.48	793.87	297.6	793.87	301.33	794	313.29	794.73	333.05	795.93
334.09	796	334.46	796.04	351.82	798	355.58	798.59	358.69	799.05
363.45	799.76	365.37	800	373.92	801.32	377.89	802	393.9	803.5
399.04	804	400.17	804.61	402.56	806	410.01	807.8	410.8	808
411.89	808.27	418.74	810	423.4	811.3	425.99	812	427.71	812.59
431.89	814	436.27	815.54	437.67	816	442.54	817.82	442.97	818
445.42	818.94	448.31	820	450.95	820.88	451.57	821.13	453.7	822
461.64	824								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100.65	.05	-38.87	.04	39.16	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-38.87	39.16	100.5	100	108.7	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1100

INPUT
Description: Cross Section L
Station Elevation Data num= 193

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-96.72	820.23	-92.59	820.01	-92.43	820	-90.23	819.69	-78.04	818
-76.58	816.77	-75.67	816	-73.48	814.21	-73.23	814	-73.06	813.86
-70.84	812	-70.47	811.7	-68.54	810	-66.92	808.69	-66.11	808
-64.28	806.49	-63.67	806	-61.48	804.08	-61.39	804	-61.35	803.97
-59.14	802	-58.05	801.05	-56.83	800	-55.99	799.28	-54.54	798
-53	796.64	-52.33	796	-51.34	795.17	-49.88	794	-48.3	792.58
-47.57	792	-45.49	790.18	-45.27	790	-45	789.78	-42.9	788
-40.79	786.27	-40.47	786	-40.06	785.66	-38.06	784	-37.31	783.39
-35.64	782	-33.93	780.58	-33.2	780	-31.67	779.43	-28.6	776.426
-5.84	776.426	-1.13	776.426	.01	776.426	14.65	776.426	26.98	776.426
28.22	778.76	30.1	780	32.69	781.61	33.26	782	34.67	782.23
35.01	782.25	35.25	782.25	35.36	782.24	35.42	782.23	35.5	782.22
35.64	782.22	36.08	782.22	36.29	782.22	36.42	782.22	36.44	782.2
37.87	782.24	40.07	782.31	77.44	784	80.58	785.03	83.76	786
86.94	787.32	88.79	788	103.22	789.23	109.37	789.74	115.26	790
117.49	790.15	124.87	790.55	125.12	790.56	125.28	790.57	125.55	790.57
125.81	790.58	125.92	790.58	126.03	790.58	126.14	790.58	126.25	790.59
126.41	790.59	132.86	790.63	144	790.7	145.07	790.72	145.94	790.73
150.16	790.85	151.92	790.9	153.58	790.94	155.06	790.97	156.43	790.98
157.75	790.99	159.06	791	161.67	791	164.4	791	165.27	790.99
165.76	790.99	166.19	790.98	166.85	790.97	171.12	790.9	171.96	790.87
174.64	790.78	178.14	790.67	178.81	790.66	179.19	790.67	179.71	790.66
180.12	790.66	180.68	790.66	181	790.65	181.45	790.65	182.12	790.63
188.32	790.47	188.64	790.47	199.3	790.16	199.53	790.15	199.95	790.12
200.16	790.11	200.34	790.11	200.45	790.11	200.58	790.1	200.77	790.1
201.08	790.1	201.55	790.09	211.24	790.01	214.5	790	214.51	790
214.52	790	214.53	790	214.54	790	214.55	790	214.56	790
214.57	790	214.58	790	214.59	790	214.62	790.01	218	790.08
219.43	790.19	222.65	790.44	229.71	790.95	241.9	792	251.27	793.09
259.22	794	262.44	794.31	271.58	795.03	280.49	795.78	283.96	796
297.88	797.15	306.41	798	313.63	799.69	314.99	800	318.8	800.95
319.1	801.04	319.35	801.11	322.96	802	340.1	803.44	346.75	804
348.52	805.02	350.73	806	359.08	807.78	360.15	808	362.02	808.4
365.21	809.07	369.08	809.88	369.69	810	377.16	811.55	378.83	811.9
379.22	811.98	379.31	812	379.89	812.15	387.68	814	392.22	814.97
394.35	815.39	394.75	815.46	395.01	815.5	395.23	815.53	396.01	815.6
396.31	815.63	398.87	816	406.81	817.8	407.55	818	411.52	818.96
416.11	820	417.43	820.41	421.86	822	425.35	823.48	426.65	824
429.21	825.16	429.95	825.45	431.41	826				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-96.72	.05	-35.64	.04	35.25	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-35.64	35.25	95.2	100	103.1	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 1000

INPUT
Description: Cross Section K
Station Elevation Data num= 182

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100.97	815	-100.34	814.96	-99.6	814.9	-98.3	814.78	-95.24	814.32
-93.24	814	-92.09	813.31	-91.26	812.73	-89.46	812	-86.13	810.03
-86.07	810	-86.01	809.96	-82.6	808	-82	807.62	-79.16	806
-78.15	805.39	-75.71	804	-74.43	803.22	-72.25	802	-70.22	800.95
-68.51	800	-66.81	799.06	-64.85	798	-61.31	796.08	-61.18	796

-61.09	795.95	-57.6	794	-55.27	792.73	-53.89	792	-52.13	791.26
-49.1	790	-47.73	789.42	-44.31	788	-40.31	786.32	-39.52	786
-37.22	784.43	-36.64	784	-36.14	783.53	-34.48	782	-32.94	780.59
-32.32	780	-31.56	779.34	-30.08	776.426	-7.71	776.426	-1.61	776.426
0	776.426	11.44	776.426	27.59	776.426	28.87	779.1	29.84	780
32.02	781.89	32.19	782	32.59	782.23	35.24	784	35.59	784
35.64	784	37.57	784	37.7	784	37.81	784	37.82	784
41.65	784	42.98	784	49.59	784.01	55.97	784.03	57.5	784.02
63.06	784.01	63.48	784.01	64.01	784.01	67.66	784	69.86	784
73.97	784	78.14	784	82.47	784	86.44	784	88.85	785.26
90.28	786	92.06	787	94.06	788	96.35	789.18	97.95	790
107.81	791.8	109.14	792	110.34	792	110.55	792	110.78	792
114.25	792	118.66	792	123.18	792	125.95	792	141.17	792
156.2	792	157.32	792	163.48	792	164.59	792	166.32	792
166.86	792	168.27	792	169.84	791.92	171.15	791.84	172.16	791.76
175.7	791.36	176.74	791.24	176.91	791.23	177.19	791.21	177.6	791.2
178.15	791.18	178.88	791.16	179.77	791.14	180.76	791.12	181.76	791.11
182.69	791.1	183.52	791.09	184.29	791.09	185.07	791.09	185.93	791.1
186.92	791.11	187.97	791.12	189.01	791.14	189.94	791.16	190.69	791.18
191.83	791.22	192.37	791.24	192.98	791.25	193.66	791.25	195.93	791.27
200.47	791.3	201.4	791.31	202.23	791.33	202.94	791.34	203.54	791.37
204.07	791.39	211.9	791.83	214.91	792	227.97	793.16	237.22	794
246.06	794.59	269.1	796	285.83	797.45	286.25	797.46	294.74	797.99
295.09	797.99	295.58	797.99	295.9	797.99	296.05	797.99	298.64	798
304.09	799.44	306.18	800	311.29	801.26	314.62	802	317.77	802.99
321.04	804	324.72	805.24	327.1	806	329.63	806.85	332.75	808
336.16	809.19	338.72	810	342.75	811.3	345.13	812	349.38	813.35
351.24	814	353.82	815.33	355.1	816	356.58	816.79	358.88	818
360.97	819.11	362.64	820	365.56	821.55	366.44	822	367.41	822.55
370.29	824	372.61	825.26	374.21	826	376.25	827.03	379.03	828
382.93	828.84	387.55	830	390.68	830.79	394.99	831.71	396.47	832
404.41	833.27	409.46	834						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100.97	.05	-36.64	.04	35.59	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-36.64	35.59	99.2	100	103	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 900

INPUT
Description: Cross Section J
Station Elevation Data num= 157

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-119.53	804.67	-111.12	804.33	-109.05	804.18	-108.99	804.19	-108.13	804.19
-105.35	804	-103.09	803.76	-101.13	803.38	-95.93	802	-93.63	801.46
-92.94	801.25	-91.39	800.69	-89.82	800	-86.28	798.62	-84.67	798
-79.52	796.82	-77.22	796	-74.07	795.13	-73.94	795.06	-73.76	794.97
-73.55	794.88	-72.45	794.43	-72.18	794.33	-72.06	794.28	-71.36	794
-66.38	792.64	-65.05	792.28	-64.88	792.24	-64.75	792.2	-64.65	792.18
-64.12	792.05	-63.94	792	-63.35	791.85	-57.76	790.49	-56.24	790
-53.05	789.1	-48.97	788	-43.9	786.58	-41.64	786	-40.04	785.34
-36.88	784	-35.52	782.98	-34.01	782	-32.01	780.59	-31.23	780
-30.46	779.41	-28.6	776.426	-11.65	776.426	0	776.426	.62	776.426
12.24	776.426	22.1	776.426	29.76	776.426	31.98	779.35	33.05	780
36.15	781.5	37.18	782	39.45	782.34	50.82	784	58.68	784.02
59	784.02	65.82	784	67.48	784	79.1	784	79.9	784

89.42	784	92.29	784	93.94	784.71	96.76	786	100.82	787.75
101.42	788	104.01	788.98	106.91	790	107.07	790.01	107.82	790.06
108.41	790.07	110.84	790.04	120.67	790.14	121.17	790.21	121.27	790.23
128.49	790.1	128.51	790.1	128.55	790.1	128.6	790.1	134.42	790.09
134.68	790.1	144.95	790.35	147.44	790.37	156.37	790.23	158.16	790.26
168.81	790.16	169.78	790.18	181.64	790.53	184.72	790.62	187.08	790.68
195.41	791.09	203.26	791.22	205.39	791.29	209.86	791.36	215.46	791.27
216.58	791.22	218.96	791.19	219.82	791.13	220.79	791.03	221.17	791.01
221.64	791.03	222.21	791.07	222.86	791.13	224.15	791.29	224.34	791.29
224.39	791.29	226.62	791.65	226.66	791.65	228.78	791.93	229.01	791.96
229.36	792	243.63	792.62	244.22	792.7	244.41	792.72	246.92	792.81
250.73	792.99	256.42	794	260.02	794.31	269.23	795.06	274.96	795.54
280.27	796	281.14	796.51	283.71	798	284.73	798.5	287.75	800
288.33	800.29	289.95	801.09	291.49	801.86	291.53	801.88	291.77	802
295.46	803.85	295.81	804	296.12	804.13	300.45	806	304.6	807.65
305.44	808	305.7	808.11	310.47	810	310.91	810.18	315.25	812
318.99	813.53	320.4	814	325.39	815.85	325.79	816	328.44	816.92
331.54	818	335.08	818.98	338.72	820	343.96	821.32	346.45	822
348.28	822.48	354.26	824						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-119.53	.05	-36.88	.04	50.82	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-36.88	50.82	95.9	104.9	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 800

INPUT
Description: Cross Section I
Station Elevation Data num= 166

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-179.63	810	-169.01	808.68	-168.01	808.55	-166.89	808.37	-164.56	808
-160.91	807.53	-149.56	806	-145.22	805.33	-144.92	805.28	-137.33	804
-132.87	802.58	-131.11	802	-125.58	800.23	-124.89	800	-124.36	799.85
-118.47	798	-106.64	796.14	-105.75	796	-102.66	795.58	-91.35	794
-73.49	792.11	-72.48	792	-71.71	791.93	-51.46	790	-50.87	789.81
-45.03	788	-39.91	786.41	-38.61	786	-36.93	785.25	-34.37	784
-32.94	782.65	-32.27	782	-31.19	780.96	-30.11	780	-29.28	779.23
-27.94	776.426	-4.36	776.426	0	776.426	.87	776.426	8.38	776.426
19.14	776.426	29.9	776.426	31.04	778.91	32.53	780	34.36	781.61
34.77	782	35.89	783.02	37	784	37.07	784	46.25	784.02
53.58	784.03	57.53	784.04	60.11	784.05	63.06	784.04	73.07	784.02
82.3	784	87.32	784	87.99	784	89.42	784	92.34	784
94.36	784	108.5	785.86	109.44	786	109.74	786.12	114.2	788
117.61	788.68	123.75	790	156.86	790.98	157.28	791.15	158.04	791.45
159.2	791.48	159.36	791.48	160.18	791.51	165.31	791.66	167.95	791.74
174.57	791.93	175.19	791.95	175.99	791.98	176.2	791.98	177.45	792.02
179.59	791.32	181.98	790.54	182.71	790.31	183.38	790.1	185.01	790.13
186.41	790.16	187.39	790.5	188.37	790.84	190.51	791.56	192.68	792.29
193.03	792.18	193.2	792.13	193.97	792.31	194.39	792.38	194.6	792.41
195.53	792.69	196.26	792.88	196.86	793.01	197.38	793.12	197.87	793.19
198.32	793.25	198.85	793.29	199.3	793.35	206.4	793.8	206.77	793.84
207.7	793.95	207.72	793.95	210.92	794	211.58	794	211.84	794
213.03	793.99	213.7	793.99	215.34	793.99	215.82	793.99	216.19	793.99
219.88	793.97	220.08	794.03	220.95	794.26	221.21	794.33	221.25	794.34
221.75	794.47	222.58	794.67	76 239.6	497	85.23	799.49	71.23	799.51
246.03	801.05	552	46.08	801.07	45.14	801.09	38.25	802.82	23.26

262.6047804.6401262.6227804.6456263.5019804.8145263.5169804.8191 264.477805.0008
264.4886805.0043264.5004805.0079266.6918805.4108266.6955805.4119266.6993805.4131
266.7032805.4143267.7288805.6026267.8083 805.617267.8506805.6246267.9461805.6427
267.9867805.6483 268.25 805.75 269.21 806 270.36 806.3 276.74 808
281.81 809.31 284.55 810 292.1 811.9 292.5 812 292.95 812.13
297.81 813.5 299.61 814 304.78 815.51 306.47 816 308.4 816.6
312.95 818 317.86 819.48 319.69 820 325.3 821.46 327.42 822
333.85 824

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-179.63	.05	-34.37	.04	37	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-34.37	37	95	100	102	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
177.45	333.85	792.02	T

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 700

INPUT
Description: Cross Section H
Station Elevation Data num= 230

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-173.38	798	-173.15	797.98	-163.76	797.06	-154.87	796.45	-153.49	796.34
-153.05	796.31	-151.8	796.23	-149.51	796	-130.32	794.72	-128.99	794.62
-120.07	794	-113.62	793.63	-90.07	792	-76.15	790.44	-72.07	790
-64.32	789.34	-48.32	788	-44.6	787.19	-37.54	786	-36.41	785.03
-35.2	784	-34.43	783.39	-32.79	782	-31.24	780.66	-30.35	780
-28.95	778.95	-27.76	776.426	-19.07	776.426	-13.32	776.426	.21	776.426
.87	776.426	12.51	776.426	29.54	776.426	32.01	779.35	32.62	779.74
33.01	780	33.82	780.29	39.15	782	48.07	783.84	48.71	784
50.23	784	52.54	784	57.21	784.01	58.7	784.01	68.27	784.02
72.79	784.02	87.68	784	92.43	784	95.6	783.99	100.42	784
103.79	784	106.33	784.42	109.33	784.65	109.51	784.74	109.91	784.97
109.97	785.01	113.18	786.6	119.5	789.74	119.54	789.74	120.51	789.76
120.52	789.76	120.54	789.76	127.46	789.9	132.62	790	132.8	790
133.62	790.02	134.05	789.81	135.3	789.19	135.61	789.04	136.01	788.85
138.08	787.82	138.21	787.82	140.1	787.83	140.76	788.15	144.54	790.03
144.69	790.11	145.11	790.31	145.14	790.31	145.17	790.31	157.08	790.74
171.39	797.68	171.87	797.91	172.39	798.16	172.94	798.43	173.53	798.72
185.07	804.28	193.77	808.44	194.83	808.94	206.68	814.53	207.86	815.08
209.09	815.67	210.39	816.28	211.75	816.92	213.18	817.6	219.75	820.65
221.17	821.32	222.66	822.02	225.65	823.4	228.68	824.77	230.08	825.41
231.54	826.06	233.05	826.74	235.32	827.76	236.79	828.42	238.32	829.11
239.9	829.82	241.49	830.52	243.02	831.21	244.6	831.93	245.96	832.51
247.46	833.15	248.48	833.59	249.92	834.19	251.39	834.82	251.63	834.92
253.11	835.55	253.12	835.55	254.63	836.19	256.2	836.86	256.41	836.94
257.92	837.59	259.47	838.25	259.49	838.25	259.5	838.25	259.69	838.33
260.85	838.16	261	838.14	262.22	837.96	262.53	837.91	263.59	837.75
264.08	837.68	264.98	837.54	265.65	837.44	266.39	837.33	266.98	837.24
267.81	837.13	268.27	837.06	269.25	836.93	269.58	836.88	270.7	836.73
270.9	836.7	272.16	836.53	272.23	836.52	272.93	836.43	273.59	836.64
274.76	837.02	274.98	837.08	275.99	837.4	276.35	837.51	277.22	837.75
277.7	837.9	278.44	838.1	279.05	838.29	279.65	838.46	280.39	838.68
280.85	838.81	281.72	839.07	282.05	839.17	283.05	839.47	283.24	839.52
283.39	839.57	284.42	839.84	284.47	839.85	285.05	840	285.61	840.15
285.63	840.15	286.83	840.47	287.95	840.76	289	841.04	289.14	841.07

290.16	841.34	290.33	841.39	291.31	841.63	292.24	841.85	293.12	842.04
293.37	842.11	294.22	842.3	294.5	842.38	295.32	842.56	295.63	842.65
296.43	842.82	296.77	842.92	297.54	843.09	298.27	843.25	298.97	843.38
299.65	843.5	300.04	843.59	300.69	843.71	301.1	843.8	301.73	843.92
302.17	844.02	302.78	844.13	303.24	844.24	303.83	844.35	304.32	844.46
304.88	844.57	305.39	844.69	305.93	844.79	306.49	844.89	307.07	845
307.68	845.11	308.31	845.23	308.98	845.35	314.37	846.2	314.66	846.24
314.95	846.29	315.23	846.33	315.5	846.38	315.77	846.42	316.03	846.46
316.29	846.5	316.54	846.54	316.79	846.58	317.03	846.61	317.27	846.65
317.5	846.69	317.73	846.72	317.95	846.76	318.17	846.79	318.38	846.83
318.59	846.86	318.8	846.89	319	846.92	319.2	846.95	319.39	846.98
319.58	847.01	319.77	847.04	319.95	847.07	320.13	847.1	321.23	847.27

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-173.38	.05	-35.2	.04	48.71	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-35.2	48.71	96.8	100	98.9	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
133.62	321.23	790.02	T

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 600

INPUT
Description: Cross Section G
Station Elevation Data num= 193

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-177.84	794.61	-177.42	794.6	-176.54	794.58	-175.26	794.53	-174.92	794.52
-174.59	794.5	-174.45	794.5	-174.09	794.48	-164.5	794	-157.86	793.68
-154.74	793.5	-147.1	793.08	-135.08	792.37	-132.13	792.22	-128.26	792
-117.13	791.33	-97.01	790	-79.08	788	-76.81	787.87	-76.21	787.84
-60.19	786.96	-38.97	786.07	-38	786.03	-37.44	786	-36.69	785.4
-34.96	784.02	-34.93	784	-34.76	783.84	-32.49	782	-29.98	779.96
-28.69	778.88	-27.7	776.426	-23.87	776.426	-23.34	776.426	-23.14	776.426
-10.75	776.426	-4.74	776.426	-4.17	776.426	-.71	776.426	0	776.426
1.39	776.426	7.39	776.426	26.49	776.426	30.38	779.79	30.47	779.83
30.6	779.88	31.28	780.19	34.33	781.51	35.48	782	37.82	782.29
38.41	782.33	38.67	782.35	38.86	782.36	45.95	782.92	52.54	783.49
55.05	783.65	57.63	783.79	59.18	783.92	62.09	784	62.37	784
62.74	784	63.56	784	63.93	784	64.15	784	66.35	784
76.11	784	80.73	784	83.42	784	83.87	784	85.96	784
87.02	784	87.45	784	88.09	784	88.36	784	88.49	784
90.37	784	90.58	784	93.09	783.99	101.19	787.98	104.75	789.73
105.31	789.74	105.77	789.75	115.89	789.96	116.55	789.97	117.96	790
119.68	789.15	122.03	788	125.07	786.5	126.09	786	128.17	784.99
128.45	784.85	132.01	784.85	132.38	784.85	132.72	785.05	134.37	786
138.11	787.86	138.4	788	141.02	789.3	142.43	790	142.45	790
142.46	790	142.5	790	142.51	790	142.56	790	142.57	790
142.61	790	143.56	790	143.6	790	143.72	790	143.76	790
143.88	790	143.93	790	143.97	790	144.09	790	144.13	790
144.25	790	144.3	790	144.42	790	144.46	790	144.58	789.99
144.68	789.99	144.8	789.99	144.92	789.99	144.98	789.99	144.99	789.99
145.09	789.99	145.16	789.99	145.24	789.99	145.31	789.99	145.38	789.99
145.46	790	145.54	790	145.62	789.99	157.32	790.69	158.43	791.24
158.51	791.28	158.61	791.33	158.72	791.38	158.85	791.45	159.01	791.53
159.2	791.62	193.67	808.74	196.52	810.16	199.85	811.82	203.82	813.79
208.6	816.16	214.48	819.08	221.9	822.77	231.54	827.56	244.57	834.03

251.35	837.4	257.56	836.16	259.52	835.77	261.4	835.39	262.75	836.07
264.74	837.07	266.56	837.99	268.24	838.83	269.8	839.61	271.24	840.34
272.58	841.02	273.84	841.65	275.01	842.24	276.11	842.79	277.14	843.31
278.11	843.79	279.02	844.25	279.89	844.69	280.7	845.1	281.48	845.49
282.21	845.86	282.91	846.21	283.57	846.54	284.2	846.86	284.8	847.16
285.37	847.45	285.92	847.72	303.54	856.58	304.24	856.93	304.9	857.26
305.53	857.58	306.13	857.88	306.7	858.16	307.24	858.44	307.76	858.7
308.25	858.95	308.73	859.19	309.18	859.41	309.61	859.63	310.03	859.84
310.43	860.04	330.51	870	338.6	874.02				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-177.84	.05	-34.93	.04	59.18	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-34.93	59.18	90.7	100	98.3	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
117.96	338.6	790	T

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 500

INPUT
Description: Cross Section F
Station Elevation Data num= 222

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-244.34	794.51	-223.9	794	-215.56	793.64	-210.73	793.38	-205.19	793.11
-203.96	793.05	-203.2	793	-202.66	792.96	-186.13	792.05	-186.07	792.05
-186.01	792.05	-185.2	792	-182.68	791.79	-182.48	791.77	-180.55	791.59
-180.15	791.56	-179	791.44	-178.36	791.36	-177.99	791.31	-177.7	791.28
-177.29	791.25	-171.44	790.91	-170.57	790.87	-170.09	790.86	-169.85	790.87
-169.76	790.9	-169.69	790.94	-169.57	790.98	-169.38	791.01	-169.11	791.04
-168.8	791.07	-168.45	791.1	-167.86	791.06	-167.53	791.09	-166.94	791.12
-166.2	791.09	-166.02	791.09	-165.9	791.1	-165.81	791.09	-165.74	791.09
-162.08	791.02	-161.98	791.02	-154.39	790.69	-149.83	790.43	-148.63	790.36
-142.48	790	-135.87	789.39	-126.03	788.13	-125.3	788.04	-124.98	788
-96.48	786.88	-95.47	786.83	-94.69	786.8	-94.02	786.77	-93.33	786.75
-85.88	786.45	-70.26	786	-69.4	785.53	-66.92	784	-66.29	783.65
-63.56	782	-63.14	781.76	-60.13	780	-58.67	779.33	-58.42	779.18
-56.05	776.426	-45.48	776.426	-42.95	776.426	-39.04	776.426	-31.42	776.426
-25.2	776.426	-20	776.426	-19.9	776.426	-5.43	776.426	6.21	776.426
9.12	779.81	9.4	780	9.75	780.21	12.59	782	12.78	782.1
13.24	782.65	13.73	782.66	13.99	782.67	14.37	782.65	16.26	782.48
17.05	782.42	19.58	782.29	20.46	782.23	22.4	782.09	23.41	782
26.38	781.97	31.68	781.73	37.85	781.58	46.73	782	55.76	783.91
56.34	784	58.03	784.18	74.22	786	83.68	787.77	84.98	788
86.18	788.13	86.67	785.07	86.85	785.16	86.92	785.19	91.79	787.61
96.06	789.73	96.7	789.74	97.07	789.75	100.42	789.82	100.55	789.82
101.23	789.84	102.23	789.86	103.87	789.89	107.04	789.96	109.15	790
110.43	789.36	110.87	789.14	113.17	788	113.63	787.77	114.61	787.28
116.38	786.4	117.2	786	119.4	784.9	121.22	784	122.66	783.29
125.25	782	134.87	782	137.52	782	138.23	782.35	141.53	784
142.52	784.49	145.54	786	146.05	786.25	149.55	788	149.61	788.03
149.82	788.14	153.56	790	154.32	790.38	156.07	791.25	156.08	791.26
165.87	791.81	165.9	791.83	166.19	791.97	166.29	792.02	241.45	829.6
246.04	831.89	251.25	834.5	255.53	836.64	258.17	836.11	265.53	834.64
266.52	835.13	267.75	835.73	268.88	836.3	269.93	836.81	270.91	837.3
271.81	837.74	281.45	842.51	283.27	843.41	284.91	844.22	286.4	844.95
287.76	845.63	289	846.24	290.14	846.8	291.19	847.32	292.17	847.81

293.07	848.25	293.91	848.67	294.69	849.05	295.42	849.42	296.11	849.75
296.75	850.07	297.36	850.37	297.93	850.65	298.47	850.92	298.97	851.17
299.46	851.41	299.91	851.64	300.35	851.85	300.76	852.05	301.15	852.25
331.14	867.07	331.32	867.16	331.5	867.25	331.66	867.33	331.81	867.4
331.96	867.48	332.1	867.55	332.23	867.61	332.35	867.67	332.47	867.73
332.58	867.78	332.69	867.84	337.02	870	338.61	870.8	338.65	870.82
338.68	870.83	338.72	870.85	338.77	870.87	338.81	870.9	338.86	870.92
338.91	870.94	338.96	870.97	339.01	870.99	339.07	871.02	339.13	871.05
339.19	871.08	339.26	871.12	339.34	871.15	339.42	871.19	339.5	871.23
342.24	872.56	342.78	872.81	343.44	873.11	344.26	873.49	345.31	873.97
346.69	874.56	348.56	875.36	350.09	876.06	352.59	877.12	353.55	877.55
354.26	877.87	355.88	878.55						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-244.34	.05	-63.56	.04	13.99	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-63.56	13.99	102.7	100	103.6	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
109.15	355.88	790	T

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 400

INPUT
Description: Cross Section E
Station Elevation Data num= 422

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-352.7	795.42	-351.82	795.38	-349.7	795.31	-349.1	795.29	-343.16	795.18
-331.71	794.99	-324.83	794.88	-322.28	794.83	-320.12	794.79	-318.06	794.74
-315.64	794.69	-312.08	794.61	-286.18	794	-275.9	793.34	-271.51	793.24
-262.26	792.8	-260.94	792.79	-260.28	792.79	-259.53	792.74	-259.41	792.76
-259.38	792.85	-259.36	792.93	-250.96	792.84	-246.1	792.79	-245.92	792.78
-245.69	792.78	-245.38	792.77	-228.5	792.42	-223.41	792.32	-205.81	792
-200.47	791.74	-200.01	791.71	-191.41	791.22	-184.72	790.94	-184.62	790.93
-184.52	790.92	-184.44	790.92	-182.06	790.81	-182.02	790.81	-166.92	790
-165.06	789.85	-164.09	789.78	-157.64	789.26	-157	789.22	-149.29	788.8
-143.54	788.49	-140.6	788.33	-137.59	788	-130.82	787.38	-130.79	787.39
-95.49	786.02	-95.32	786.02	-94.77	786.02	-92.58	786.02	-73.01	786
-72.97	786	-72.87	786	-72.7	786	-72.05	785.93	-53.74	784
-49.73	783.24	-41.7	782	-39.21	780.45	-38.37	780	-37.45	779.48
-35.04	776.426	-26.51	776.426	-24.74	776.426	-22.8	776.426	-22.19	776.426
-12.24	776.426	-7.43	776.426	-1.23	776.426	0	776.426	3.31	776.426
4.64	776.426	13.39	776.426	30.25	776.426	35.36	776.426	36.41	778.66
38.4	780	40.49	781.1	43.68	782	47.3	782.67	50.34	782.84
50.81	782.88	51.22	782.92	51.65	782.99	53.26	783.25	54.45	783.41
57.99	784	62.09	784.53	71.9	786	73.68	786.83	76.1	788
81.13	790	81.15	790	81.18	790.01	92.58	792	104.63	792.62
105.12	792.41	105.34	792.31	105.98	792.34	106.45	792.36	109.82	792.48
112.83	792.6	116.06	792.72	119.64	792.85	120.34	792.88	120.75	792.9
121.02	793.02	121.66	793.33	121.99	793.34	122.05	793.35	122.09	793.35
122.13	793.35	122.19	793.35	122.27	793.36	123.46	793.42	123.63	793.43
123.82	793.44	124.07	793.45	124.37	793.47	124.7	793.49	124.96	793.5
125.23	793.51	125.41	793.44	125.43	793.43	125.47	793.41	127.4	792.59
127.56	792.52	128.11	792.28	129.39	791.74	129.63	791.64	130.73	791.17
131.37	790.89	131.63	790.78	133.33	790.06	133.36	790.04	133.47	790
133.56	789.96	133.6	789.95	135.03	789.39	135.09	789.37	135.9	789.06
136.45	788.88	137.14	788.76	137.88	788.59	138.67	788.47	139.13	788.43

139.48	788.45	140.26	788.44	140.39	788.46	140.63	788.5	141.38	788.49
141.38	788.5	141.64	788.55	141.65	788.55	142.11	788.62	142.43	788.68
142.86	788.74	142.88	788.75	143.29	788.83	143.87	788.95	143.92	788.96
144.42	789.07	144.89	789.17	144.97	789.18	145.57	789.31	145.92	789.38
146.35	789.47	146.52	789.5	148.65	788.98	151	788.41	153.06	788.82
153.26	788.86	153.28	788.87	153.29	788.87	155.28	790.15	156.99	791.25
157.68	791.7	157.94	791.87	157.95	791.87	158.51	792	158.9	792.09
158.92	792.09	158.93	792.1	158.94	792.1	158.95	792.1	158.97	792.11
159	792.11	159.29	792.19	159.94	792.37	160.23	792.46	161	792.7
161.12	792.74	161.48	792.86	161.76	792.96	163.08	793.43	163.13	793.45
163.43	793.56	165.21	794.26	165.43	794.35	167.96	795.41	168.03	795.45
168.97	795.86	171.27	796	185.92	797.19	187.23	797.31	187.48	797.31
188.02	797.56	188.04	797.57	188.06	797.58	191.57	799.22	191.7	799.28
201.5	803.82	203.78	804.87	204.57	805.24	205.02	805.44	205.5	805.66
206	805.89	214.9	809.93	215.58	810.24	216.29	810.56	217.04	810.91
224.42	814.19	225.27	814.58	227.8	815.69	228.7	816.08	234.3	818.49
235.23	818.89	236.21	819.31	237.22	819.75	238.28	820.21	242.56	822
243.61	822.45	244.71	822.93	246.43	823.63	249.24	824.76	250.29	825.17
251.37	825.6	253.63	826.48	254.67	826.89	255.75	827.32	255.99	827.41
257.09	827.86	257.48	828	258.61	828.45	258.66	828.47	259.82	828.93
261.03	829.38	262.11	829.77	263.19	830.16	264.3	830.56	265.44	830.96
266.28	831.25	267.38	831.65	268.52	832.06	269.68	832.48	270.25	832.67
271.38	833.08	271.57	833.14	271.8	833.21	272.2	833.34	273.26	833.67
273.37	833.71	274.43	834.04	275.52	834.39	276.63	834.74	277.77	835.1
278.93	835.47	278.96	835.48	279.6	835.69	280.1	835.62	280.14	835.61
281.25	835.48	281.36	835.47	282.39	835.34	282.56	835.32	283.51	835.21
283.76	835.18	284.62	835.08	284.94	835.04	285.72	834.94	286.1	834.89
286.81	834.81	287.25	834.76	287.88	834.69	288.45	834.63	288.95	834.58
289.46	834.53	290.01	834.47	290.47	834.42	291.05	834.36	291.7	834.29
292.09	834.25	292.78	834.18	293.12	834.15	293.86	834.07	294.14	834.04
294.39	834.02	295.15	833.96	295.36	833.94	296.15	833.87	296.32	833.86
297.14	833.79	297.28	833.78	298.13	833.71	298.23	833.7	299.11	833.63
299.17	833.63	300.08	833.55	300.11	833.55	301	833.48	301.04	833.48
301.05	833.49	302.1	833.63	303.11	833.77	303.16	833.78	304.14	833.91
304.22	833.92	305.17	834.05	305.27	834.07	306.2	834.2	306.32	834.22
307.23	834.34	307.37	834.36	308.25	834.49	309.09	834.6	309.9	834.72
310.66	834.82	311.4	834.93	312.11	835.02	312.78	835.12	313.43	835.21
314.06	835.29	314.66	835.38	315.24	835.46	315.79	835.54	316.33	835.61
316.85	835.68	317.35	835.75	317.83	835.82	318.29	835.88	323.63	836.63
324.41	836.73	325.17	836.84	325.92	836.94	326.66	837.05	327.39	837.15
328.1	837.25	328.8	837.35	329.49	837.44	330.17	837.54	330.84	837.63
331.5	837.72	332.15	837.81	332.79	837.9	333.41	837.99	334.03	838.07
334.64	838.16	335.24	838.24	335.83	838.32	336.41	838.4	336.98	838.48
337.54	838.56	338.1	838.64	338.65	838.71	339.19	838.79	344.8	839.57
345.5	839.67	346.19	839.76	346.88	839.86	347.56	839.95	348.23	840.05
348.9	840.14	349.56	840.23	350.21	840.32	350.86	840.41	351.5	840.5
352.14	840.59	352.76	840.68	353.39	840.76	354	840.85	354.61	840.93
355.22	841.02	355.81	841.1	356.41	841.18	356.99	841.26	357.58	841.35
358.15	841.43	358.72	841.51	359.29	841.58	364.95	842.37	365.62	842.46
366.29	842.56	366.96	842.65	367.62	842.74	368.28	842.83	368.93	842.92
369.57	843.01	370.21	843.1	370.85	843.19	371.49	843.28	372.11	843.37
384.96	845.09	385.74	845.2	385.99	845.23	386.77	845.34	387.03	845.38
387.8	845.48	388.06	845.52	388.83	845.62	389.1	845.66	389.86	845.76
390.13	845.8	390.89	845.9	391.17	845.94	391.93	846.04	392.2	846.08
392.96	846.18	393.14	846.21						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-352.7	.05	-41.7	.04	43.68	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.7	43.68	101.3	168.7	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
125.32	393.14	793.48	T

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 300

INPUT
Description: Cross Section D
Station Elevation Data num= 312

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-385.65	794.17	-375.87	794	-372.67	793.96	-372.64	793.96	-356.88	793.77
-356.73	793.76	-353.34	793.71	-353.16	793.71	-350.59	793.66	-350.39	793.66
-349	793.64	-346.98	793.58	-346.74	793.57	-346.3	793.57	-342.19	793.54
-337.96	793.51	-337.89	793.51	-337.83	793.51	-337.64	793.51	-331.66	793.43
-331.49	793.43	-331.32	793.43	-330.32	793.44	-329.63	793.44	-328.64	793.43
-327.28	793.42	-325.63	793.4	-319.22	793.32	-318.44	793.31	-317.47	793.29
-316.13	793.27	-301.4	793.04	-293.65	792.92	-283.49	792.75	-270.41	792.54
-253.83	792.26	-238.71	792	-235.96	791.82	-232.86	791.61	-225.48	791.34
-220.99	791.1	-217.95	790.93	-187.87	790	-172.68	788.66	-165.69	788
-157.46	787.11	-148.65	786	-142.05	785.99	-141.2	785.98	-140.34	785.98
-139.94	785.99	-138.4	785.99	-136.61	785.99	-135.59	785.99	-132.57	786
-131.4	786	-131.17	786	-126.29	786	-120.02	786	-118.89	786
-107.9	786	-95.64	785.32	-74.72	784	-69.44	783.53	-58.81	782.57
-52.69	782	-42.92	781.02	-41.35	780.87	-37.61	780.54	-31.55	780
-30.02	778.9	-28.85	776.426	-20.98	776.426	-18.09	776.426	-12.16	776.426
-1.69	776.426	0	776.426	7.92	776.426	23.09	776.426	23.75	778.63
24.88	780	26.65	781.23	27.61	782	28.54	782.74	30.39	784
33.75	785.19	36.51	786	39.96	786.94	43.29	788	47.21	789.16
49.96	790	55.26	791.43	57.37	792	70.25	793.68	72.56	794
76.97	794.14	81.58	794.27	85.3	794.37	98.72	794.71	100.74	794.76
102.46	794.79	103.89	794.81	105.15	794.81	106.36	794.81	110.47	794.77
117.42	794.68	124.22	794.57	124.76	794.59	132.99	794.45	133.22	794.47
133.54	794.48	133.65	794.49	133.74	794.5	134.21	794.56	134.41	794.58
136.08	794.72	143.42	794.48	143.55	794.47	148.01	795.33	148.04	795.33
148.08	795.33	148.12	795.33	148.16	795.33	148.2	795.34	150.04	795.65
150.06	795.65	150.09	795.66	150.11	795.66	152.24	796	155.19	796.04
155.73	796.3	155.81	796.34	157.56	796.38	160.75	796.46	163.98	796.54
166.19	796.59	166.88	796.26	167.41	796.01	167.66	796.11	167.75	796.15
168.24	796.31	168.35	796.34	168.72	796.42	170.9	797.28	171.26	797.29
171.99	797.35	173.25	797.47	173.74	797.48	174.38	797.57	174.88	797.57
175.34	797.59	175.37	797.59	176.59	797.85	176.87	797.98	177.26	797.87
179.12	796.93	202.64	798.88	203.29	798.93	203.47	798.93	205.83	799.07
206.13	799.07	206.22	799.07	206.31	799.07	207.75	799.08	208.74	799.09
209.54	799.11	209.75	799.12	209.91	799.12	210.03	799.12	210.13	799.12
210.36	799.12	212.4	799.14	214.45	799.17	214.48	799.17	215.92	799.33
215.94	799.33	217.65	799.49	217.82	799.51	217.98	799.52	218.15	799.53
220.15	799.68	220.63	799.72	222.37	799.85	222.89	799.9	223.05	799.91
223.19	799.92	223.32	799.93	223.63	799.94	224.1	799.99	224.15	799.99
224.46	803.31	224.61	803.32	224.67	803.33	228.82	801.34	231.86	799.9
232.9	799.91	233.93	799.92	235.03	800.46	236.72	801.3	240.83	803.32
245.04	805.39	246.5	806.11	260.75	807.39	266.72	810.21	266.92	810.3
267.12	810.4	267.35	810.51	276.34	814.71	276.83	814.94	279.44	816.15
280.02	816.43	280.13	816.48	280.76	816.78	280.83	816.81	300.46	825.71
304	827.25	305.13	827.73	305.96	828.11	306.71	828.43	307.57	828.82
308.1	829.05	308.99	829.45	309.92	829.88	310.26	830.02	311.23	830.46
312.24	830.92	313.3	831.41	313.55	831.51	313.79	831.61	314.9	832.09
316.07	832.58	319.97	834.21	321.08	834.68	322.24	835.17	323.45	835.69
324.4	836.07	326.33	836.84	327.44	837.32	328.61	837.81	329.67	838.22
330.83	838.68	331.4	838.89	331.59	838.96	332.73	839.41	333.56	839.71
334.66	840.14	335.8	840.59	336.98	841.06	337.52	841.25	338.65	841.7

338.69	841.71	339.86	842.17	339.87	842.18	340.23	842.3	341.37	842.7
341.41	842.71	342.57	843.12	342.6	843.13	342.68	843.16	343.82	843.56
344.83	843.92	345.01	843.89	345.03	843.89	345.05	843.89	346.4	843.68
346.56	843.66	347.75	843.48	348.04	843.43	349.08	843.28	349.95	843.16
350.39	843.09	351.15	842.99	351.68	842.91	352.32	842.82	352.95	842.73
353.49	842.66	354.19	842.56	354.64	842.5	355.42	842.4	355.77	842.35
356.63	842.24	356.89	842.21	357.83	842.09	358	842.07	359	841.94
359.1	841.93	360.17	841.79	360.18	841.78	360.38	841.76	361.3	842
362.25	842.22	362.32	842.23	363.25	842.45	364.12	842.65	364.24	842.69
365.28	842.92	365.43	842.96	366.42	843.19	366.61	843.24	367.55	843.46
367.78	843.52	368.03	843.6	368.94	843.81	369.23	843.89	370.1	844.1
370.91	844.29	371.24	844.37	372.01	844.55	372.38	844.64	373.11	844.81
373.51	844.91	373.9	845						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-385.65	.05	-31.55	.04	24.88	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-31.55	24.88	92.7	100	105.3	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 200

INPUT
Description: Cross Section C
Station Elevation Data num= 297

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-536.17	798	-531.04	796.73	-527.71	796	-518.36	795.68	-516.19	795.61
-514.46	795.56	-513.05	795.53	-511.82	795.51	-505.93	795.41	-501.42	795.32
-500.89	795.31	-499.19	795.29	-498.32	795.27	-497.27	795.25	-496.15	795.23
-495.05	795.2	-494.07	795.17	-493.19	795.13	-490.39	795	-488.17	794.91
-488.01	794.9	-487.85	794.89	-487.59	794.88	-487.16	794.87	-486.53	794.86
-484.74	794.82	-481.56	794.78	-480.19	794.71	-479.76	794.69	-479.53	794.69
-479.22	794.68	-478.97	794.67	-478.42	794.65	-477.04	794.63	-476.87	794.62
-462.39	794.36	-440.43	794.02	-439.43	794.01	-438.59	794	-438.56	794
-437.52	793.99	-437.45	793.99	-437.44	793.99	-437.43	793.99	-437.42	793.99
-437.4	793.99	-437.3	793.99	-435.98	793.97	-435.58	793.96	-432.3	793.91
-432.05	793.9	-430.89	793.88	-424.92	793.77	-421.51	793.71	-417.12	793.64
-406.36	793.48	-405.85	793.47	-392.8	793.28	-392.27	793.26	-389.6	793.22
-389.06	793.2	-387.08	793.16	-386.54	793.15	-382.73	793.09	-381.24	793.04
-380.62	793.03	-379.5	793.02	-368.62	792.91	-356.43	792.79	-356.24	792.79
-356.07	792.78	-355.48	792.78	-336.21	792.49	-335.61	792.48	-335.03	792.48
-331.53	792.49	-329.08	792.47	-325.48	792.44	-320.4	792.38	-314.06	792.29
-293.63	792	-291.56	791.93	-291.49	791.93	-290.61	791.9	-290.49	791.89
-289.55	791.85	-289.38	791.85	-288.23	791.8	-288.01	791.79	-280.77	791.44
-278.54	791.41	-276.46	791.31	-270.64	791.23	-269.85	791.23	-269.12	791.22
-268.45	791.23	-267.06	791.25	-263.83	791.27	-260.88	791.27	-259.23	791.26
-257.44	791.25	-255.52	791.23	-253.43	791.2	-251.19	791.17	-248.89	791.13
-242.35	791.03	-241.86	791.02	-241.45	791.01	-240.73	791	-227.22	790.77
-225.26	790.73	-222.1	790.67	-216.83	790.57	-199.11	790.22	-188.39	790
-177.57	788	-172.49	787.14	-166.27	786	-156.97	785.76	-155.95	785.73
-155.46	785.72	-153.95	785.69	-151.87	785.64	-145.81	785.52	-137.26	785.35
-129.89	785.2	-114.11	784.87	-73.32	784	-69.46	783.72	-68.77	783.67
-67.58	783.58	-65.48	783.42	-53.35	782.52	-50.61	782.31	-47.6	782.08
-46.45	782	-45.76	781.91	-37.8	780.92	-33.29	780	-30.89	778.64
-29.66	776.426	-19.02	776.426	-14.31	776.426	-3.5	776.426	-2.01	776.426
0	776.426	1.89	776.426	10.45	776.426	23.37	776.426	25.89	779.6
26.43	780	26.98	780.34	29.65	782	30.79	782.57	33.08	784
44.69	785.14	52.55	786	56.42	787.07	59.54	788	63.01	788.73

69.31	790	87.37	791.54	88.28	791.61	89.05	791.67	91.18	791.84
91.2	791.84	91.21	791.84	91.22	791.84	91.24	791.84	91.28	791.85
91.36	791.85	91.47	791.86	91.97	791.88	93.62	792	105.34	792.41
105.38	792.41	105.42	792.41	105.47	792.41	107.73	792.38	117.86	792.23
125.55	792.11	125.63	792.11	125.71	792.11	125.79	792.12	132.68	792
135.86	791.84	139.78	791.63	142.35	791.57	143.84	791.56	145.29	791.56
146.07	791.56	147.02	791.57	148.25	791.59	149.86	791.61	151.93	791.65
154.53	791.7	157.8	791.77	161.91	791.87	166.88	791.99	167.2	792
179.16	793.28	189.56	794	197.27	794.85	208.28	796	209.86	796.12
209.95	796.13	210.11	796.14	212.88	796.38	214.39	796.51	215.83	796.65
217.68	796.82	222.12	797.2	222.78	797.28	223.59	797.42	223.61	797.42
224.18	797.7	224.23	797.7	224.94	797.72	225.58	797.73	237.11	797.98
237.49	797.99	237.91	798	238.77	798.43	239.58	798.83	239.92	798.9
240.41	798.92	240.99	798.99	241.32	799	241.58	799.02	242.01	799.05
243.95	799.19	245.93	799.36	247.07	798.82	250.06	797.38	251.87	797.4
252.11	797.4	253.33	798	253.89	798.28	255.89	799.26	258.14	800.37
258.15	800.38	258.24	800.42	258.26	800.42	258.32	800.45	258.35	800.46
258.37	800.47	258.43	800.5	258.44	800.5	258.59	800.57	277.75	802
280.33	802.32	280.35	802.33	280.36	802.33	280.38	802.34	280.72	802.49
297.52	810.83	298.66	811.39	310.53	817.27	312.29	818.14	314.27	819.12
316.51	820.23	319.08	821.5	322.03	822.96	325.48	824.67	337.68	830.72
341.22	832.46	346.36	835.01	349.74	836.69	353.52	838.55	357.72	840.63
362.43	842.97	362.86	843.18	366.09	844.77	367.93	844.41	370.68	843.87
373.99	843.22	376.22	842.79	377.26	843.31	378.65	843.99	379.78	844.54
380.72	845.01	381.51	845.4	382.2	845.74	382.79	846.03	383.29	846.28
383.76	846.5	384.16	846.7	384.52	846.88	403.89	856.45	404.49	856.74
405.16	857.06	406.43	857.65	407.96	858.36	409.78	859.2	411.53	860
412.82	860.58	412.96	860.64						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-536.17	.05	-46.45	.04	29.65	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.45	29.65	89.3	100	191	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 100

INPUT
Description: Cross Section B
Station Elevation Data num= 190

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-474.74	794	-454.25	793.83	-435.64	793.7	-434.92	793.69	-434.32	793.69
-433.39	793.68	-430.01	793.62	-429.41	793.6	-428.85	793.59	-428.35	793.58
-427.49	793.56	-422.27	793.42	-421.22	793.41	-411.54	793.15	-409.32	793.11
-406.48	793.03	-405.74	793.02	-402.03	792.95	-399.95	792.91	-397.31	792.87
-391.06	792.76	-389.7	792.72	-382.78	792.61	-381.67	792.58	-380.36	792.55
-379.31	792.52	-378.38	792.5	-377.34	792.48	-369.95	792.35	-369.44	792.33
-368.28	792.32	-366.16	792.29	-344.82	792.04	-341.82	792	-328.6	791.78
-328.46	791.77	-328.33	791.77	-328.15	791.76	-328.01	791.76	-327.88	791.75
-327.44	791.74	-327.3	791.74	-317.31	791.44	-316.99	791.44	-316.52	791.43
-313.05	791.43	-311.37	791.41	-307.59	791.34	-305.83	791.32	-304.15	791.28
-298.36	791.16	-296.69	791.12	-295.55	791.09	-294.39	791.05	-293.18	791.01
-291.88	790.96	-285.15	790.69	-281.68	790.57	-279.86	790.5	-279.62	790.49
-277.76	790.43	-277.53	790.42	-275.65	790.37	-275.41	790.36	-273.54	790.32
-272.19	790.25	-264.84	790.14	-264.62	790.13	-256.21	790	-250.53	789.91
-250.25	789.91	-250.15	789.91	-250.04	789.91	-249.93	789.9	-248.33	789.88
-246.65	789.88	-244.77	789.88	-240.01	789.9	-239.32	789.89	-239.22	789.88
-239.14	789.88	-239.06	789.88	-238.65	789.85	-228.8	789.89	-228.68	789.88

-228.53	789.87	-221.05	789.83	-220.86	789.82	-217.57	789.77	-216.23	789.72
-213.18	789.65	-210.63	789.57	-208.68	789.47	-206.42	789.38	-205.18	789.31
-204.61	789.27	-202.74	789.17	-201.34	789.09	-201.13	789.07	-187.35	788.01
-187.33	788	-187.28	788	-185.57	787.81	-184.16	787.63	-173.14	786
-165.72	785.28	-164.36	785.22	-163.03	785.18	-161.86	785.16	-157.85	784.83
-156.64	784.82	-155.78	784.82	-151.72	784.51	-150.96	784.51	-150.34	784.52
-149.71	784.55	-146.7	784.73	-146.59	784.76	-139.58	784.82	-133.15	784.86
-116.82	784.59	-104.05	784.36	-85.12	784	-82.7	783.75	-82.02	783.69
-81.7	783.67	-81.24	783.64	-76.28	783.14	-74.96	783.07	-70.87	782.9
-65.98	782.49	-63.43	782.43	-62.05	782.34	-59.96	782.32	-59.66	782.3
-58.34	782.32	-57.69	782.35	-57.2	782.42	-56.8	782.44	-56.06	782.43
-54.86	782.4	-52.98	782.34	-43.6	782	-42.37	781.3	-40.16	780
-38.54	778.86	-37.06	778	-34.12	777.491	-33.79	777.491	-33.53	777.491
-32.57	777.491	-10.6	777.491	-10	777.491	-9.16	777.491	-8.63	777.491
-7.98	777.491	0	777.491	5.56	777.491	18.29	777.491	19.63	777.491
21.05	777.491	43.9	777.491	45.32	777.491	47.4	779.82	47.62	780
50.13	781.72	50.52	782	50.58	782.06	52.66	784	75.62	785.72
76.33	785.71	77.1	785.7	77.12	785.69	78.36	785.86	79.26	786
79.57	786.17	82.69	788	85.85	789.76	86.25	790	87.53	790.8
89.37	792	89.65	792.23	91.83	794	93.51	795.32	94.35	796
96.63	797.83	96.84	798	97.82	798.19	102.01	798.84	109.58	800

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-474.74	.05	-43.6	.04	50.52	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.6	50.52	85.74	100	88.32	.1	.3

CROSS SECTION

RIVER: Meathouse Fork
REACH: Meathouse Fork RS: 0

INPUT
Description: Cross Section A
Cross Section A
Station Elevation Data num= 169

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-441	794	-438.76	793.97	-435.61	793.94	-427.87	793.87	-423.97	793.83
-419.54	793.78	-415.12	793.73	-412.82	793.69	-408.54	793.64	-400.24	793.5
-395.95	793.44	-392.39	793.38	-383.92	793.23	-379.53	793.16	-376.89	793.12
-376.18	793.11	-375.71	793.1	-375.35	793.1	-374.63	793.09	-372.95	793.07
-360.44	792.95	-349.7	792.86	-349.3	792.86	-348.96	792.85	-348.44	792.85
-334.62	792.58	-332.11	792.53	-329.76	792.48	-327.59	792.43	-323.9	792.34
-310.62	792	-275.55	790.65	-271.23	790.46	-263.9	790.16	-262.95	790.13
-259.76	790	-257.14	789.89	-251.75	789.66	-247.9	789.51	-245.02	789.4
-242.82	789.33	-241.11	789.27	-239.73	789.23	-238.52	789.2	-227.63	788.94
-219.91	788.75	-218.5	788.68	-216.76	788.61	-215.93	788.58	-215.22	788.55
-213.23	788.49	-212.65	788.47	-212.14	788.45	-200.82	788.22	-199.82	788.18
-199.63	788.17	-199.46	788.17	-199.3	788.16	-199.14	788.16	-198.58	788.15
-197.1	788.13	-196.33	788.11	-190.43	788.06	-188.16	788.02	-187.01	788
-186.02	787.94	-184.31	787.81	-182.93	787.8	-172.77	787.25	-167.62	787.22
-166.61	787.17	-165.83	787.13	-164.3	787.11	-162.71	787.08	-161.95	787.06
-161.13	787.03	-160.14	786.99	-158.81	786.92	-156.9	786.83	-142.2	786
-140.44	785.83	-139.25	785.76	-139	785.74	-137.85	785.64	-119.33	784
-113.28	783.4	-107.66	783.17	-100.29	782.63	-92.2	782.45	-81.15	782.13
-80.2	782.09	-79.16	782.04	-79.08	782.03	-79.02	782.03	-78.96	782.03
-78.92	782.03	-78.88	782.02	-78.85	782.02	-78.83	782.02	-78.81	782.02
-78.8	782.02	-78.78	782.02	-78.65	782.02	-78.64	782.03	-78.62	782.03
-78.61	782.03	-78.49	782.03	-78.01	782	-76.23	781.91	-73.88	781.81
-71.39	781.64	-68.43	781.49	-57.63	781.02	-48.12	780	-46.83	779.64

-41.19	778	-39.4	777.58	-37.71	777.64	-37.39	777.6	-35.96	777.65
-32.89	777.4	-27.11	776.95	-22.13	777.04	-17.13	776.81	-14.9	776.69
-12.92	776.58	-11.19	776.5	-10.11	776.45	-9.14	776.41	-9.07	776.41
-9.02	776.4	-8.83	776.284	0	776.284	6.14	776.284	6.69	776.45
7.62	776.51	9.25	776.59	11.35	776.69	14.94	776.87	20.37	777.13
21.11	777.17	22.24	777.24	31.19	777.76	32.57	777.75	33.79	777.74
35.48	778	36.38	779	37.31	780	38.16	780.94	38.96	782
43.1	783.49	44.47	784	45.05	784.39	47.54	786	50.52	787.95
50.6	788	50.67	788.04	53.82	790	55.47	791.17	56.72	792
58.67	793.63	59.21	794	59.76	794.38	61.8	796	64.22	797.74
64.6	798	66.44	798.28	77.39	800	82.9	800.35		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-441	.05	-48.12	.04	37.31	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-48.12	37.31	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Buckeye Creek

Reach	River Sta.	n1	n2	n3
Buckeye Creek	1300	.05	.04	.05
Buckeye Creek	1200	.05	.04	.05
Buckeye Creek	1100	.05	.04	.05
Buckeye Creek	1000	.05	.04	.05
Buckeye Creek	900	.05	.04	.05
Buckeye Creek	800	.05	.04	.05
Buckeye Creek	700	.05	.04	.05
Buckeye Creek	600	.05	.04	.05
Buckeye Creek	500	.05	.04	.05
Buckeye Creek	400	.05	.04	.05
Buckeye Creek	300	.05	.04	.05
Buckeye Creek	200	.05	.04	.05
Buckeye Creek	100	.05	.04	.05
Buckeye Creek	0	.05	.04	.05

River:Meathouse Fork

Reach	River Sta.	n1	n2	n3
Meathouse Fork	1500	.05	.04	.05
Meathouse Fork	1400	.05	.04	.05
Meathouse Fork	1300	.05	.04	.05
Meathouse Fork	1200	.05	.04	.05
Meathouse Fork	1100	.05	.04	.05
Meathouse Fork	1000	.05	.04	.05
Meathouse Fork	900	.05	.04	.05
Meathouse Fork	800	.05	.04	.05
Meathouse Fork	700	.05	.04	.05
Meathouse Fork	600	.05	.04	.05
Meathouse Fork	500	.05	.04	.05
Meathouse Fork	400	.05	.04	.05
Meathouse Fork	300	.05	.04	.05
Meathouse Fork	200	.05	.04	.05
Meathouse Fork	100	.05	.04	.05
Meathouse Fork	0	.05	.04	.05

SUMMARY OF REACH LENGTHS

River: Buckeye Creek

Reach	River Sta.	Left	Channel	Right
Buckeye Creek	1300	109.3	100	94.14
Buckeye Creek	1200	100.9	100	93.5
Buckeye Creek	1100	100.5	100	99.8
Buckeye Creek	1000	93.5	100	108.8
Buckeye Creek	900	144.5	100	92.5
Buckeye Creek	800	78.3	100	100.6
Buckeye Creek	700	88.9	100	96.1
Buckeye Creek	600	103.2	100	97.3
Buckeye Creek	500	91.1	100	88.3
Buckeye Creek	400	108.1	100	112.1
Buckeye Creek	300	95.9	100	100.2
Buckeye Creek	200	97.7	100	101.8
Buckeye Creek	100	78.5	100	93.6
Buckeye Creek	0	0	0	0

River: Meathouse Fork

Reach	River Sta.	Left	Channel	Right
Meathouse Fork	1500	116.8	100	100.5
Meathouse Fork	1400	104.4	100	100.5
Meathouse Fork	1300	99.6	100	102.2
Meathouse Fork	1200	100.5	100	108.7
Meathouse Fork	1100	95.2	100	103.1
Meathouse Fork	1000	99.2	100	103
Meathouse Fork	900	95.9	100	104.9
Meathouse Fork	800	95	100	102
Meathouse Fork	700	96.8	100	98.9
Meathouse Fork	600	90.7	100	98.3
Meathouse Fork	500	102.7	100	103.6
Meathouse Fork	400	101.3	100	168.7
Meathouse Fork	300	92.7	100	105.3
Meathouse Fork	200	89.3	100	191
Meathouse Fork	100	85.74	100	88.32
Meathouse Fork	0	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Buckeye Creek

Reach	River Sta.	Contr.	Expan.
Buckeye Creek	1300	.1	.3
Buckeye Creek	1200	.1	.3
Buckeye Creek	1100	.1	.3
Buckeye Creek	1000	.1	.3
Buckeye Creek	900	.1	.3
Buckeye Creek	800	.1	.3
Buckeye Creek	700	.1	.3

Buckeye Creek	600	.1	.3
Buckeye Creek	500	.1	.3
Buckeye Creek	400	.1	.3
Buckeye Creek	300	.1	.3
Buckeye Creek	200	.1	.3
Buckeye Creek	100	.1	.3
Buckeye Creek	0	.1	.3

River: Meathouse Fork

Reach	River Sta.	Contr.	Expan.
Meathouse Fork	1500	.1	.3
Meathouse Fork	1400	.1	.3
Meathouse Fork	1300	.1	.3
Meathouse Fork	1200	.1	.3
Meathouse Fork	1100	.1	.3
Meathouse Fork	1000	.1	.3
Meathouse Fork	900	.1	.3
Meathouse Fork	800	.1	.3
Meathouse Fork	700	.1	.3
Meathouse Fork	600	.1	.3
Meathouse Fork	500	.1	.3
Meathouse Fork	400	.1	.3
Meathouse Fork	300	.1	.3
Meathouse Fork	200	.1	.3
Meathouse Fork	100	.1	.3
Meathouse Fork	0	.1	.3

Appendix D

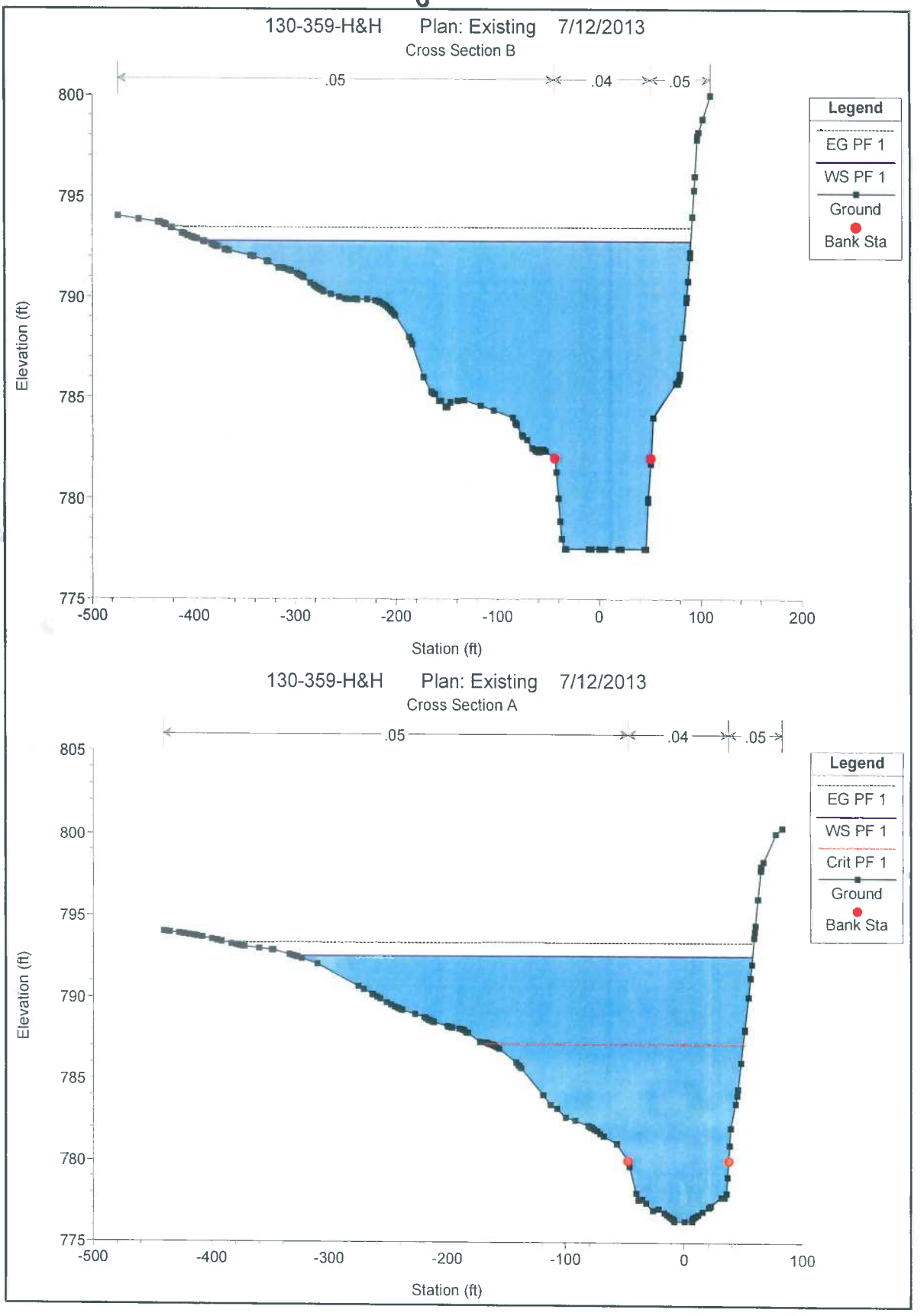
APPENDIX D

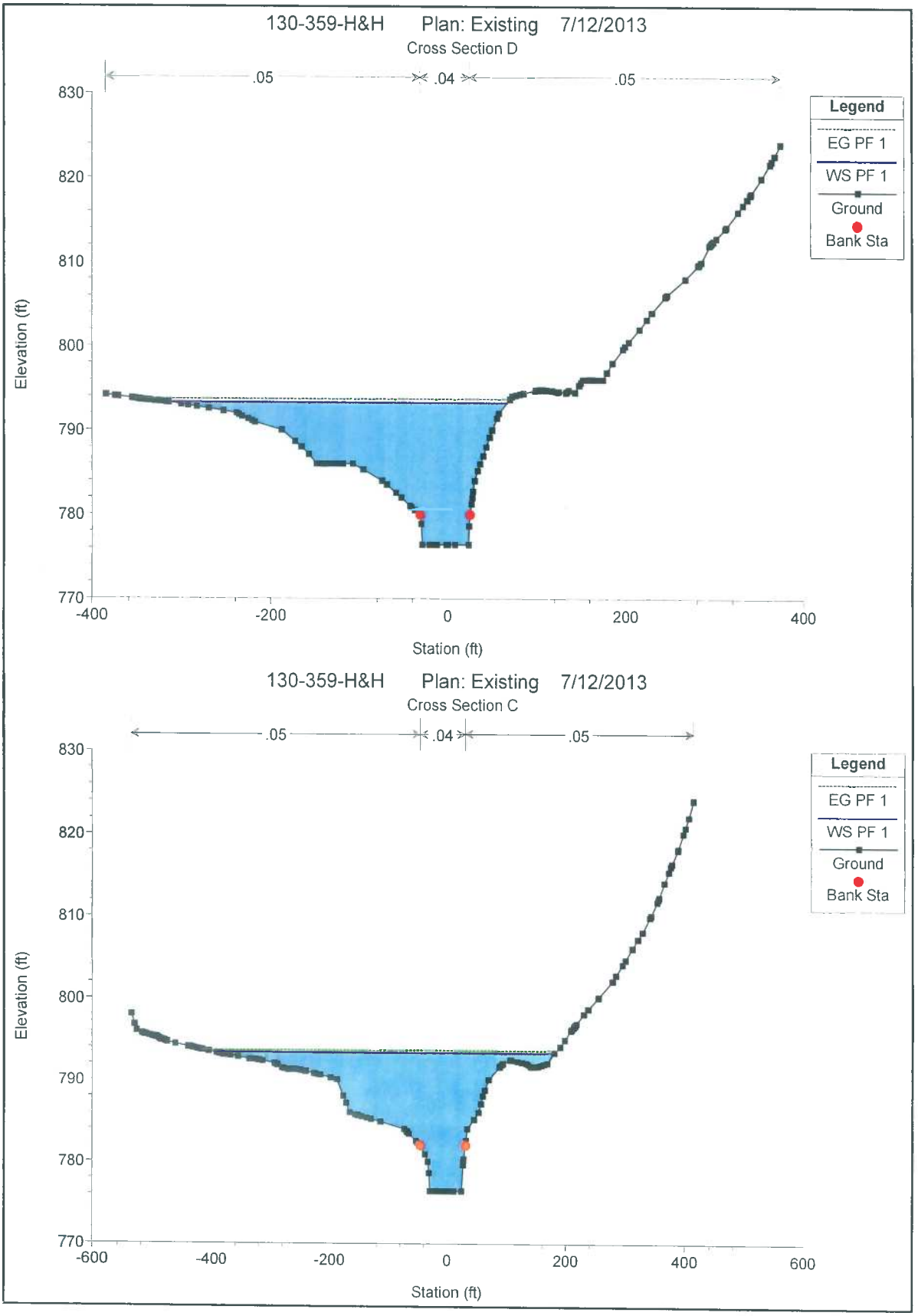
EXISTING AND PROPOSED FLOODWAY MAPS AND CROSS SECTION OUTPUT

PREPARED BY: ARC 7/12/13

CHECKED BY: CJR 7/12/2013

Existing Conditions

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Cross Section D
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.04
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Legend
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WS PF 1
Ground
Bank Sta
Elevation (ft)
830
820
810
800
790
780
770
-400
-200
0
200
400
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section C
.05
.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
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810
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-600
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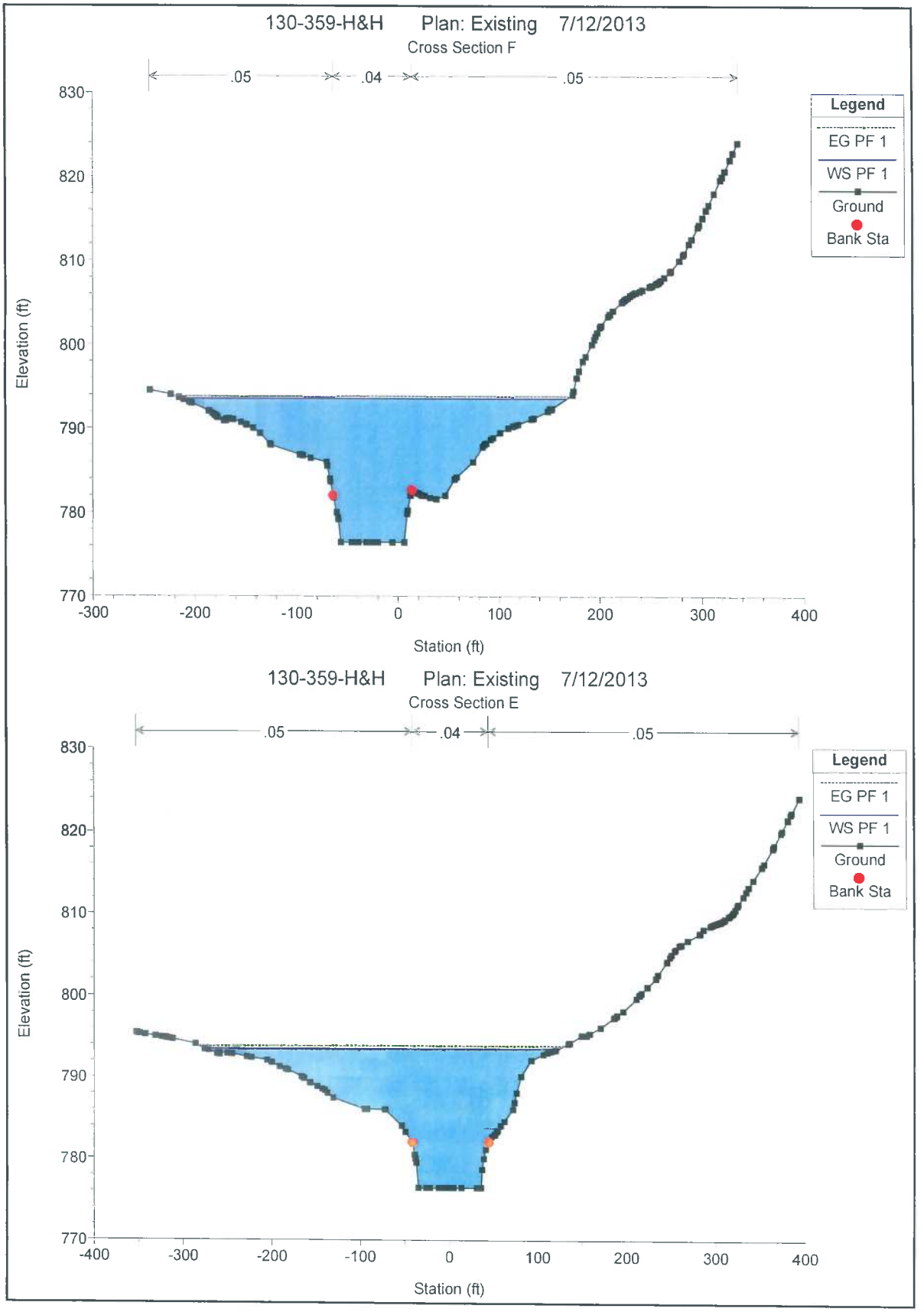
-200
0
200
400
600
Station (ft)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WS PF 1
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Bank Sta
Elevation (ft)
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820
810
800
790
780
770
-300
-200
-100
0
100
200
300
400
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section E
.05
.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
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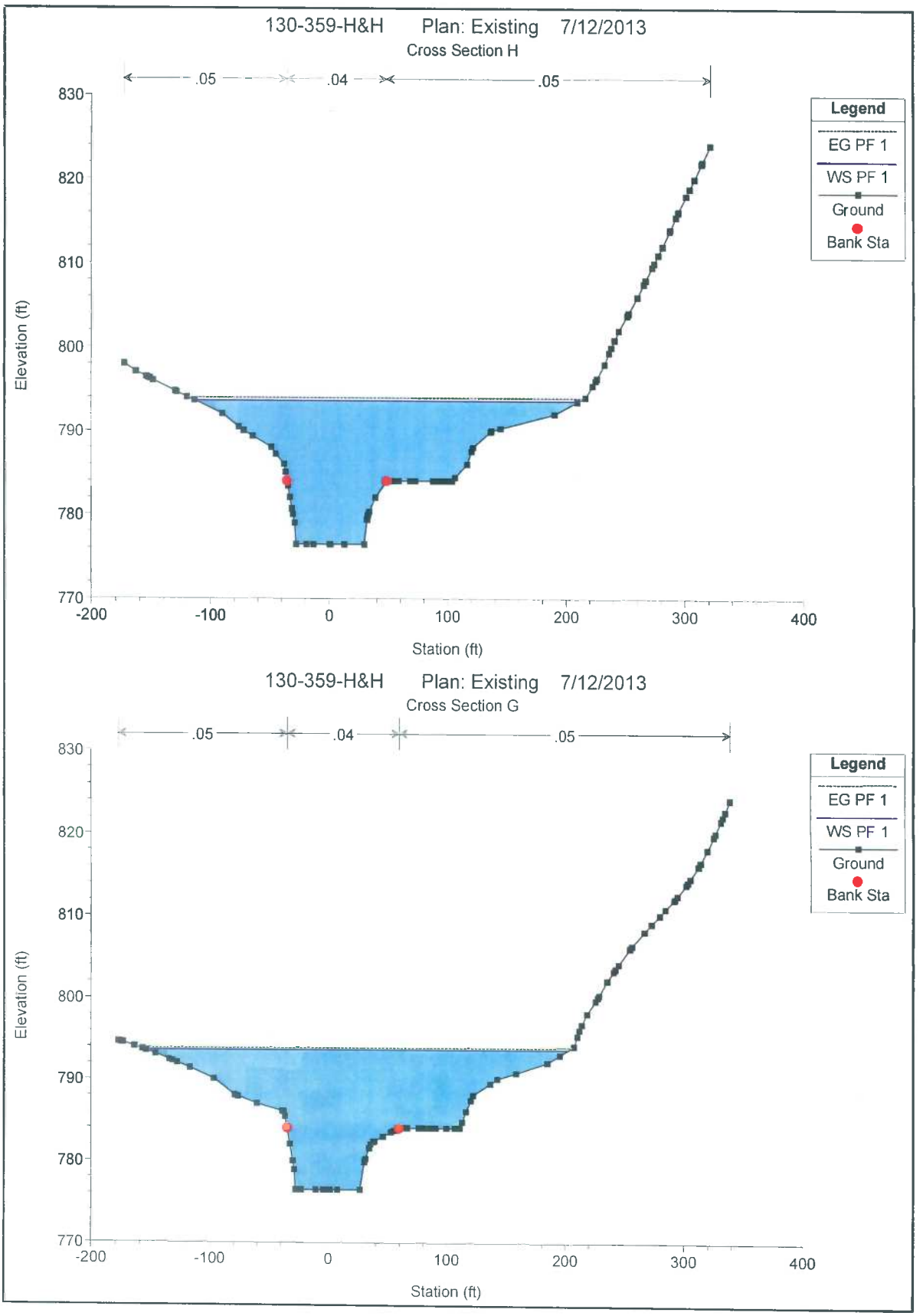
810
800
790
780
770
-400
-300
-200
-100
0
100
200
300
400
Station (ft)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Cross Section H
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Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
830
820
810
800
790
780
770
-200
-100
0
100
200
300
400
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section G
.05
.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
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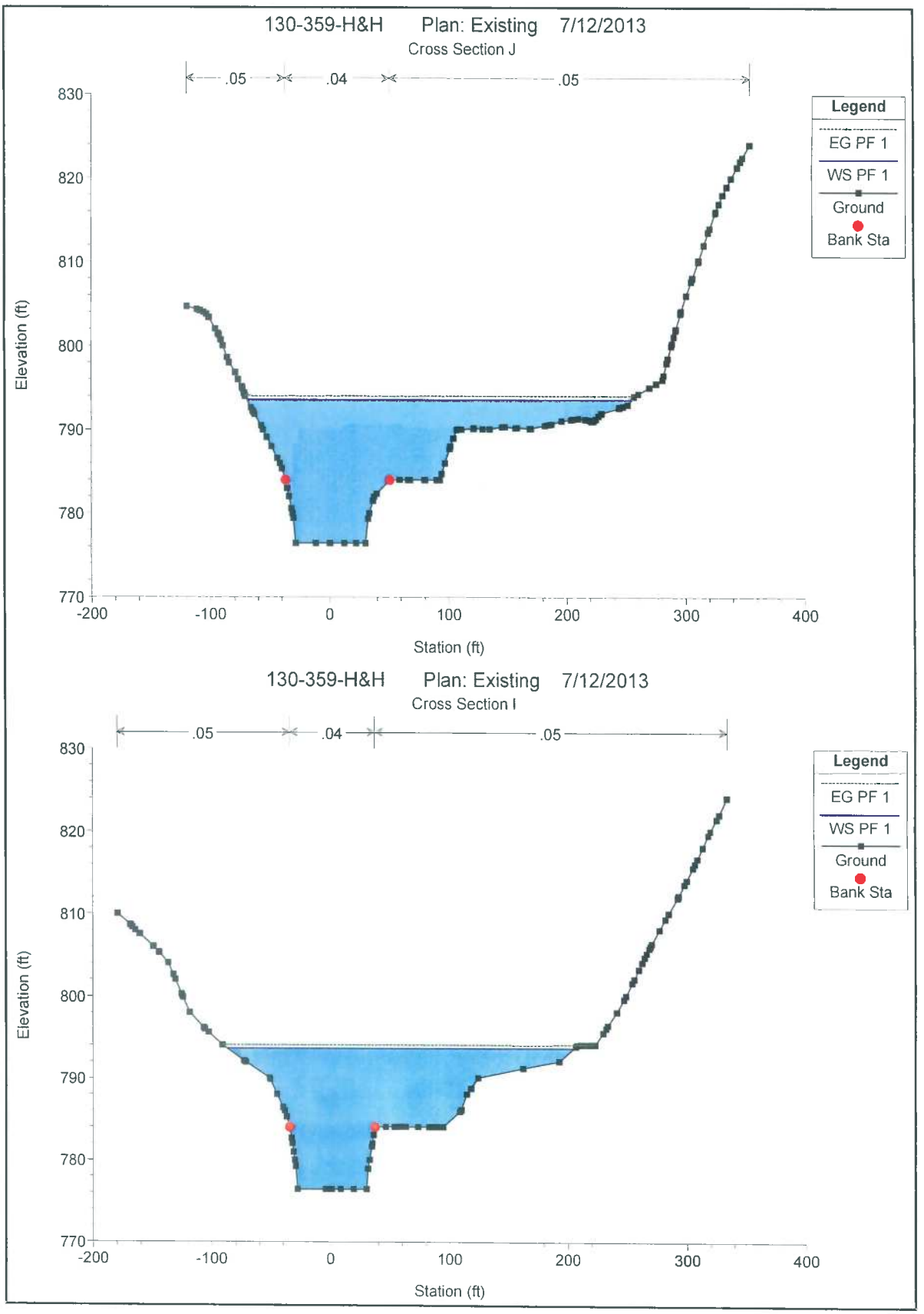
810
800
790
780
770
-200
-100
0
100
200
300
400
Station (ft)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.05
Legend
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WS PF 1
Ground
Bank Sta
Elevation (ft)
830
820
810
800
790
780
770
-200
-100
0
100
200
300
400
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section I
.05
.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
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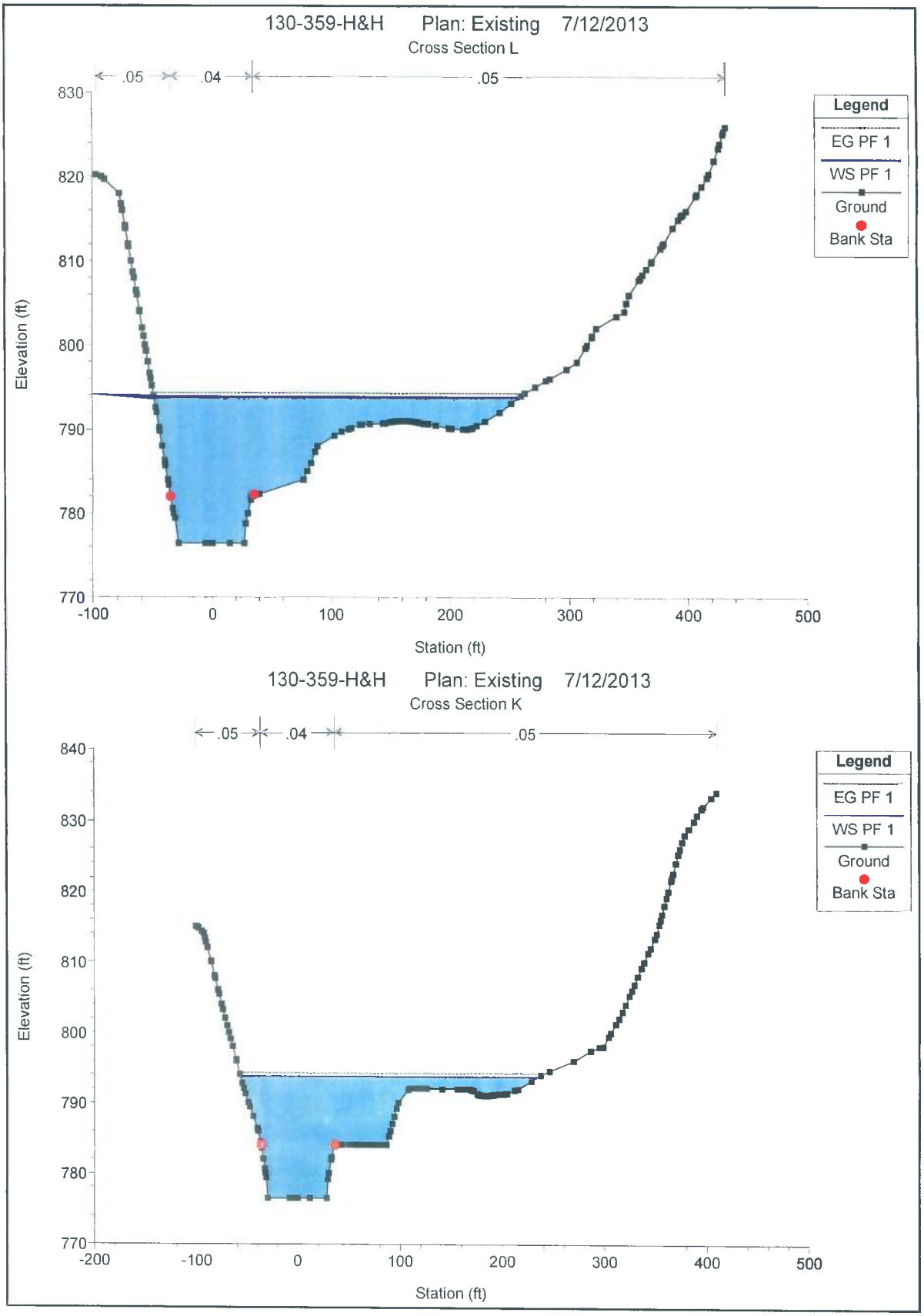
820
810
800
790
780
770
-200
-100
0
100
200
300
400
Station (ft)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.05
Legend
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WS PF 1
Ground
Bank Sta
Elevation (ft)
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820
810
800
790
780
770
-100
0
100
200
300
400
500
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section K
.05
.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
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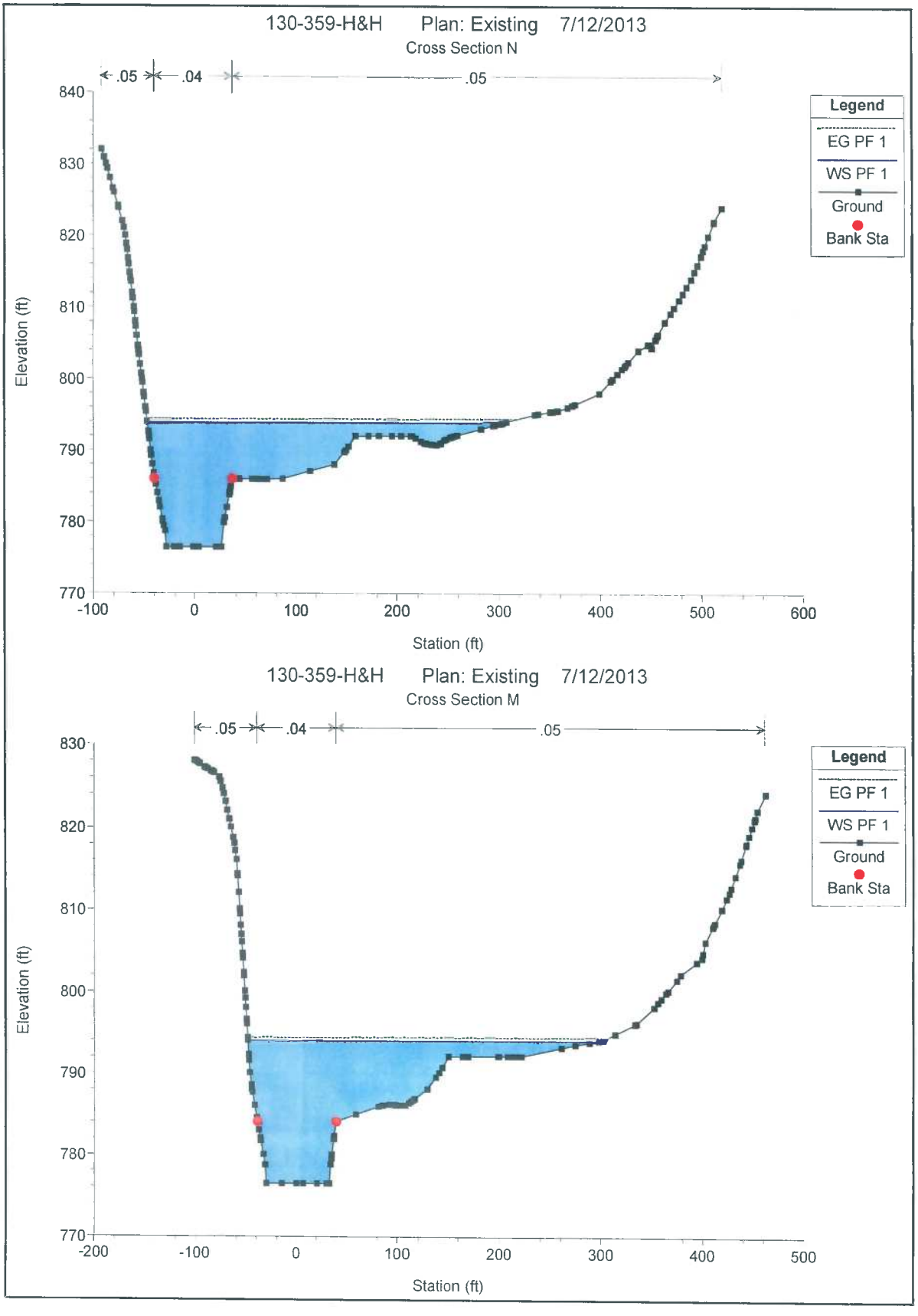
820
810
800
790
780
770
-200
-100
0
100
200
300
400
500
Station (ft)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Cross Section N
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.05
Legend
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WS PF 1
Ground
Bank Sta
Elevation (ft)
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830
820
810
800
790
780
770
-100
0
100
200
300
400
500
600
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section M
.05
.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
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810
800
790
780
770
-200
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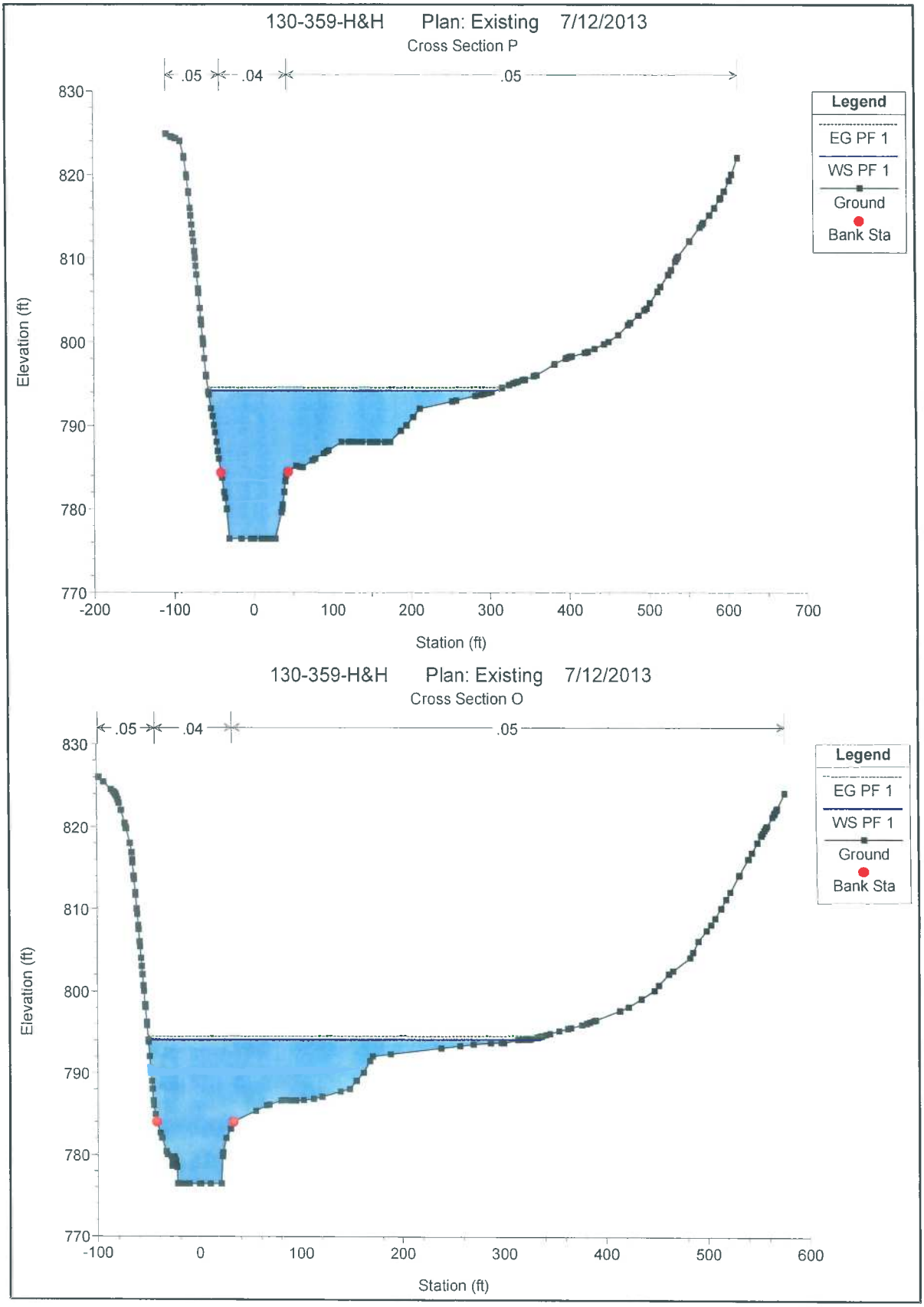
100
200
300
400
500
Station (ft)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Cross Section P
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Legend
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WS PF 1
Ground
Bank Sta
Elevation (ft)
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820
810
800
790
780
770
-200
-100
0
100
200
300
400
500
600
700
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section O
.05
.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
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810
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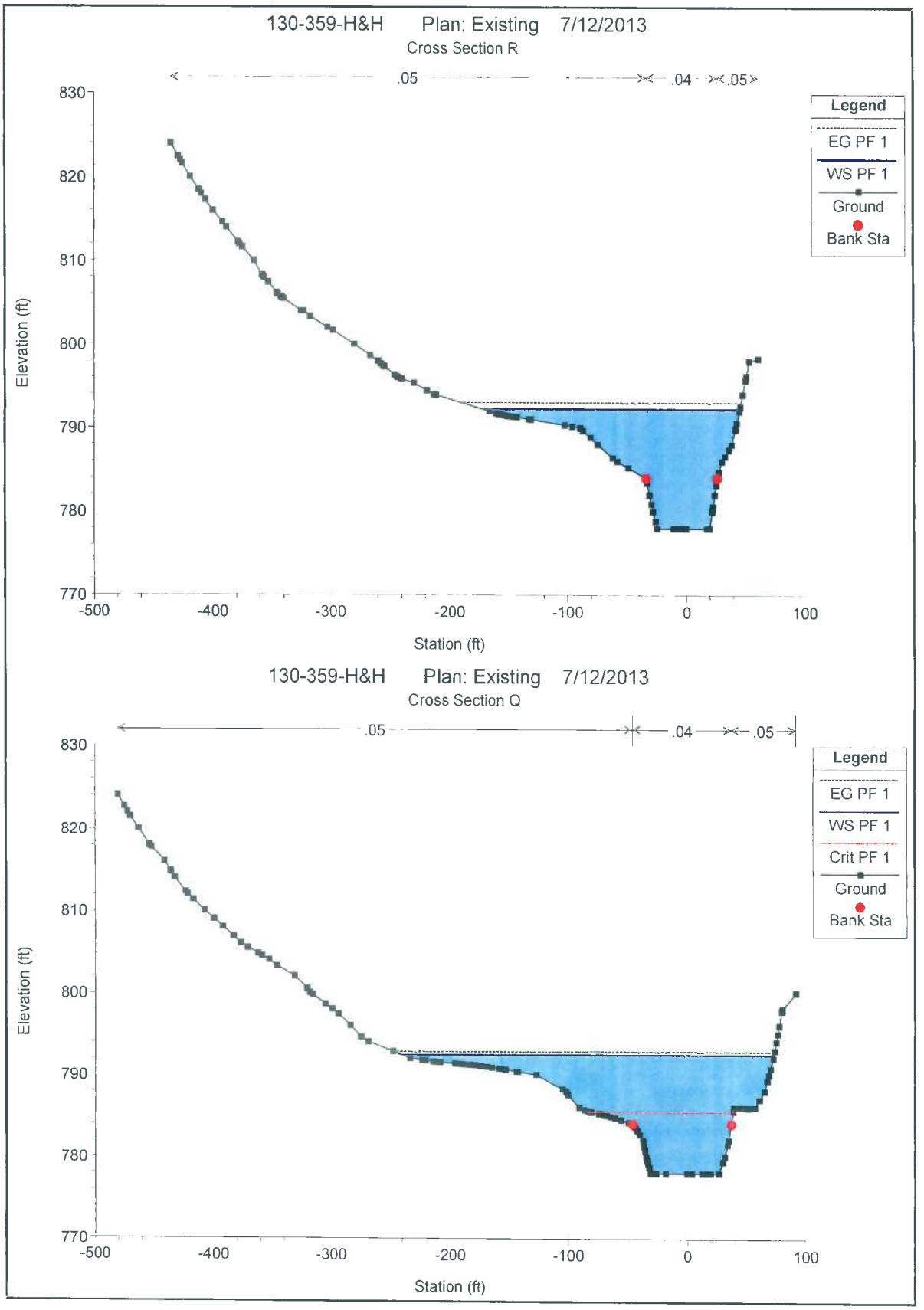
790
780
770
-100
0
100
200
300
400
500
600
Station (ft)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Cross Section R
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.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
830
820
810
800
790
780
770
-500
-400
-300
-200
-100
0
100
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section Q
.05
.04
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
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810
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780
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-500
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0
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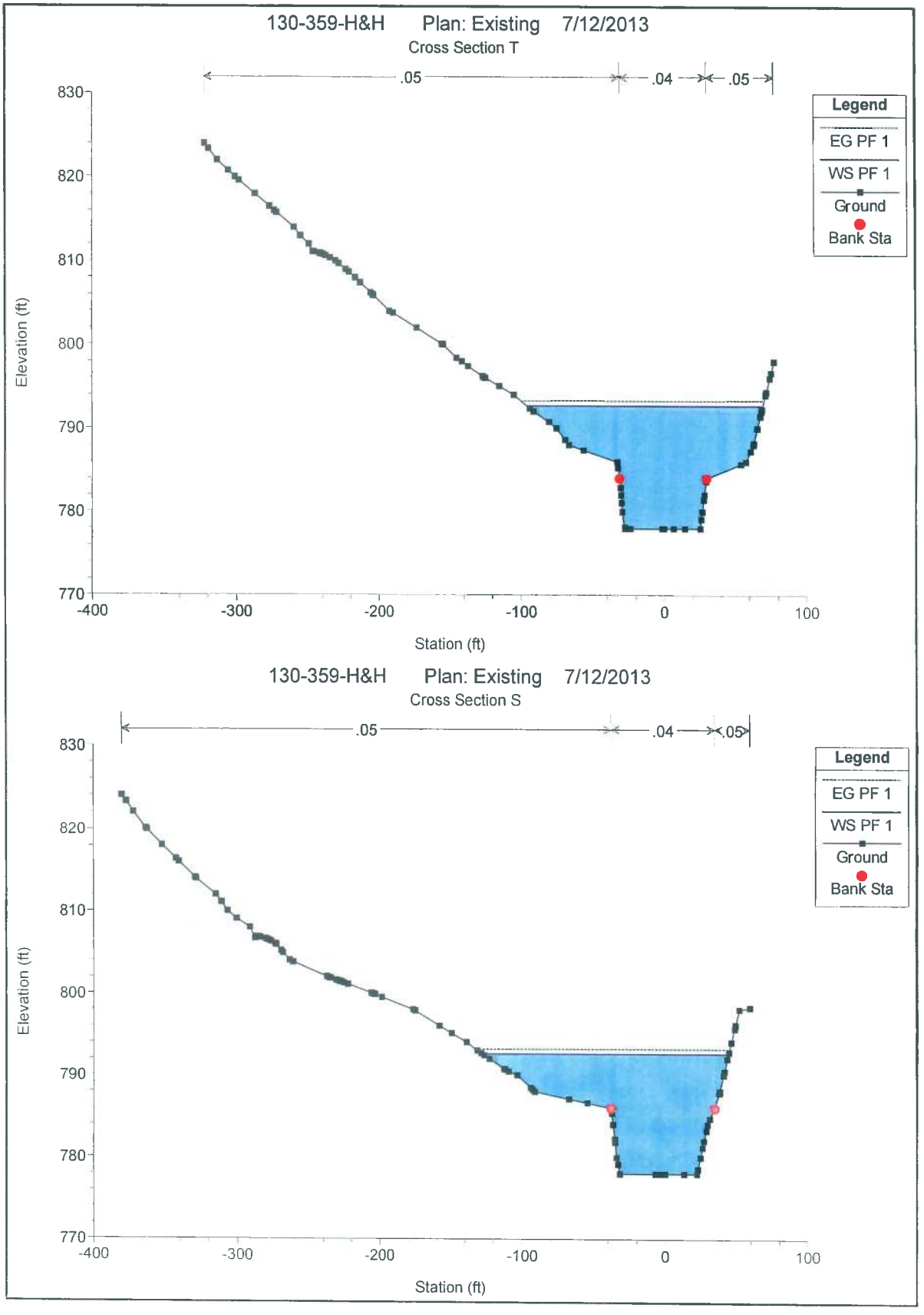
Station (ft)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Cross Section T
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Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
830
820
810
800
790
780
770
-400
-300
-200
-100
0
100
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section S
.05
.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
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810
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770
-400
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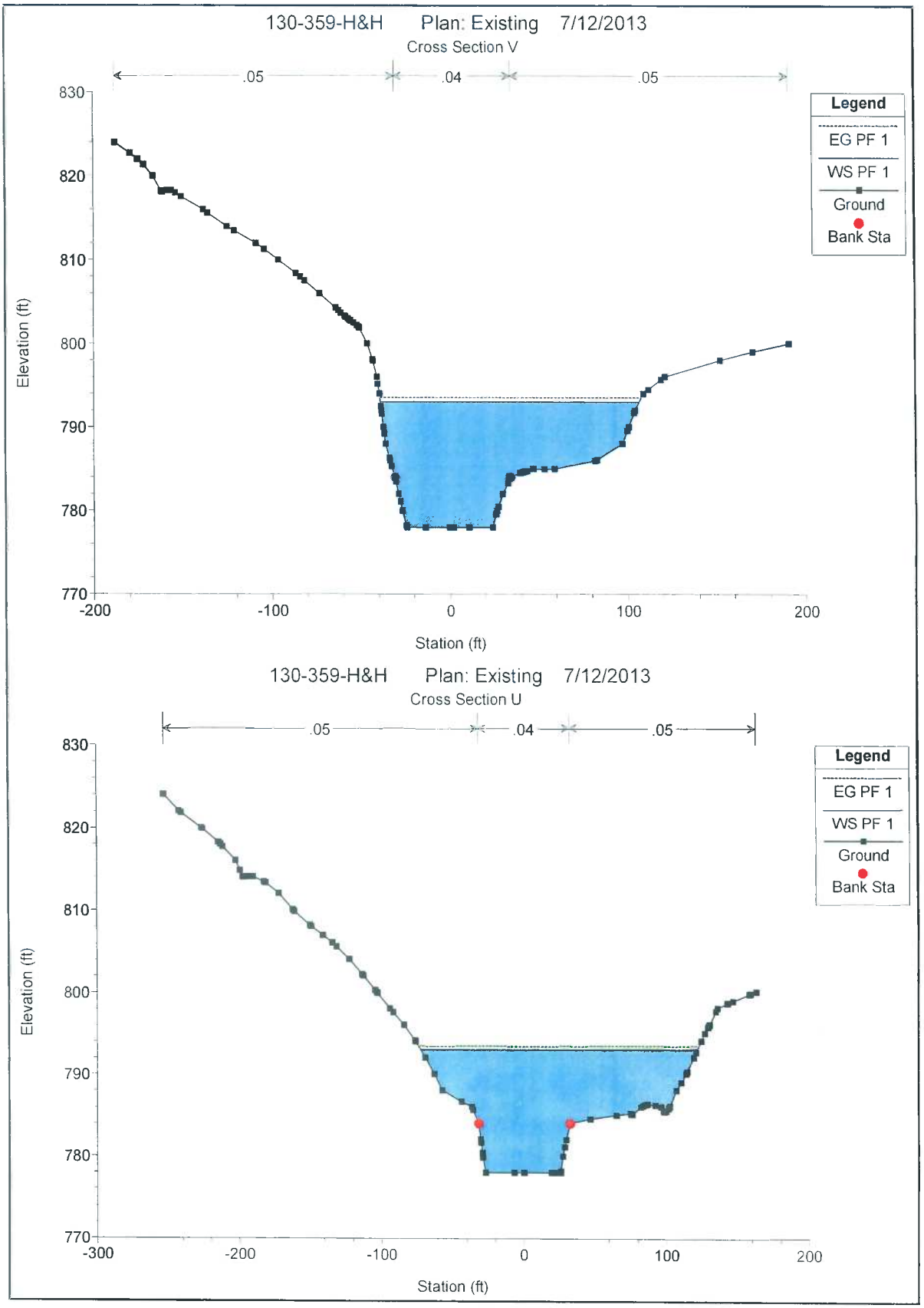
-200
-100
0
100
Station (ft)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Cross Section V
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.04
.05
Legend
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WS PF 1
Ground
Bank Sta
Elevation (ft)
830
820
810
800
790
780
770
-200
-100
0
100
200
Station (ft)
130-359-H&H Plan: Existing 7/12/2013
Cross Section U
.05
.04
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
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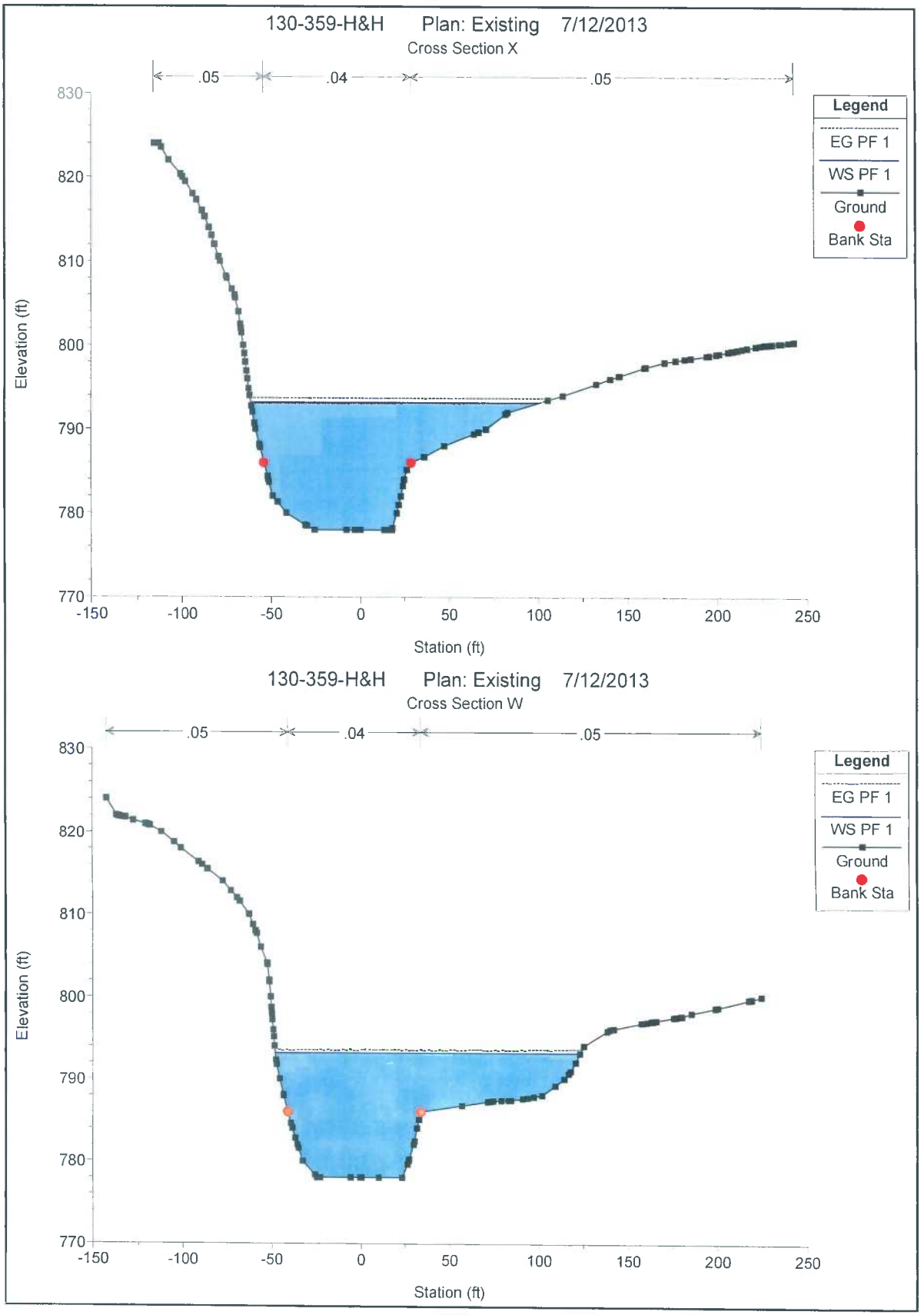
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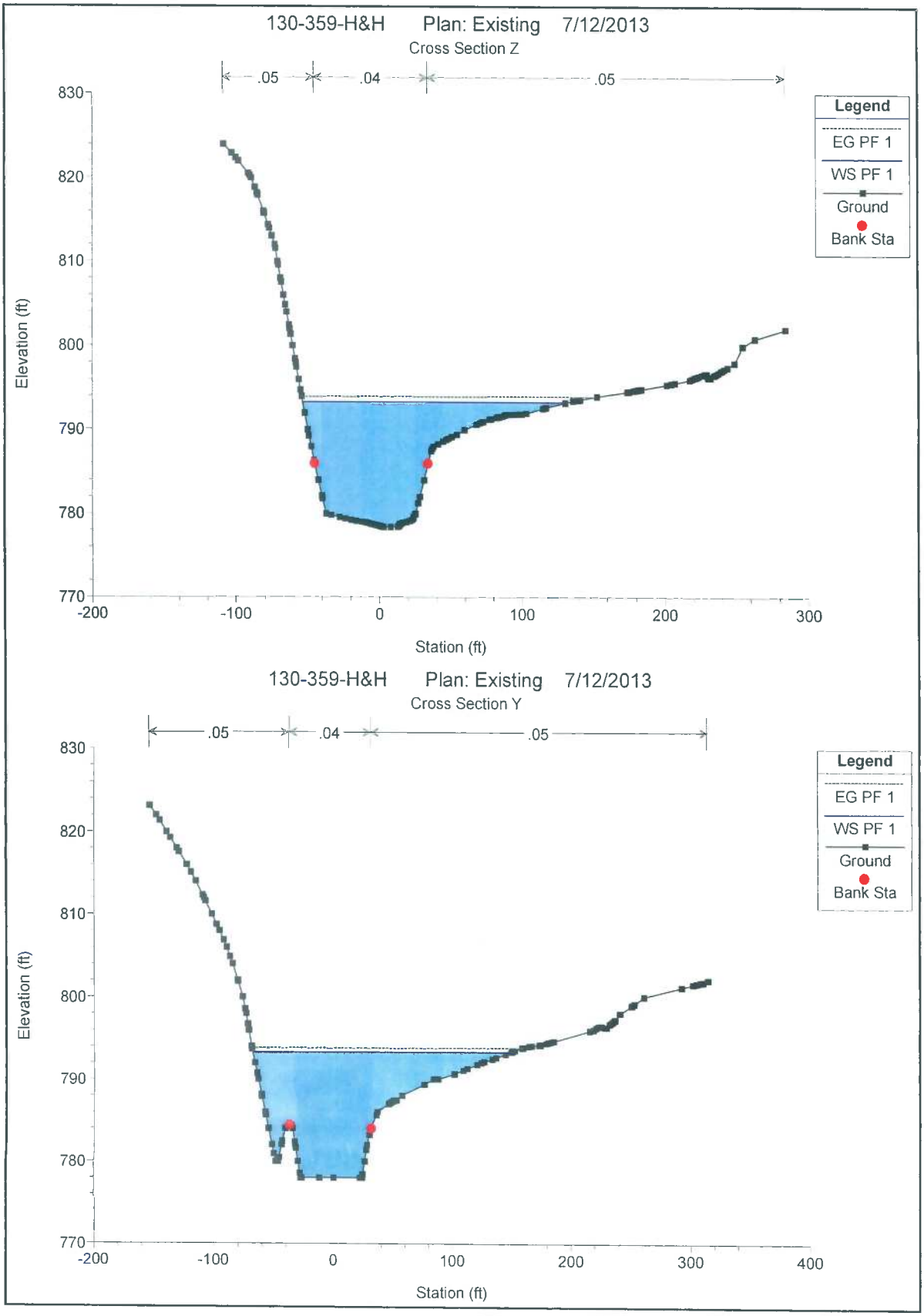
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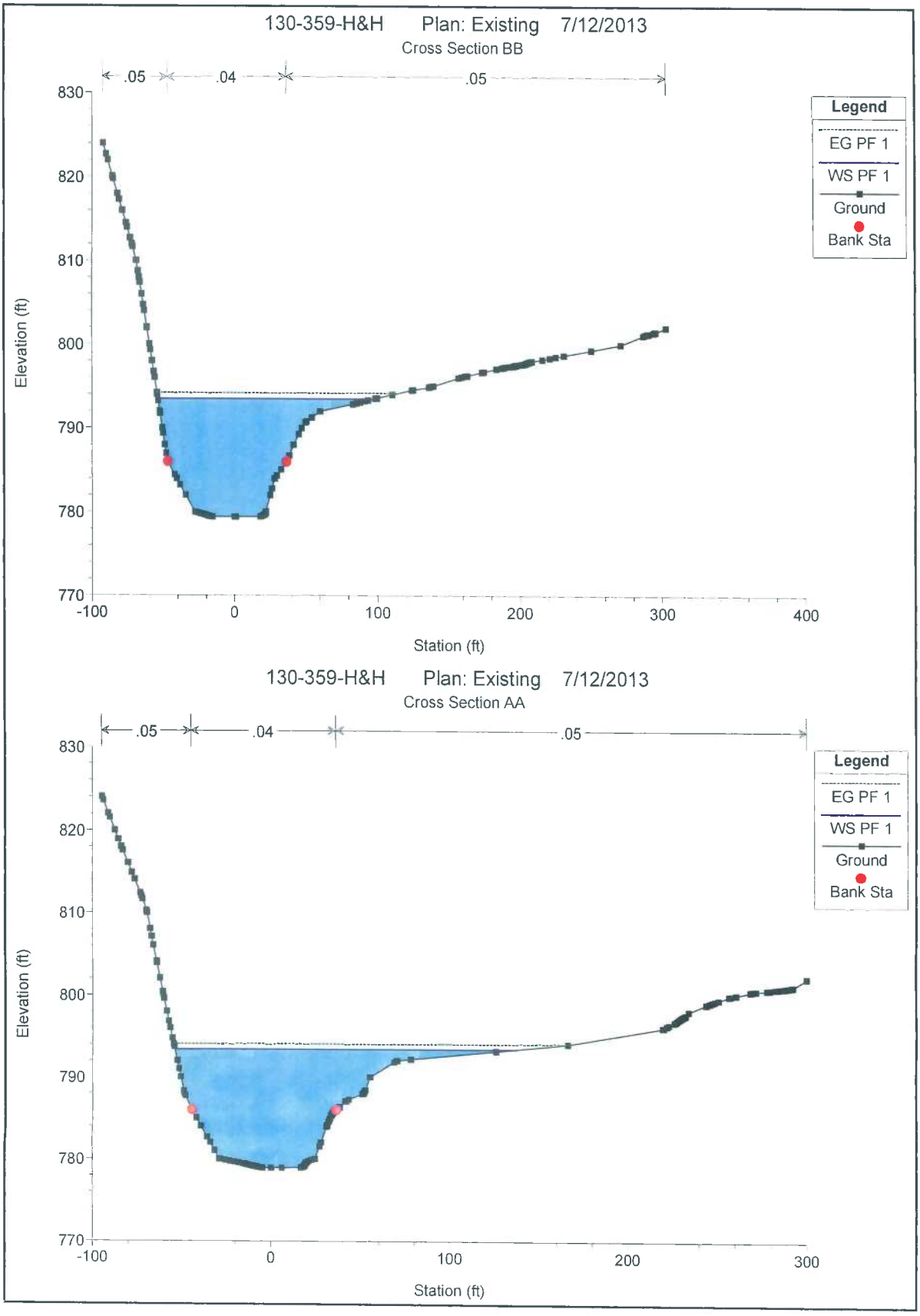
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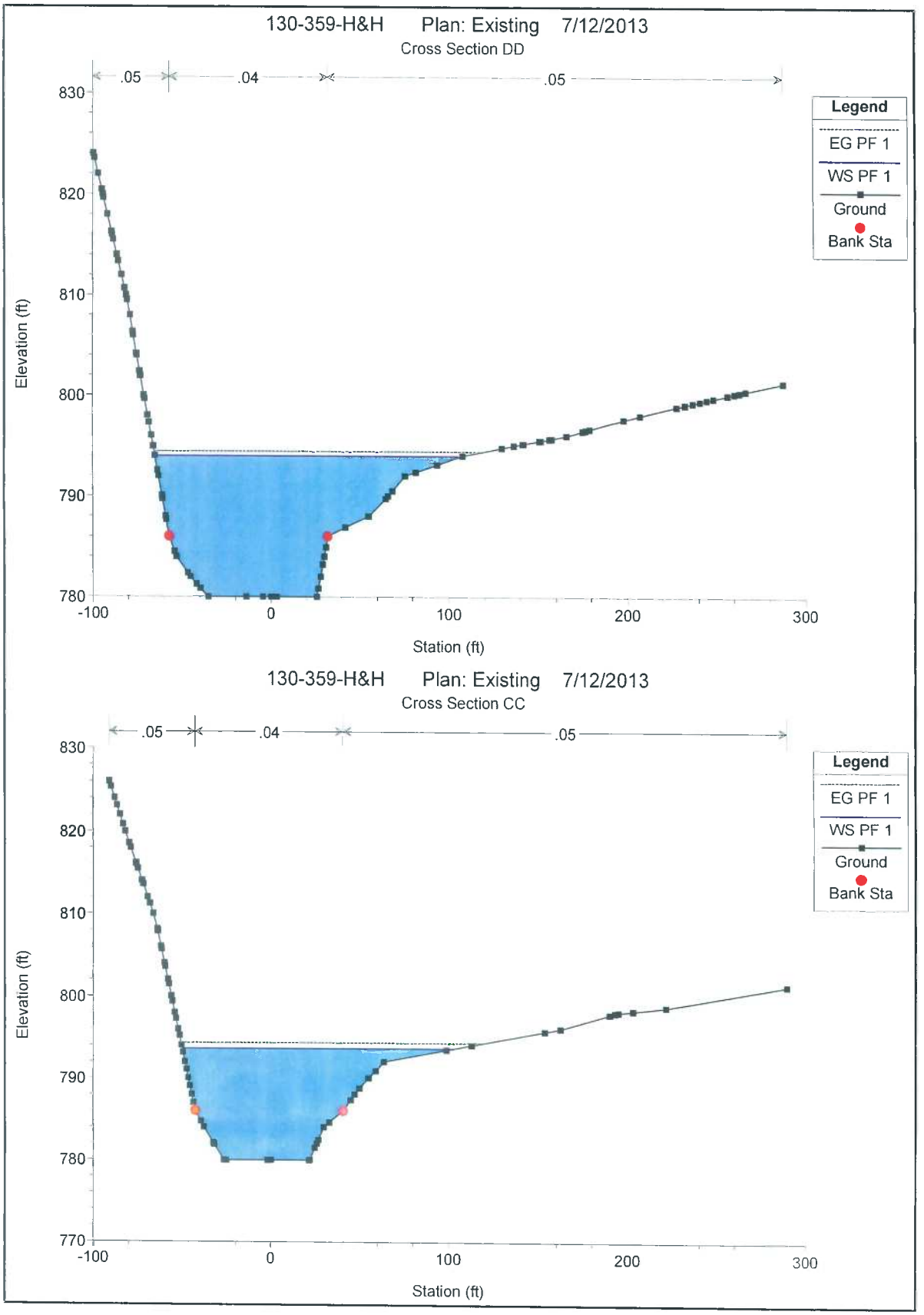
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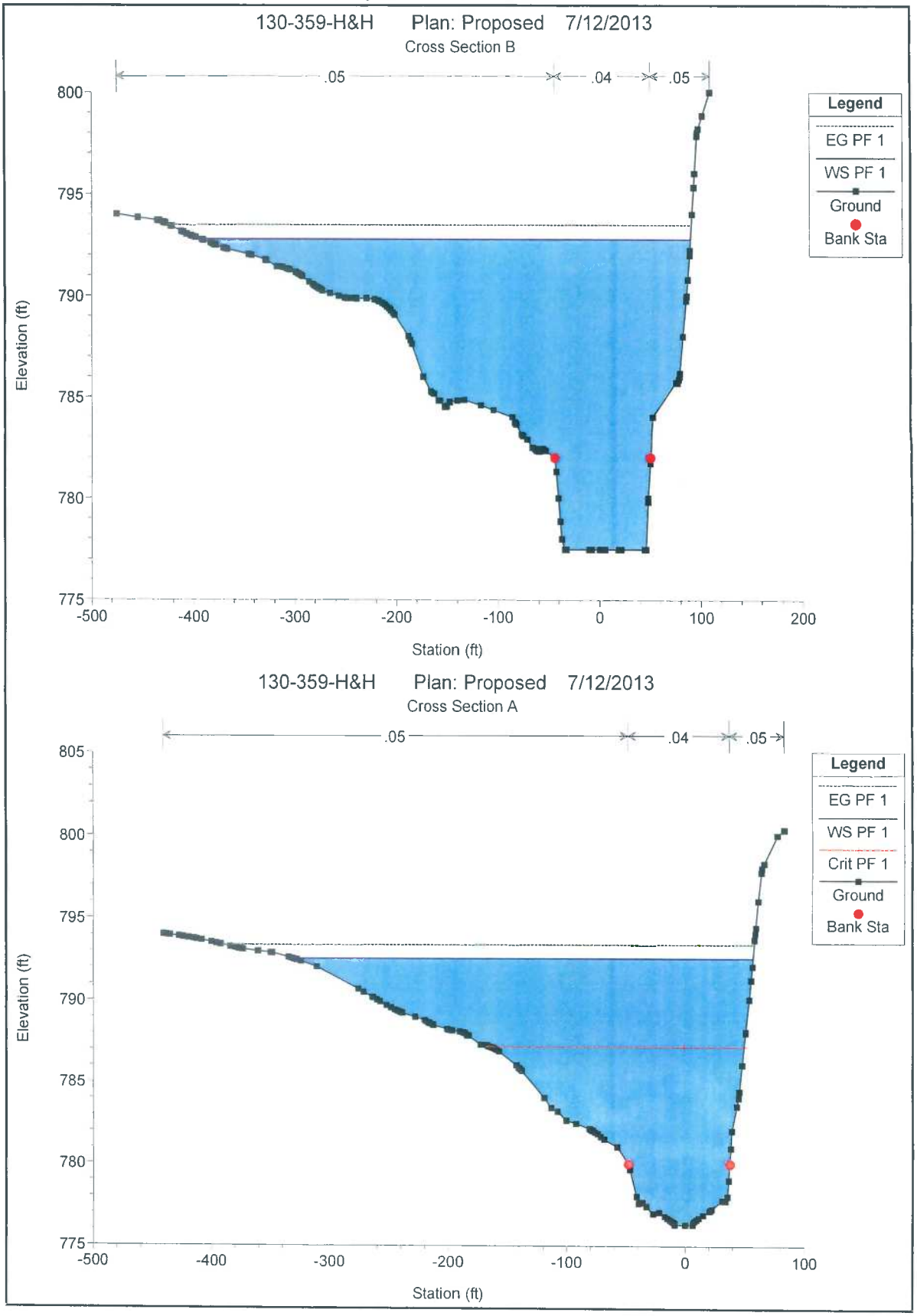
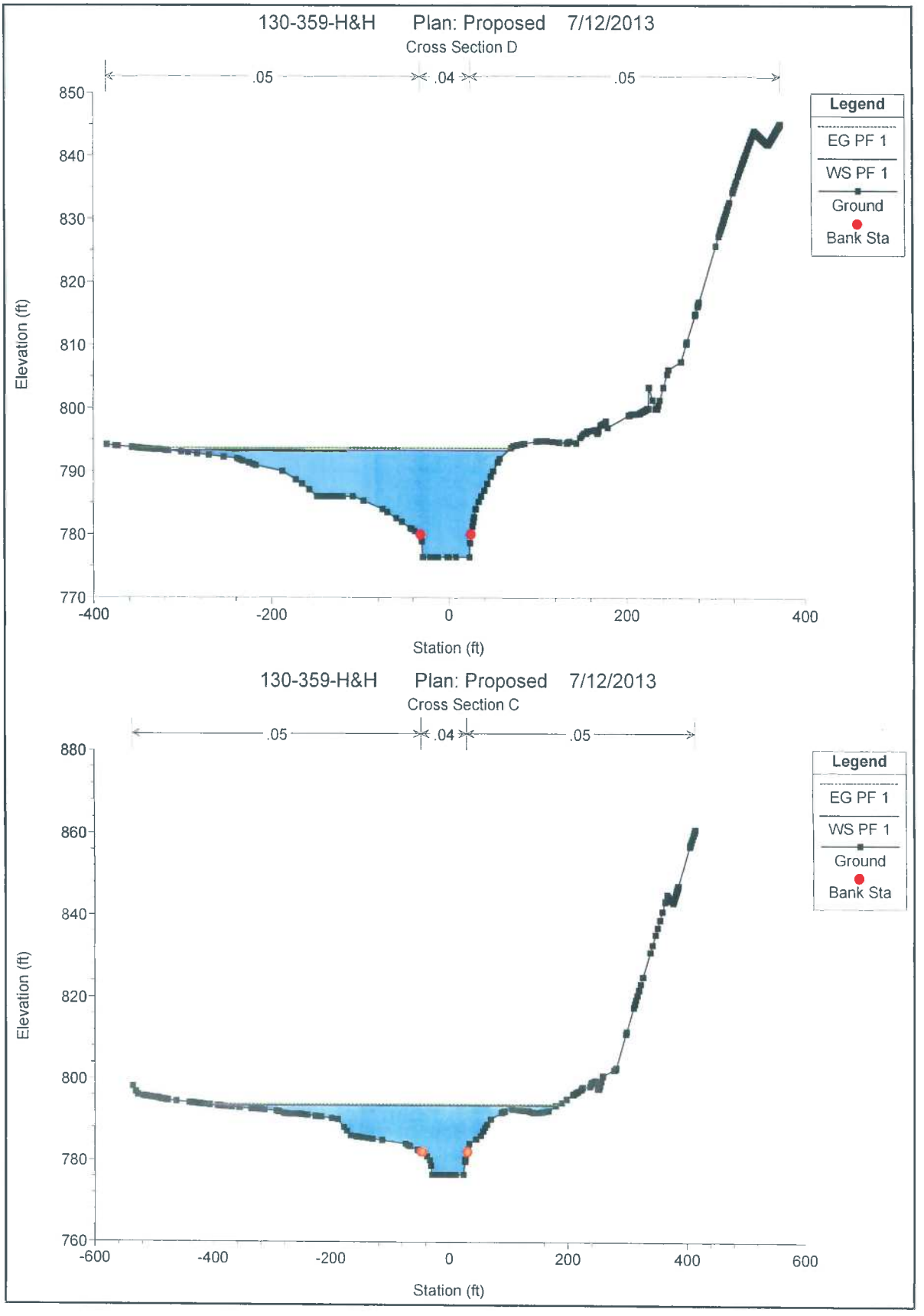
Station (ft)

PREPARED BY: ARC 7/12/13
CHECKED BY: CJR 7/12/2013

Proposed Conditions

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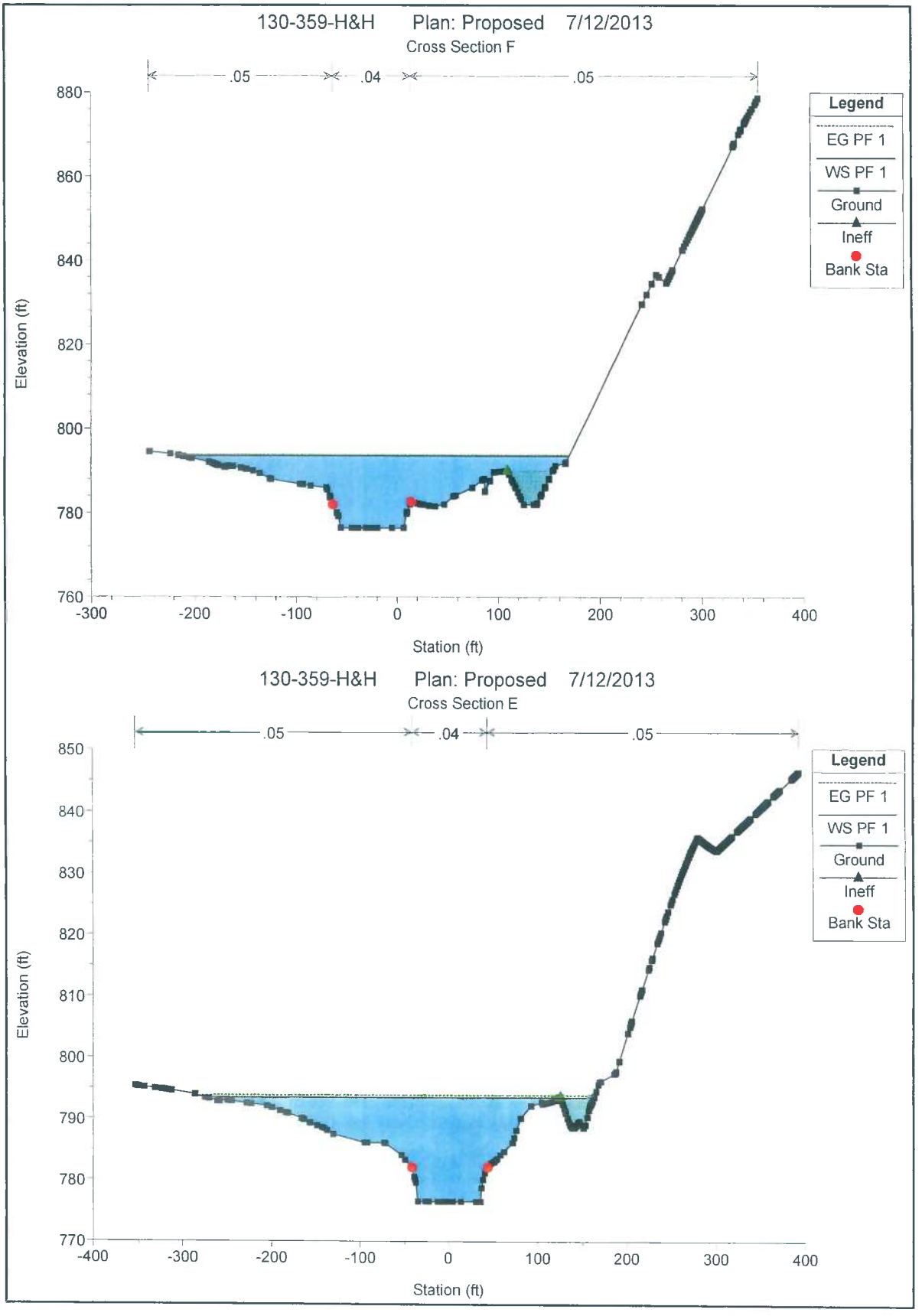
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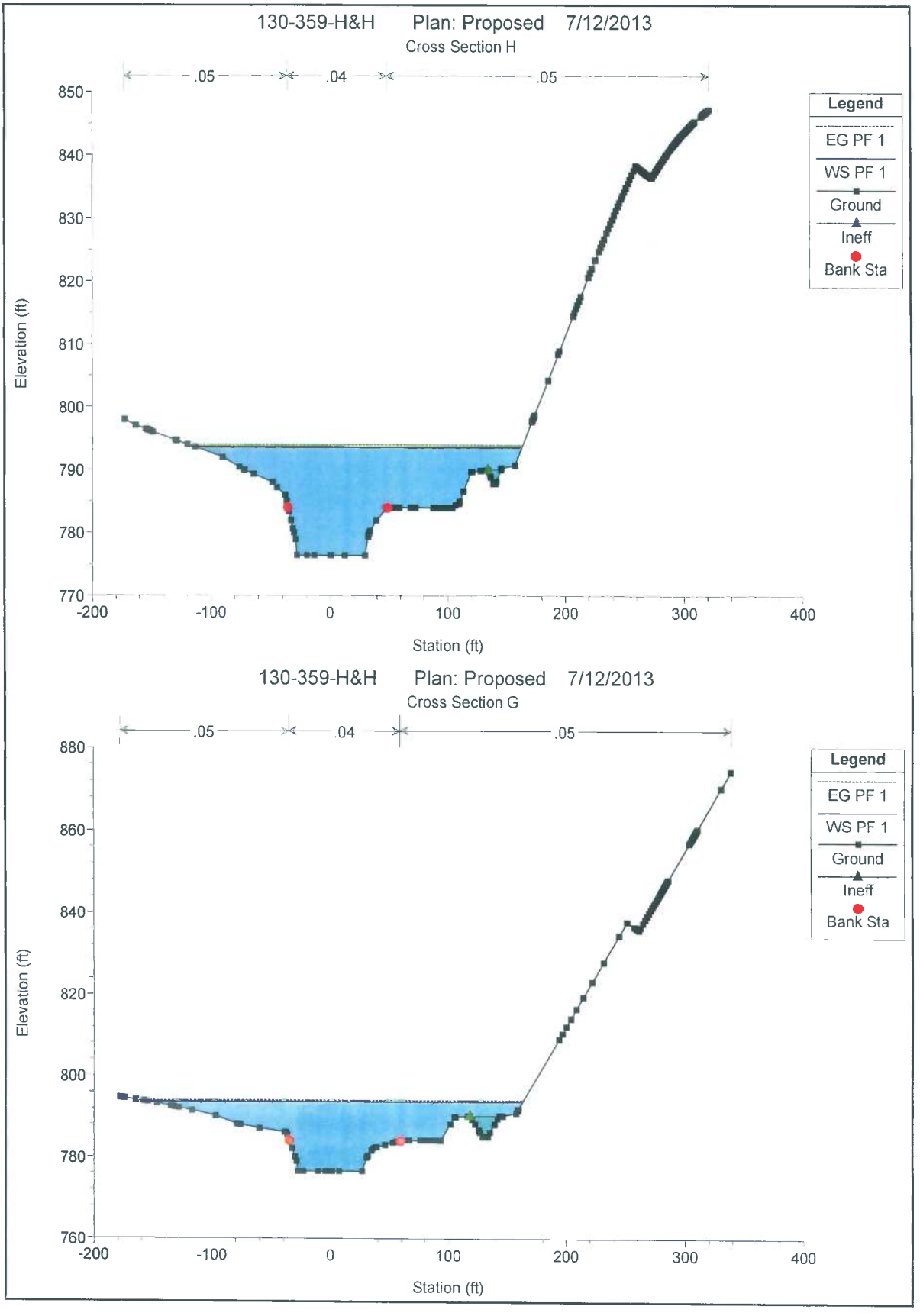
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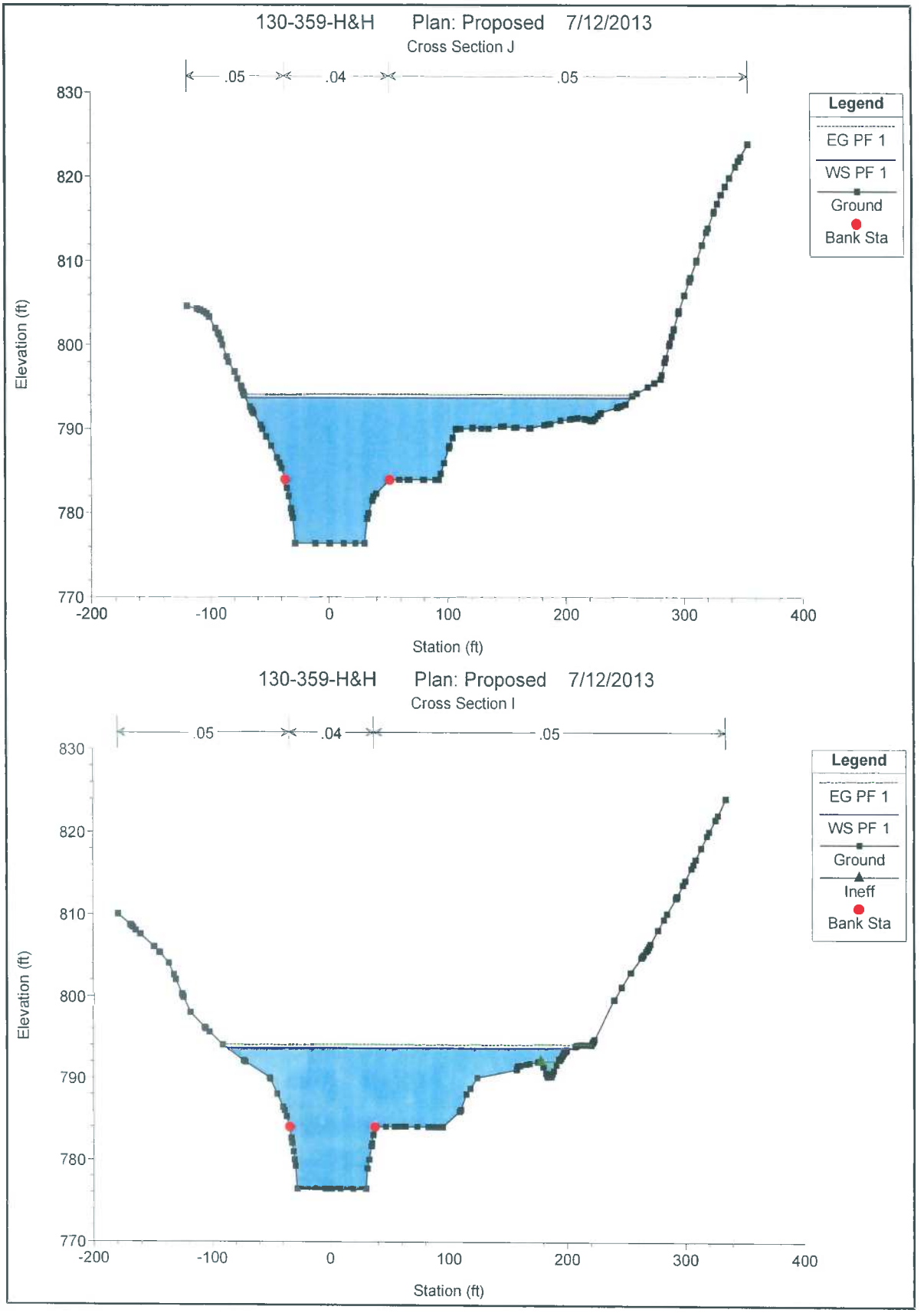
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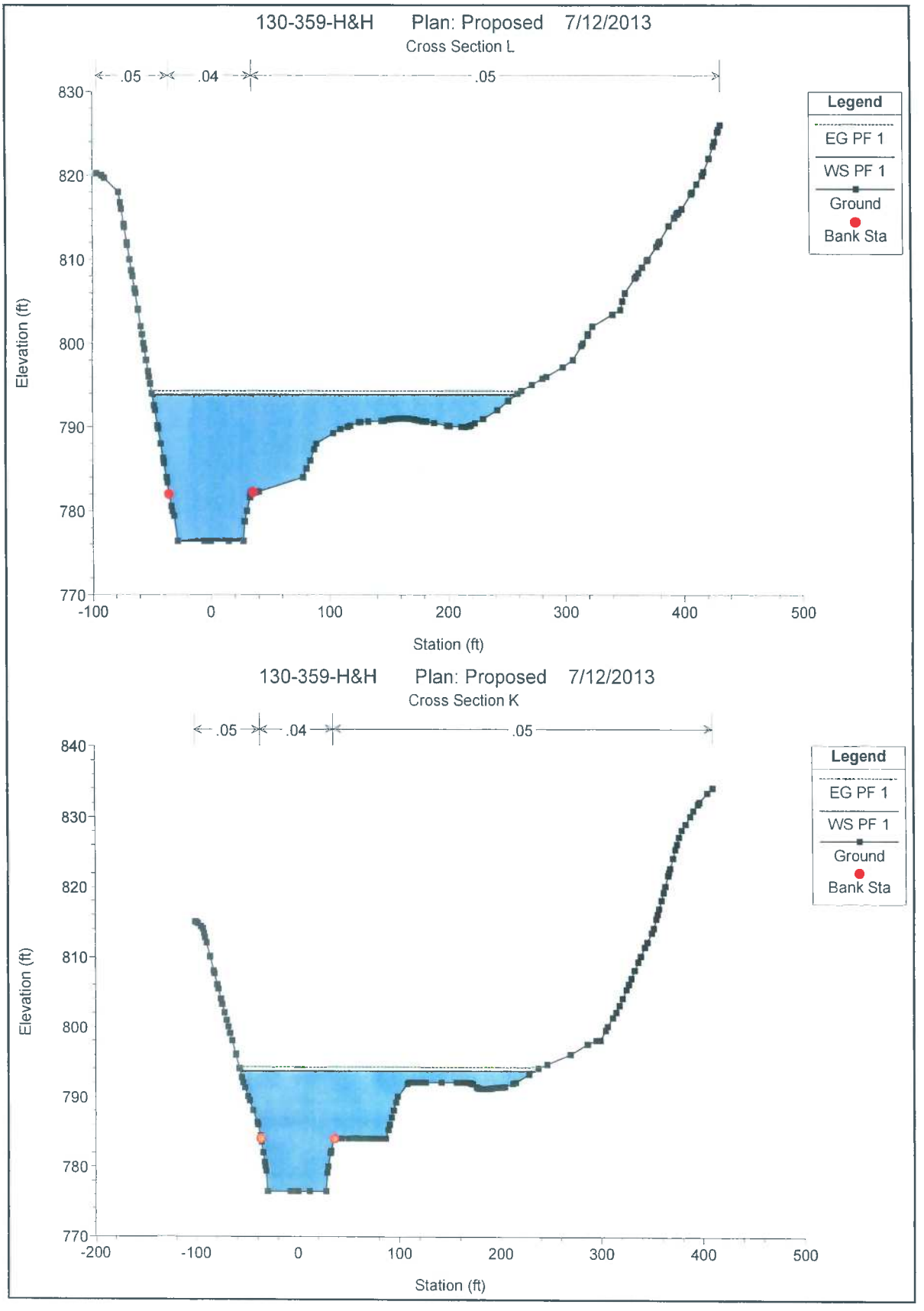
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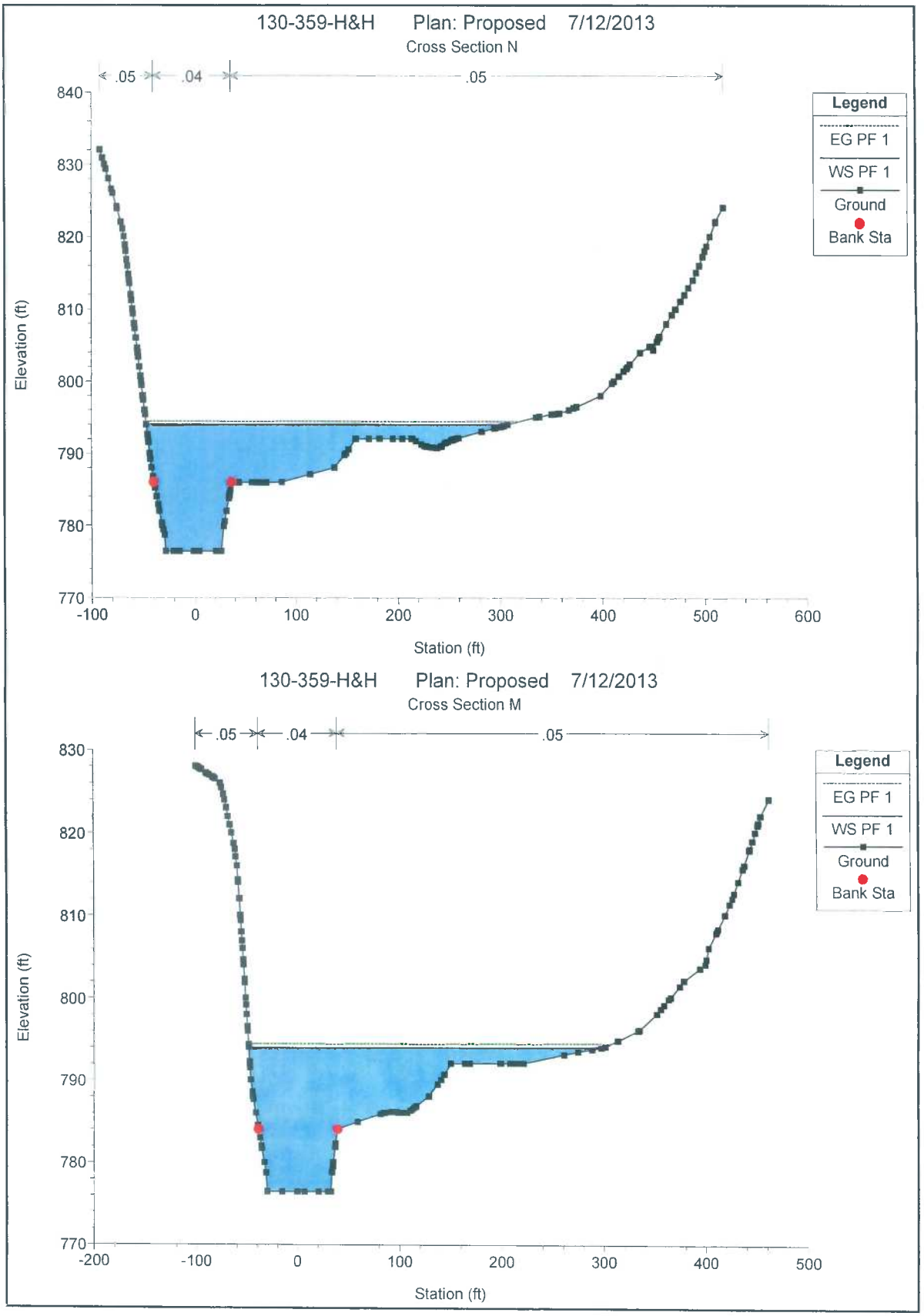
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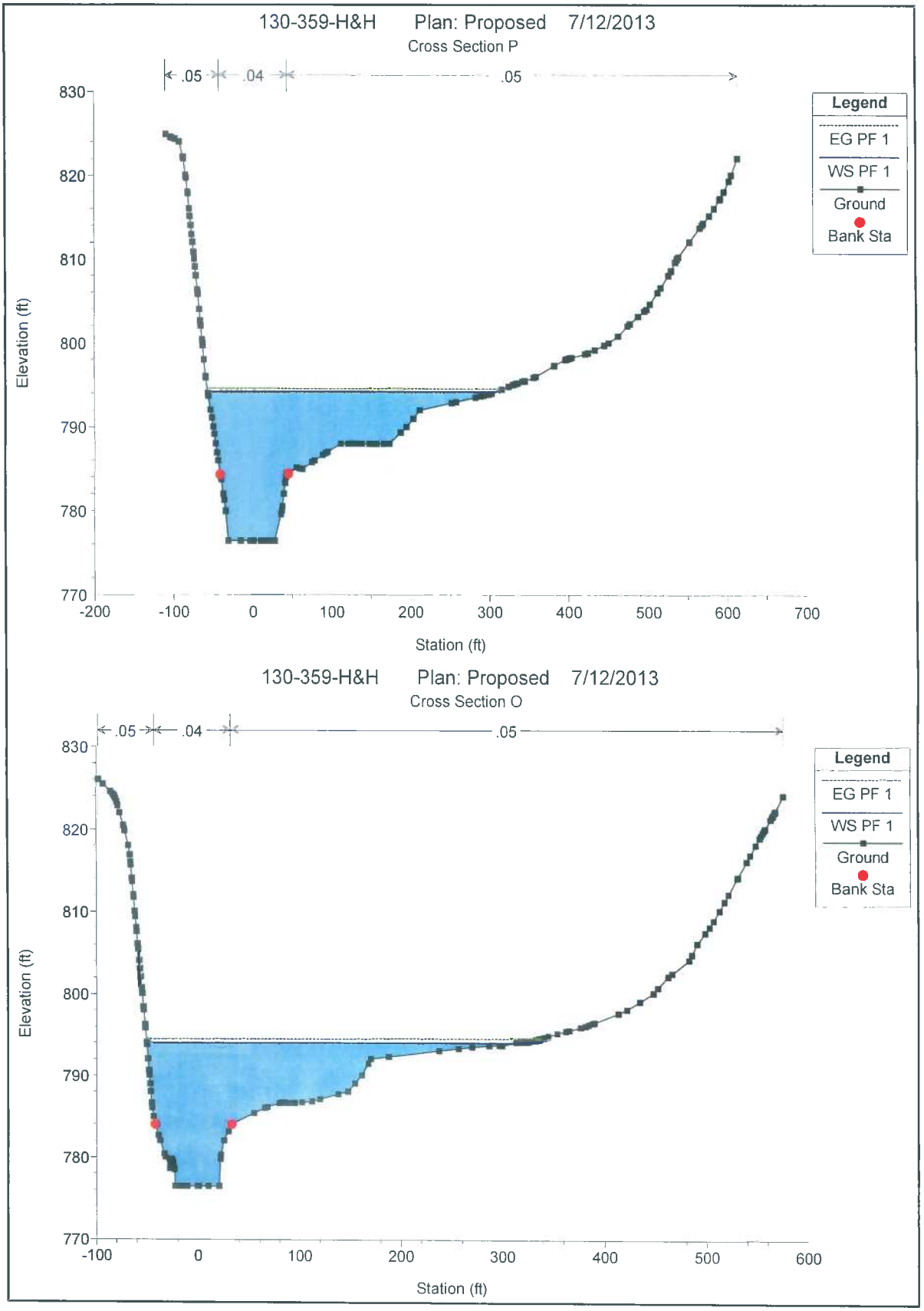
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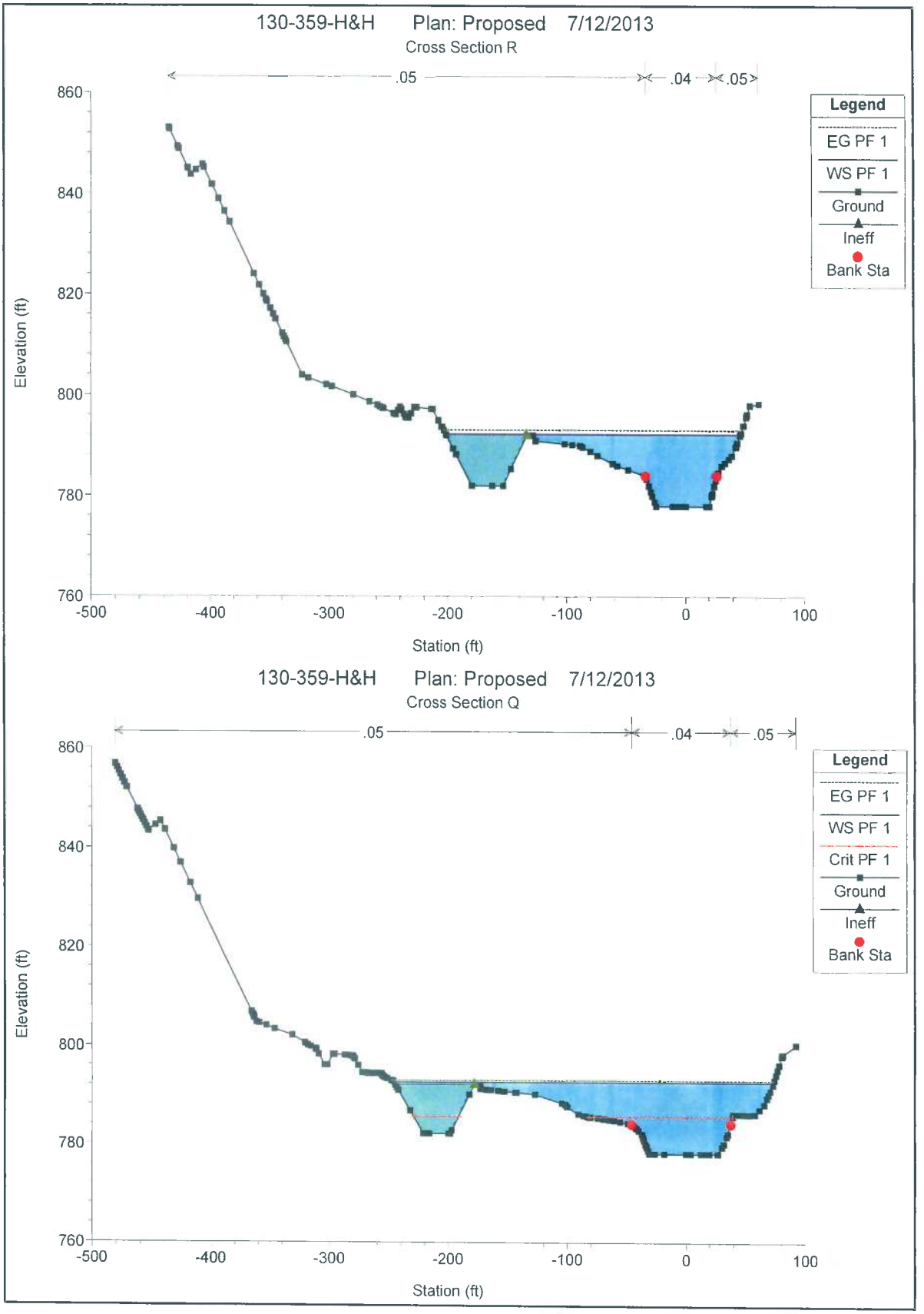
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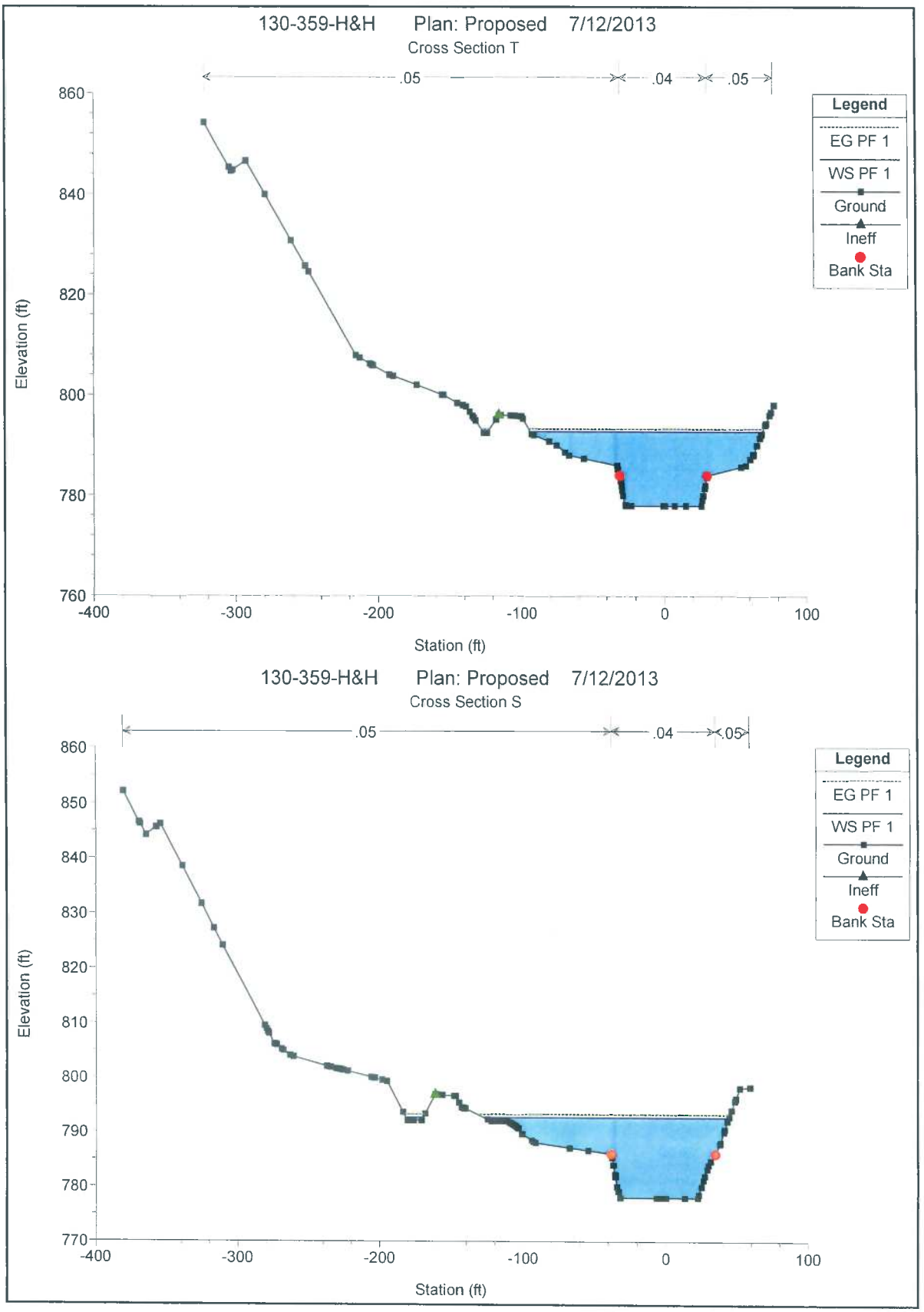
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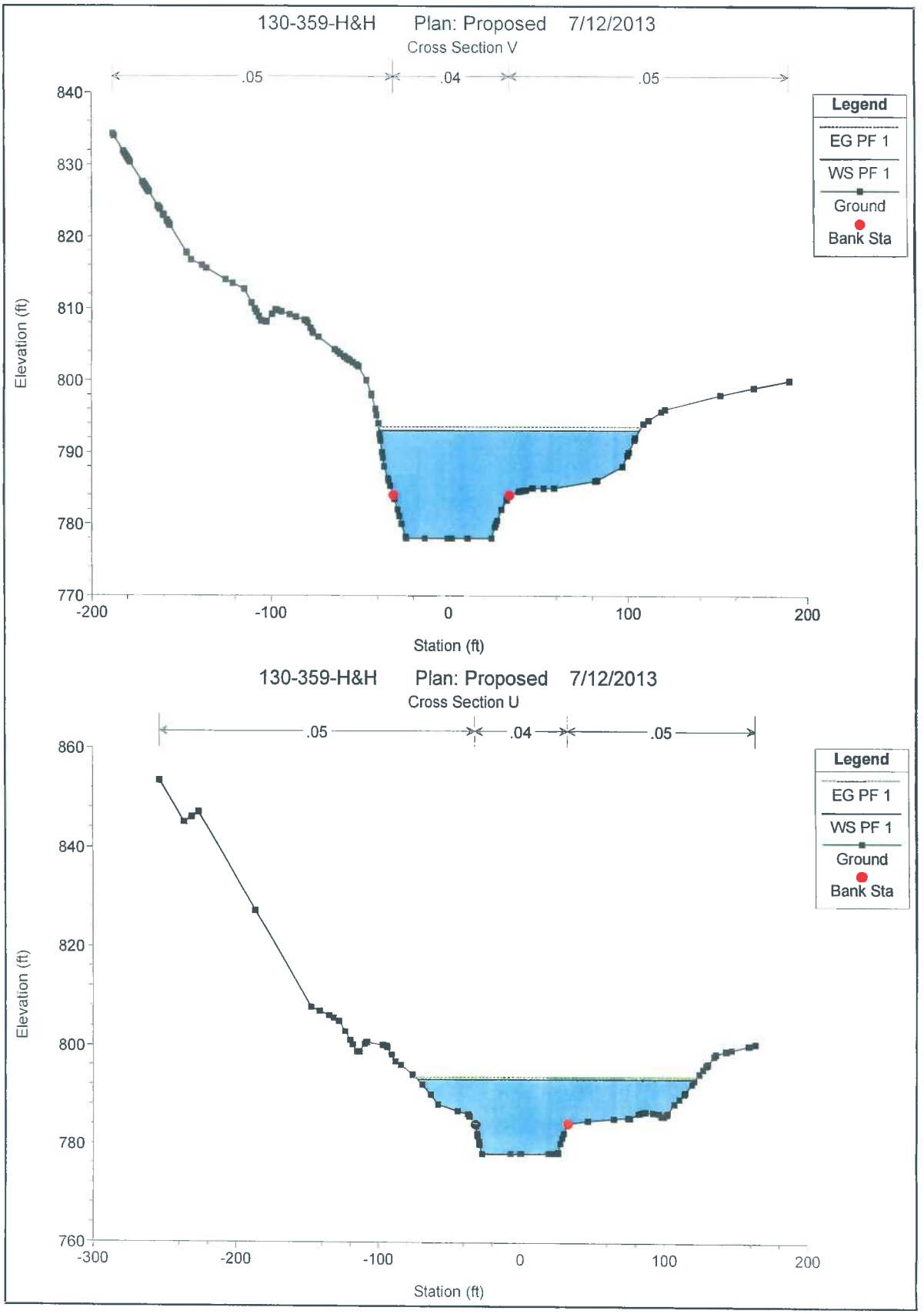
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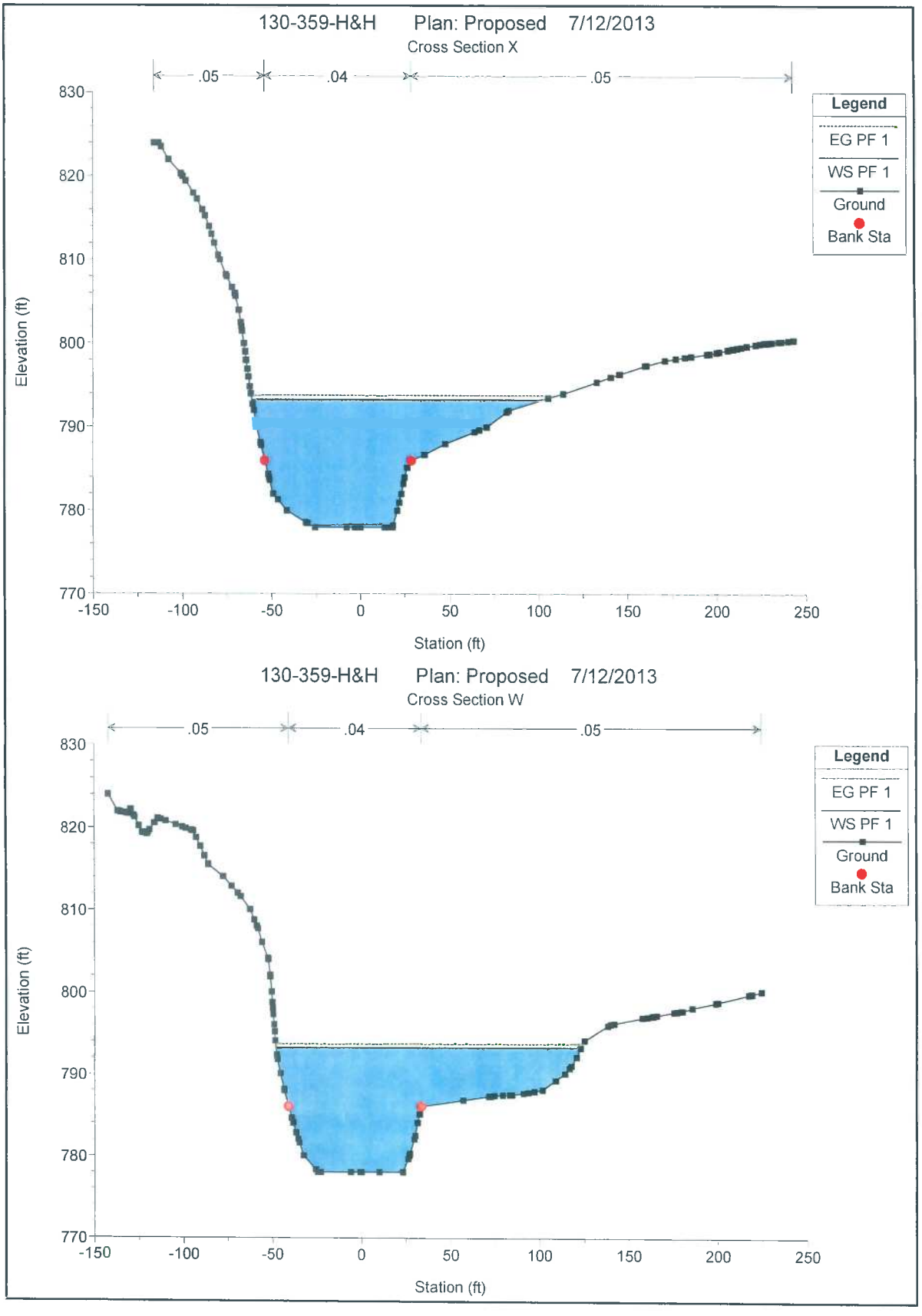
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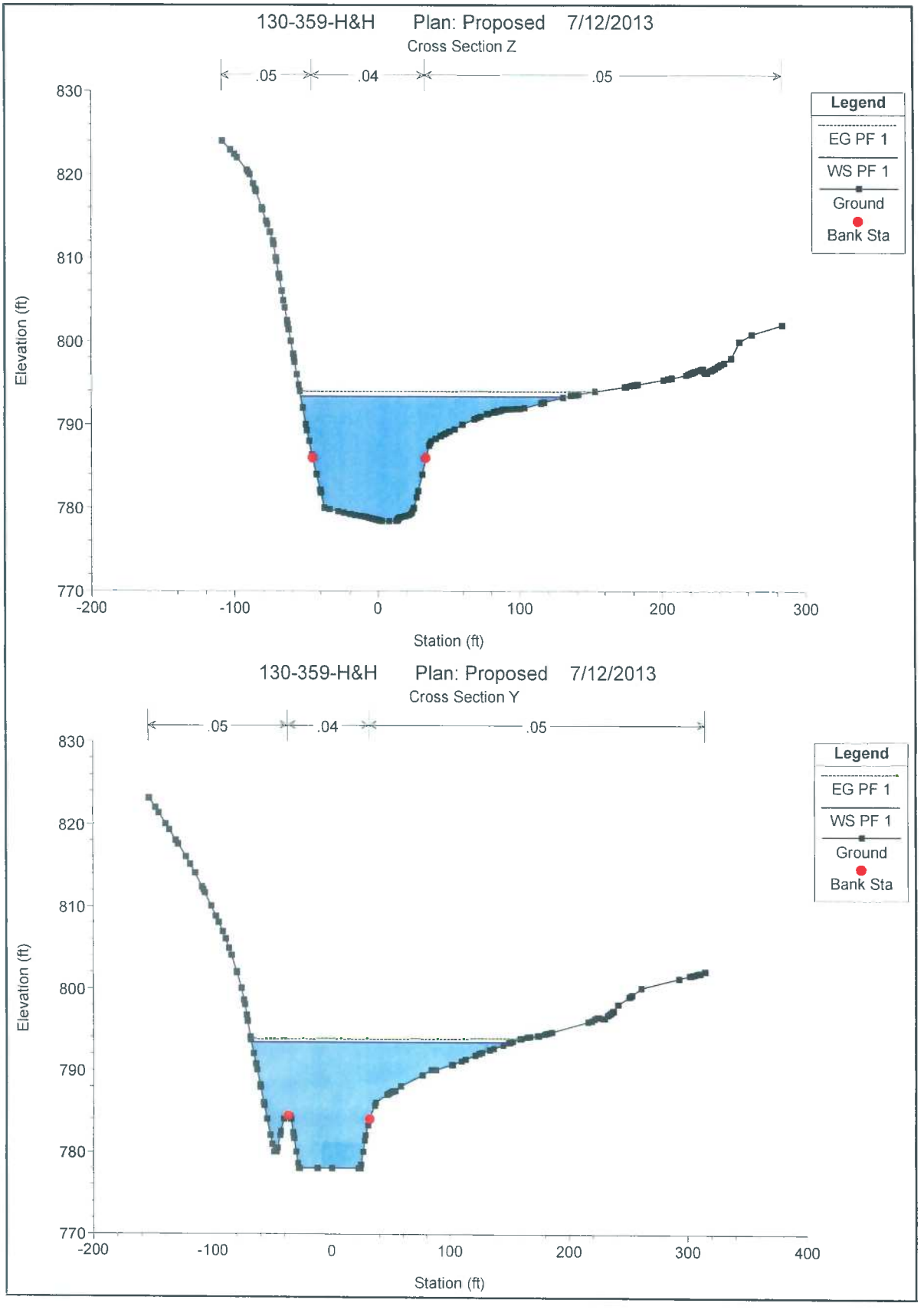
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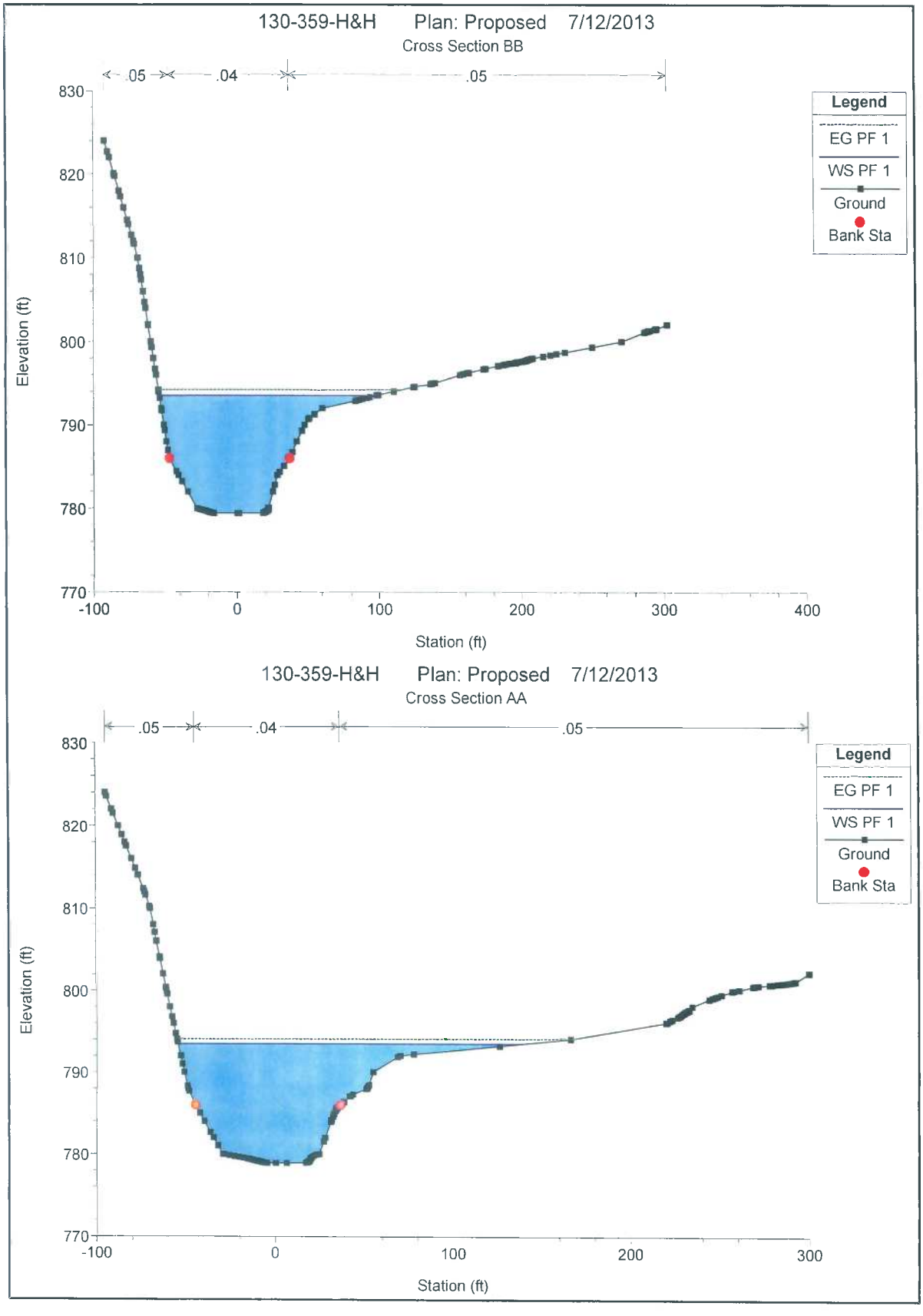
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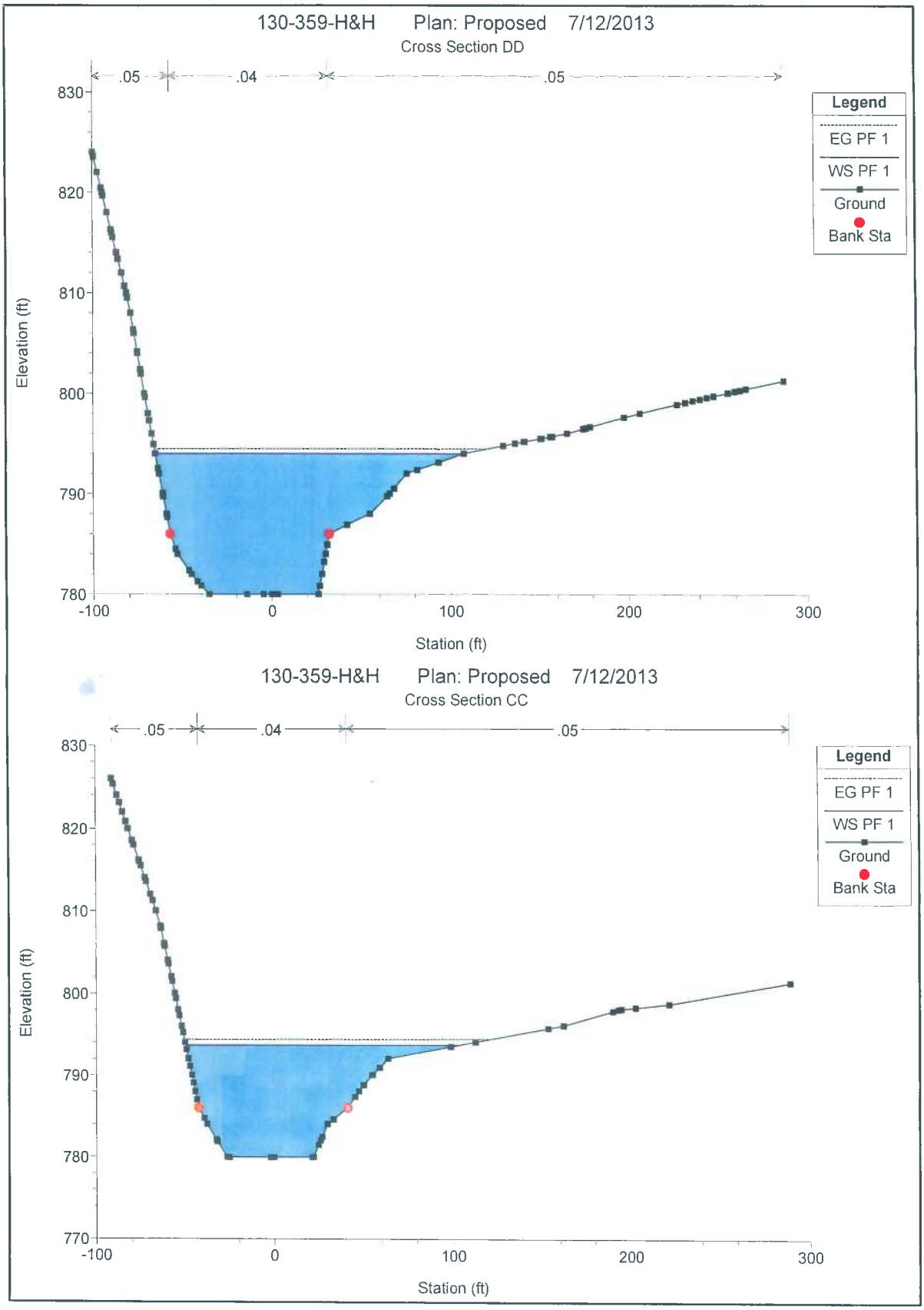
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Appendix E

APPENDIX E

HEC-RAS SUMMARY OF EXISTING AND PROPOSED HYDRAULIC CALCULATIONS

13-054

Meathouse Fork
Existing vs. Proposed HEC-RAS Models
100-Year Water Surface Elevations Summary
Moose Gas Processing Plant - Doddridge County, WV
Project: 130-359

BY: ARC 7/12/2013
CHECKED: CJR 7/12/2013

	River Station	100-Year Peak Flow (cfs)	Water Surface Elevations Existing	Water Surface Elevations Proposed	Water Surface Elevations Existing vs. Proposed
A	15	16950	792.5	792.5	0.00
B	14	16950	792.78	792.78	0.00
C	13	9600	793.32	793.32	0.00
D	12	9600	793.32	793.32	0.00
E	11	9600	793.46	793.48	0.02
F	10	9600	793.55	793.6	0.05
G	9	9600	793.55	793.58	0.03
H	8	9600	793.6	793.61	0.01
I	7	9600	793.62	793.63	0.01
J	6	9600	793.74	793.75	0.01
K	5	9600	793.71	793.71	0.00
L	4	9600	793.9	793.9	0.00
M	3	9600	793.96	793.96	0.00
N	2	9600	794.03	794.03	0.00
O	1	9600	794.09	794.09	0.00
P	0	9600	794.28	794.28	0.00

13-054

Buckeye Creek
Existing vs. Proposed HEC-RAS Models
100-Year Water Surface Elevations Summary
Moose Gas Processing Plant - Doddridge County, WV
Project: 130-359

BY: ARC 7/12/2013
CHECKED: CJR 7/12/2013

	River Station	100-Year Peak Flow (cfs)	Water Surface Elevations Existing	Water Surface Elevations Proposed	Water Surface Elevations Existing vs. Proposed
Q	13	7350	792.50	792.50	0.00
R	12	7350	792.30	792.28	-0.02
S	11	7350	792.62	792.65	0.03
T	10	7350	792.72	792.77	0.05
U	9	7350	793.04	793.08	0.04
V	8	7350	793.03	793.07	0.04
W	7	7350	793.17	793.20	0.03
X	6	7350	793.20	793.24	0.04
Y	5	7350	793.36	793.40	0.04
Z	4	7350	793.33	793.36	0.03
AA	3	7350	793.40	793.44	0.04
BB	2	7350	793.49	793.53	0.04
CC	1	7350	793.60	793.64	0.04
DD	0	7350	793.97	794.00	0.03

Appendix F

APPENDIX F

DODDRIDGE COUNTY FLOODPLAIN PERMITS

DODDRIDGE COUNTY
FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

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. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. **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 _____
(AGENT)

DATE 7/12/2013

SECTION 2: PROPOSE DEVELOPMENT (TO BE COMPLETED BY APPLICANT).

IF THE APPLICANT IS NOT A NATURAL PERSON, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF A NATURAL PERSON WHO SHALL BE APPOINTED BY THE APPLICANT TO RECEIVE NOTICE PURSUANT TO ANY PROVISION OF THE CURRENT DODDRIDGE COUNTY FLOODPLAIN ORDINANCE.

APPLICANT'S NAME: MarkWest Liberty - Kevin Sturgill
ADDRESS: 218 Swisher Lane, West Union, WV 26456
TELEPHONE NUMBER: 724-514-4319

BUILDER'S NAME: ANDERSON EXCAVATING, LLC
ADDRESS: 343 WILLIAMS ROAD, MORGANTOWN, WV 26501
TELEPHONE NUMBER: 304-983-2296

ENGINEER'S NAME: CIVIL + ENVIRONMENTAL CONSULTANTS - CHRIS REMLEY
ADDRESS: 333 BALDWIN RD PITTSBURGH, PA 15205
TELEHONE NUMBER: 412-429-2324

PROJECT LOCATION:

NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)
MARK WEST LIBERTY MIDSTREAM & RESOURCES, LLC
ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)
218 SWISHER LANE WEST UNION, WV 26456
DISTRICT: WEST UNION DISTRICT
DATE/FROM WHOM PROPERTY
PURCHASED: 7/15/2013 FROM GENE P. MOOSE
LAND BOOK DESCRIPTION: —
DEED BOOK REFERENCE: D.B.V. 257, PAGE 66
TAX MAP REFERENCE: PARCEL 08-16-0015
EXISTING BUILDINGS/USES OF PROPERTY: HUNTING CABIN / WOODS
NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY N/A
ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY N/A

To avoid delay in processing the application, please provide enough information to easily identify the project location.

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 DEVEOPLMENT ACTIVITIES:

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

_____

C. STANDARD SITE PLAN OR SKETCH

1. **SUBMIT ALL STANDARD SITE PLANS, IF ANY HAVE BEEN PREPARED.**
2. **IF STANDARD SITE PLANS HAVE NOT BEEN PREPARED:**
   SKETCH ON A SEPARATE 8 ½ X 11 INCH SHEET OF PAPER THE SHAPE AND LOCATION OF THE LOT. SHOW THE LOCATION OF THE INTENDED CONSTRUCTION OR LAND USE INDICATING BUILDING SETBACKS, SIZE & HEIGHT. IDENTIFY EXISTING BUILDINGS, STRUCTURES OR LAND USES ON THE PROPERTY.
3. **SIGN AND DATE THE SKETCH.**

ACTUAL TOTAL CONSTRUCTION COSTS OF THE COMPLETE DEVELOPMENT IRRESPECTIVE OF WHETHER ALL OR ANY PART OF THE SUBJECT PROPOSED CONSTRUCTION PROJECT IS WITHIN THE FLOODPLAIN $ 80,000

D. ADJACENT AND/OR AFFECTED LANDOWNERS:

1. NAME AND ADDRESS OF ALL OWNERS OF SURFACE TRACTS ADJACENT TO THE AREA OF THE SURFACE TRACT (UP & DOWN STREAM) UPON WHICH THE PROPOSED ACTIVITY WILL OCCUR AND ALL OTHER SURFACE OWNERS UP & DOWN STREAM) WHO OWN PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY (IF ONE HAS BEEN COMPLETED).

NAME: CLINTON D. MEANS
ADDRESS: RT. 2 Box 47D
WEST UNION, WV 26456

NAME:
ADDRESS:

NAME: LAWRENCE GASKINS
ADDRESS: RT. 2 Box 204
WEST UNION, WV 26456

NAME: JAMES BALLENGER
ADDRESS: RT. 1 Box 73
WEST UNION, WV 26456

1. NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON ANY ADJACENT PROPERTY AT THE TIME THE FLOODPLAIN PERMIT APPLICATION IS FILED AND THE NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN ANY HOME ON ANY PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY.

NAME:
ADDRESS:

NAME:
ADDRESS:

NAME:
ADDRESS:

NAME:
ADDRESS:

E. CONFIRMATION FORM

THE APPLICANT ACKNOWLEDGES, AGREES, AND CONFIRMS THAT HE/IT WILL PAY WITHIN 30 DAYS OF RECEIPT OF INVOICE BY THE COUNTY FOR ALL EXPENSES RELATIVE TO THE PERMIT APPLICATION PROCESS GREATER THAN THE REQUIRED DEPOSIT FOR EXPENSES INCLUDING:

(A) PERSONAL SERVICE OF PROCESS BY THE DODDRIDGE COUNTY SHERIFF AT THE RATES PERMITTED BY LAW FOR SUCH SERVICE.

(B) SERVICE BY CERTIFIED MAIL RETURN RECEIPT REQUESTED.

(C) PUBLICATION.

(D) COURT REPORTING SERVICES AT ANY HEARINGS REQUESTED BY THE APPLICANT.

(E) CONSULTANTS AND/OR HEARING EXPERTS UTILIZED BY DODDRIDGE COUNTY FLOODPLAIN ADMINISTRATOR/MANAGER OR FLOODPLAIN APPEALS BOARD FOR REVIEW OF MATERIALS AND/OR TESTIMONY REGARDING THE EFFICACY OF GRANTING OR DENYING THE APPLICANT'S FLOODPLAIN PERMIT.

NAME (PRINT): RICHARD P. CELENDER (AGENT)

SIGNATURE: _____ **DATE:** 7/12/2013

After completing SECTION 2, APPLICANT should submit form to Floodplain Administrator/Manager or his/her representative for review.

SECTION 3: FLOODPLAIN DETERMINATION (to be completed by Floodplain Administrator/Manager or his/her representative)

THE PROPOSED DEVELOPMENT:

THE PROPOSED DEVELOPMENT IS LOCATED ON:

FIRM Panel: _____

Dated: _____

[] Is **NOT** located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOOPLAIN DEVELOPMENT PERMIT IS REQUIRED**).

[] Is located in Special Flood Hazard Area.

FIRM zone designation _____

100-Year flood elevation is: _____ NGVD (MSL)

[] Unavailable

[] The proposed development is located in a floodway.

FBFM Panel No. _____ Dated _____

[] See section 4 for additional instructions.

SIGNED_____ **DATE**_____

SECTION 4: ADDITIONAL INFORMATION REQUIRED (To be completed by Floodplain Administrator/Manager or his/her representative)

The applicant must submit the documents checked below before the application can be processed.

[] A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.

[] Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor, (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proffing of utilities located below the first floor and details of enclosures below the first floor. Also_____

_____

[] Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).

[] Plans showing the extent of watercourse relocation and/or landform alterations.

[] Top of new fill elevation_____Ft. NGVD (MSL).
For floodproofing structures applicant must attach certification from registered engineer or architect.

[] Certification from a registered engineer that the proposed activity in a regulatory floodway will not result in any increase in the height of the 100-year flood. A copy of all data and calculations supporting this finding must also be submitted.

[] Manufactured homes located in a floodplain area must have a West Virginia Contractor's License and a Manufactured Home Installation License as required by the Federal Emergency Management Agency (FEMA).

[] Other: Must submit an itemized cost breakdown of total construction costs located within the designated floodplain. Estimate of $80,000 is not sufficient!

SECTION 5: PERMIT DETERMINATION (To be completed by Floodplain Administrator/Manager or his/her representative)

I have determined that the proposed activity **(type is or is not)** in conformance with provisions of the Floodplain Ordinance adopted by the County Commission of Doddridge County on May 21, 2013. The permit is issued subject to the conditions attached to and made part of this permit.

SIGNED_____DATE_____

If the Floodplain Administrator/Manager found that the above was not in conformance with the provisions of the Doddridge County Floodplain Ordinance and/or denied that application, the applicant may complete an appealing process below.

APPEALS: Appealed to the County Commission of Doddridge County? [] Yes {} No
Hearing Date:_____
County Commission Decision - Approved [] Yes [] No

CONDITIONS:_____

SECTION 6: AS-BUILT ELEVATIONS (To be submitted by APPLICANT before Certificate of Compliance is issued).

The following information must be provided for project structures. This section must be completed by a registered professional engineer or a licensed land surveyor (or attach a certification to this application).

COMPLETE 1 OR 2 BELOW:

1 Actual (As-Built) Elevation of the top of the lowest floor (including basement or crawl space is_____FT. NGVD (MSL)

2 Actual (As Built) elevation of floodproofing is_____FT. NGVD (MSL)

Note: Any work performed prior to submittal of the above information is at risk of the applicant.

SECTION 7: COMPLIANCE ACTION (To be completed by the Floodplain Administrator/Manager or his/her representative).

The Floodplain Administrator/Manager or his/her representative will complete this section as applicable based on inspection of the project to ensure compliance with the Doddridge County Floodplain Ordinance.

INSPECTIONS:

DATE:_____ **BY:**_____

DEFICIENCIES ? Y/N

COMMENTS_____

_____

_____

_____

_____

_____

SECTION 8: CERTIFICATE OF COMPLIANCE (To be completed by Floodplain Administrator/Manager or his/her representative).

Certificate of Compliance issued: DATE:_____ BY:_____

CERTIFICATE OF COMPLIANCE
FOR DEVELOPMENT IN SPECIAL FLOOD HAZARD AREA
(OWNER MUST RETAIN)

PERMIT NUMBER:_____

PERMIT DATE:_____

PURPOSE –

CONSTRUCTION LOCATION:_____

OWNER'S ADDRESS:_____

_____

_____

THE FOLLOWING MUST BE COMPLETED BY THE FLOODPLAIN ADMINISTRATOR/MANAGER OR HIS/HER AGENT.

COMPLIANCE IS HEREBY CERTIFIED WITH THE REQUIREMENT OF THE FLOODPLAIN ORDINANCE ADOPTED BY THE COUNTY COMMISSION OF DODDRIDGE COUNTY ON MAY 21, 2013.

SIGNED_____DATE_____

DODDRIDGE COUNTY
FLOODPLAIN APPLICATION PERMIT FEES

Accessory Building and/or Appurtenant Structures ---------- **$100.00**

(examples: garage, storage or pole building, carport)
(the total cost of which do not exceed $10,000.00)

Accessory Building and/or Appurtenant Structures, Additions and/or Substantial Improvement to Single Family Residential or Manufactured Homes, New Single or Multi-Family Residential and Commercial Structures or Substantial Improvement to existing Commercial Structures, Commercial Land Use Changes and Land Altering Activities

(commercial structures includes buildings used for business purposes)
(the total costs of which exceed $10,000.00 but do not exceed $50,000.00) ----- **$250.00**

Accessory Building and/or Appurtenant Structures, Additions and/or Substantial Improvement to Single Family Residential or Manufactured Homes, New Single or Multi-Family Residential and Commercial Structures or Substantial Improvement to existing Commercial Structures, Commercial Land Use Changes and Land Altering Activities

(commercial structures includes buildings used for business purposes)
(the total costs of which exceed $50,000.00 plus $2.oo per $1,000.00 to cover costs over $50,000.00) ---------- **$350.00**

New Industrial Structures or Additions and/or Substantial Improvement to Existing Industrial Structures, changes in Land Use and Land Altering Activities for Industrial purposes

(industrial structures includes oil and/or natural gas wells, roads, bridges, tank pads, and Buildings used or associated with oil and natural gas purposes)
(the total costs of which do not exceed $100,000.00) ---------- $500.00

New Industrial Structures or Additions and/or Substantial Improvement to Existing Industrial Structures, changes in Land Use and Land Altering Activities for Industrial purposes

(industrial structures includes oil and/or natural gas wells, roads, bridges, tank pads, and Buildings used or associated with oil and natural gas purposes)
(the total costs of which exceed $100,000.00 plus $5.00 per $1,000.00 in costs over $100,000.00) ---------- **$1,000.00**

Maximum Fee: In no event shall any Floodplain Application Permit Fee charged under the Doddridge County Floodplain Ordinance exceed the sum of $25,000.00.

LEGEND

- APPROXIMATE STREAM CENTERLINE
- 20+55.25 – K HEC-RAS CROSS SECTION
- 100-YEAR FLOODPLAIN LIMITS, CURRENT CONDITIONS
- 100-YEAR FLOODPLAIN LIMITS, PROPOSED CONDITIONS

REFERENCE

1. EXISTING TOPOGRAPHY DEVELOPED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. (CEC) USING CEC SURVEY DATA AND DIGITAL ELEVATION MODELS (USGS 3-METER), 2003 OF THE u.s. GEOLOGICAL SURVEY (USGS) AND WEST VIRGINIA STATEWISE ADDRSSING & MAPPING BOARD (WVSAMB).
2. STREAM LOCATIONS DELINEATED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
3. IMAGE PROVIDED BY GOOGLE EARTH © 2012.

SCALE IN FEET
0 100 200

* HAND SIGNATURE ON FILE

REVISION RECORD

NO	DATE	DESCRIPTION

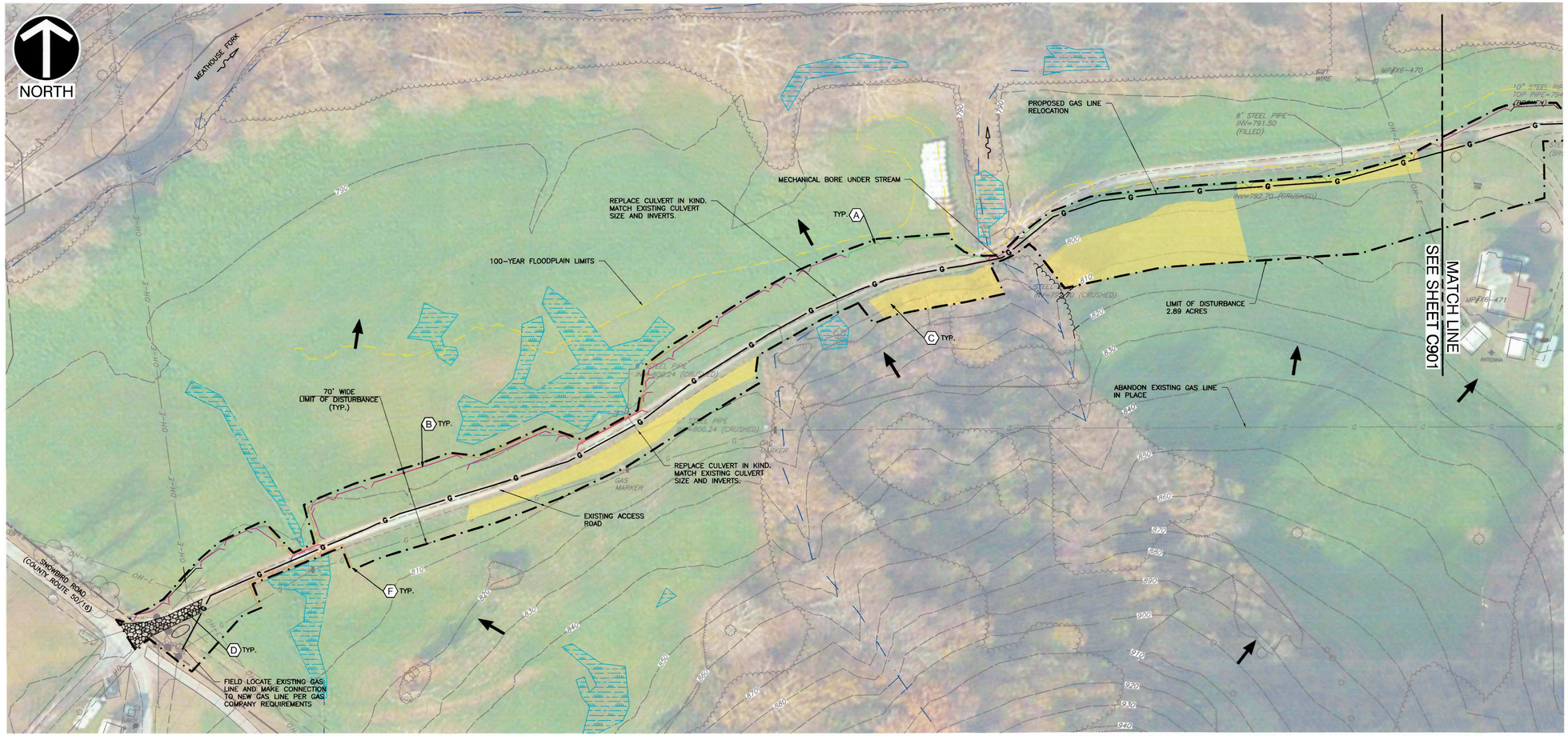
Civil & Environmental Consultants, Inc.
4274 Glendale-Milford Road - Cincinnati, OH 45242
513-985-0226 · 800-759-5614
www.cecinc.com

MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC.
MOOSE PHASE II FILL SITE
DODDRIDGE COUNTY, WEST VIRGINIA

EXISTING AND PROPOSED 100-YEAR FLOODPLAIN MAP

DATE:	7/15/13	DRAWN BY:	ARC
DWG SCALE:	1"=150'	CHECKED BY:	CJR
PROJECT NO:			110-811
APPROVED BY:			*GJH

DRAWING NO.:
SP01



LEGEND

- EXISTING PROPERTY LINE
- EXISTING RIGHT-OF-WAY
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING PAVED ROADWAY
- EXISTING UNPAVED DRIVEWAY
- EXISTING FENCE
- EXISTING GUIDERAIL
- EXISTING TRAIL
- EXISTING GAS LINE
- EXISTING STORM SEWER LINE
- EXISTING WATERLINE
- EXISTING OVERHEAD ELECTRIC LINE
- EXISTING TELEPHONE LINE
- EXISTING TREELINE
- EXISTING BUILDING
- EXISTING IRON PIN
- EXISTING MANHOLE
- EXISTING STORM INLET/CATCH BASIN
- EXISTING UTILITY POLE W/ GUY WIRE
- EXISTING GAS VALVE/METER
- EXISTING WATERLINE VALVE
- EXISTING POST
- EXISTING STREAM
- EXISTING WETLAND
- EXISTING 100-YEAR FLOODPLAIN
- PROPOSED GAS LINE RELOCATION
- PROPOSED GAS METER SET
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED 30" REINFORCED SILT FENCE
- PROPOSED SUPER SILT FENCE
- PROPOSED EROSION CONTROL BLANKET
- PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
- PROPOSED TRENCH PLUG
- PROPOSED CONSTRUCTION FENCE
- DRAINAGE ARROW
- STREAM FLOW DIRECTION

KEY NOTES

(A) FURNISH AND INSTALL SUPER SILT FENCE PER DETAIL 5, SHEET D003. (TYPICAL)
(B) FURNISH AND INSTALL REINFORCED 30" SILT FENCE PER DETAIL 5, SHEET D003. (TYPICAL)
(C) FURNISH AND INSTALL EROSION CONTROL BLANKET PER DETAIL 6 AND DETAIL 7, SHEET D004.
(D) FURNISH AND INSTALL ROCK CONSTRUCTION ENTRANCE/EXIT WITH ROCK STOCKPILE PER DETAIL 1, SHEET D003
(E) FURNISH AND INSTALL TRENCH PLUG PER DETAIL 8, SHEET D004.
(F) FURNISH AND INSTALL ORANGE CONSTRUCTION FENCE PER DETAIL 9, SHEET D004.

REFERENCE

1. EXISTING TOPOGRAPHY DEVELOPED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. (CEC) USING AERIAL SURVEY DATA PREPARED BY NOR EAST MAPPING, INC. AND SUPPLEMENTED BY FIELD SURVEYS CONDUCTED BY CEC. CONTRACTOR IS TO ALL VERIFY ELEVATIONS IN THE FIELD AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
2. STREAM LOCATIONS DELINEATED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
3. 100-YEAR FLOODPLAIN LIMITS SHOWN ARE FROM THE HYDRAULIC STUDY OF MEATHOUSE FORK AND BUCKEYE CREEK PREPARED BY CEC, DATED JULY 2013.
4. AERIAL IMAGERY OBTAINED FROM ESRI WORLD IMAGERY/ ARCGIS ONLINE MAP SERVICE: ACCESSED 01/22/2014, IMAGERY DATE: 2011.

M.U.W.V TICKET NUMBER: 1304207986

CALL BEFORE YOU DIG MUWV Miss Utility of West Virginia, Inc. 1-800-245-4848

NOTES

THE FOLLOWING SEDIMENT BARRIERS CAN BE SUBSTITUTED WITH APPROVAL FROM MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC.

- 18" COMPOST FILTER SOCK FOR 30" REINFORCED SILT FENCE
- 24" COMPOST FILTER SOCK FOR SUPER SILT FENCE

SITE RESTORATION

SITE RESTORATION SHALL COMMENCE PROMPTLY AFTER COMPLETION OF EACH PIPELINE SECTION. FOR SITE RESTORATION, THE ENTIRE RIGHT-OF-WAY SHALL BE SEEDED IN ACCORDANCE WITH THE SEEDING REQUIREMENTS PROVIDED. DURING SITE RESTORATION, ALL TEMPORARY CONTROLS SHALL BE REMOVED AND THE GRADES SHALL BE RETURNED TO THE EXISTING CONDITION GRADES.

SCALE IN FEET
0 50 100

EDWARD J. FINK REGISTERED 18669 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

* HAND SIGNATURE ON FILE

REVISION RECORD

NO.	DESCRIPTION	DATE

Civil & Environmental Consultants, Inc.
333 Baldwin Road - Pittsburgh, PA 15205
412-429-2324 - 800-365-2324
www.cecinc.com

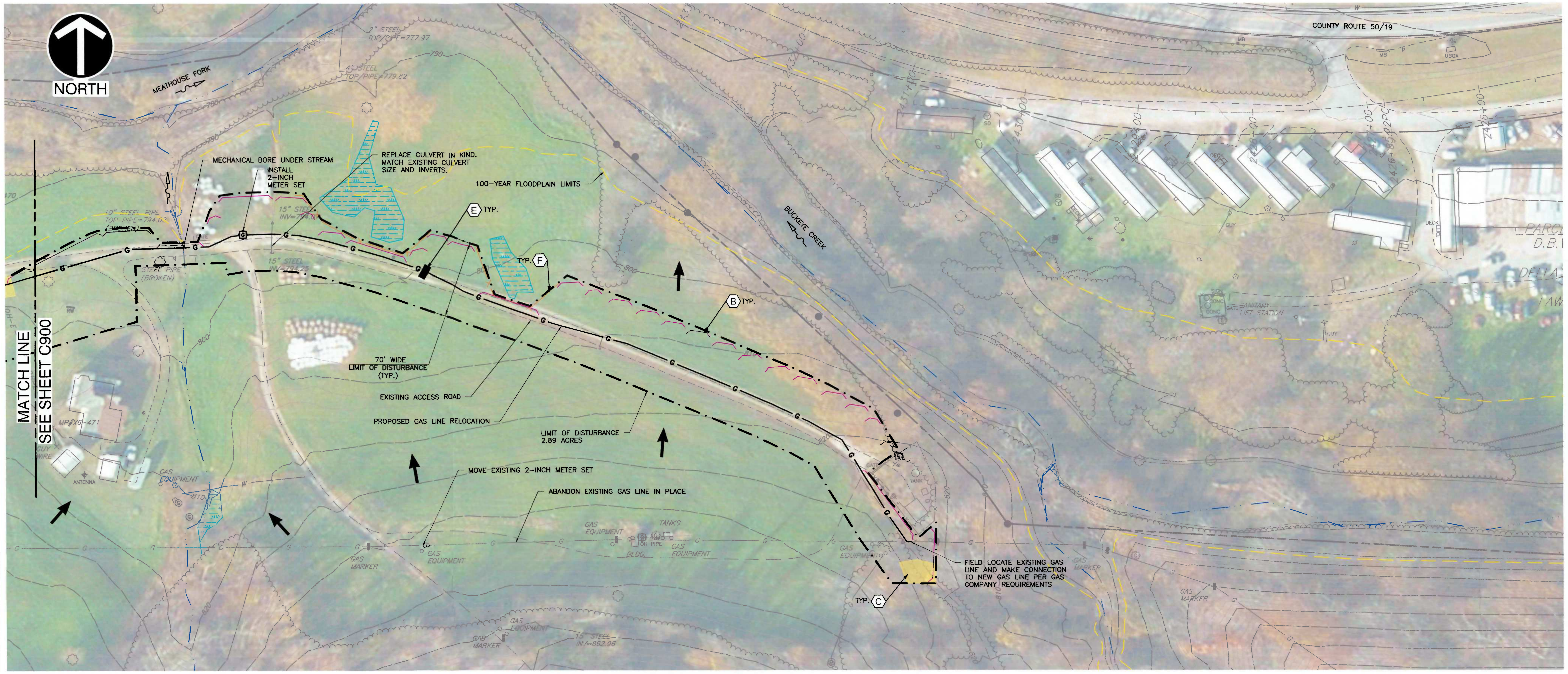
MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC
MOOSE PROPERTY
DODDRIDGE COUNTY, WV

GAS LINE RELOCATION
EROSION AND SEDIMENTATION CONTROL PLAN

DATE:	JANUARY 2014
DRAWN BY:	SPT
DWG SCALE:	1"=50'
CHECKED BY:	DJL
PROJECT NO:	130-359.0013
APPROVED BY:	* RPC

DRAWING NO.: C900
SHEET 1 OF 6

P:\2013\130-359\-CAD\Dwg\MSK 0013 - GAS LINE RELOC\130359.0013 C900.dwg[C900] LS(1/01/2014 - stucke) - LP: 1/31/2014 11:45 AM



LEGEND

- EXISTING PROPERTY LINE
- EXISTING RIGHT-OF-WAY
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING PAVED ROADWAY
- EXISTING UNPAVED DRIVEWAY
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- EXISTING WATERLINE VALVE
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- EXISTING 100-YEAR FLOODPLAIN
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- PROPOSED GAS METER SET
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED 30" REINFORCED SILT FENCE
- PROPOSED SUPER SILT FENCE
- PROPOSED EROSION CONTROL BLANKET
- PROPOSED ROCK CONSTRUCTION ENTRANCE AND STONE STOCKPILE
- PROPOSED TRENCH PLUG
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- STREAM FLOW DIRECTION

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- (F) FURNISH AND INSTALL ORANGE CONSTRUCTION FENCE PER DETAIL 9, SHEET D004.

REFERENCE

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M.U.W.V TICKET NUMBER: 1304207986

CALL BEFORE YOU DIG
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SCALE IN FEET
0 50 100

* HAND SIGNATURE ON FILE

EDWARD J. FINK
REGISTERED
18669
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER

REVISION RECORD

NO	DATE	DESCRIPTION

CEC
Civil & Environmental Consultants, Inc.
333 Baldwin Road - Pittsburgh, PA 15205
412-429-2324 - 800-365-2324
www.cecinc.com

MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC
MOOSE PROPERTY
DODDRIDGE COUNTY, WV

GAS LINE RELOCATION
EROSION AND SEDIMENTATION CONTROL PLAN

DATE:	JANUARY 2014	DRAWN BY:	SPT
DWG SCALE:	1"=50'	CHECKED BY:	DJL
PROJECT NO:	130-359.0013	APPROVED BY:	* RPC

DRAWING NO.: C901

SHEET 2 OF 6

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