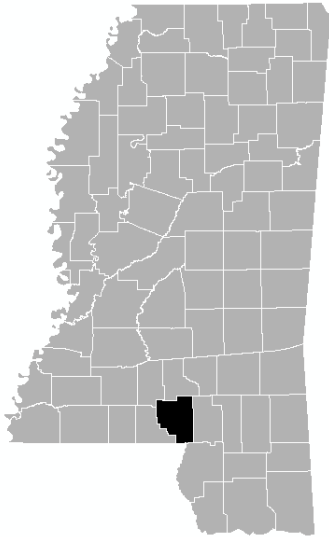


FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



MARION COUNTY, MISSISSIPPI

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
COLUMBIA, CITY OF	280111
MARION COUNTY UNINCORPORATED AREAS	280230



FEMA

REVISED:

TBD

FLOOD INSURANCE STUDY NUMBER
28091CV000B

Version Number 2.3.3.3

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Volume 1
Exhibits

Flood Profiles	<u>Panel</u>
Balls Mill Creek	01-02 P
Balls Mill Creek Tributary	03-04 P
Dry Creek	05-06 P
Jones Creek	07-08 P
Pearl River	09-11 P
Silver Creek	12-13 P
Upper Little Creek	14 P
Webb Creek	15 P

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT MARION COUNTY, MISSISSIPPI

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these flood-prone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or

after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Marion County, MS.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Columbia, City of	280111	03180004	28091C0165E 28091C0170D 28091C0255D 28091C0260E	

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Marion County (Unincorporated Areas)	280230	03170007 03180003 03180004 03180005	28091C0025D 28091C0050D 28091C0075D 28091C0100E 28091C0125D ¹ 28091C0150D 28091C0165E 28091C0170D 28091C0175E 28091C0200E 28091C0225D ¹ 28091C0250E 28091C0255D 28091C0260E 28091C0275E 28091C0300E 28091C0325E 28091C0350E 28091C0375E 28091C0400D ¹ 28091C0425D ¹	

¹ Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

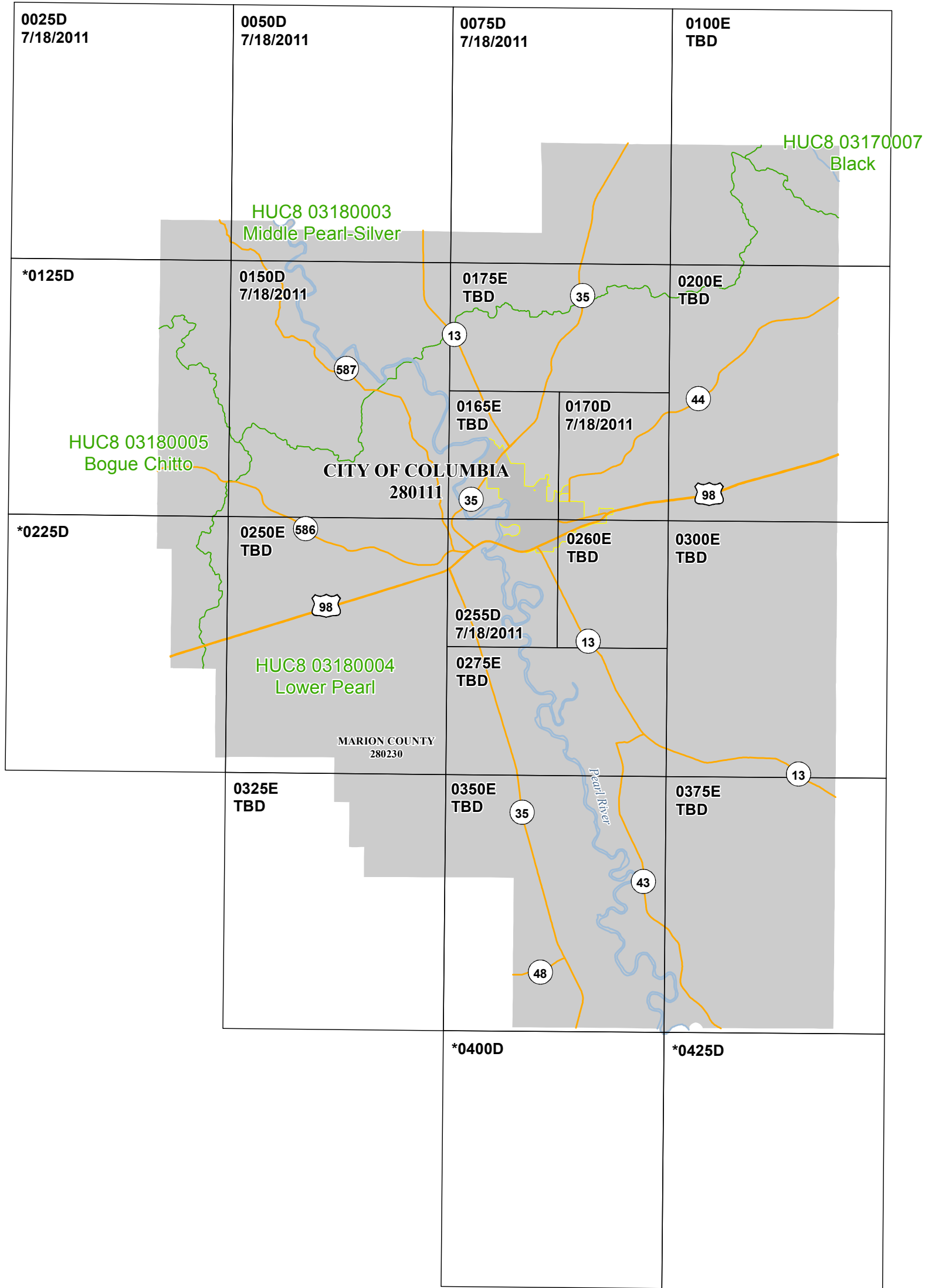
- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, "Map Repositories," within this FIS Report.

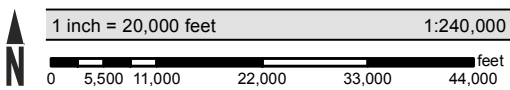
- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The initial Countywide FIS Report for Marion County became effective on July 18, 2011. Refer to Table for information about subsequent revisions to the FIRMs.

- The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at www.fema.gov/national-flood-insurance-program-community-rating-system or contact your appropriate FEMA Regional Office for more information about this program.
- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/online-tutorials.



ATTENTION: The corporate limits shown on the FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on the FIRM panels issued before MONTH DAY, YEAR.



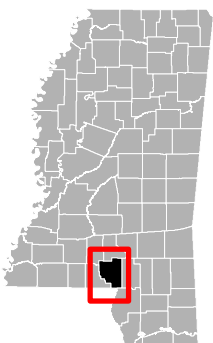
Map Projection:
State Plane Coordinate System
Mississippi East, FIPS Zone 2301

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

MARION COUNTY, MISSISSIPPI and Incorporated Areas

PANELS PRINTED:

0025, 0050, 0075, 0100, 0150, 0165, 0170, 0175, 0200, 0250, 0255, 0260, 0275, 0300, 0325, 0350, 0375



FEMA

MAP NUMBER
28091CIND0B

MAP REVISED

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center 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 website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates, refer to Table in this FIS Report.

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

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

Figure 2. FIRM Notes to Users

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane Coordinate System, Mississippi West, FIPS ZONE 2302. The horizontal datum was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane 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 the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM 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*

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by Mississippi Department of Environmental Quality, Mississippi Automated Resource Information System, and the United States Census Bureau at a scale of 1:5,000. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

The 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 may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the 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 the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Figure 2. FIRM Notes to Users

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Marion County, MS, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Marion County, MS, effective **TBD**.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Marion County.

Figure 3: Map Legend for FIRM

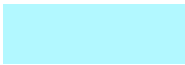
<p>SPECIAL FLOOD HAZARD AREAS: <i>The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. 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. See note for specific types. If the floodway is too narrow to be shown, a note is shown.</i></p>	
	<p>Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)</p>
<p>Zone A</p>	<p>The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.</p>
<p>Zone AE</p>	<p>The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone, either at cross section locations or as static whole-foot elevations that apply throughout the zone.</p>
<p>Zone AH</p>	<p>The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.</p>
<p>Zone AO</p>	<p>The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.</p>
<p>Zone AR</p>	<p>The flood insurance rate zone that corresponds to areas that were 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.</p>
<p>Zone A99</p>	<p>The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.</p>
<p>Zone V</p>	<p>The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.</p>

Figure 3: Map Legend for FIRM





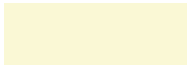

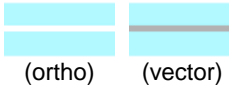




<p>Zone VE</p> 	<p>Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.</p> <p>Regulatory Floodway determined in Zone AE.</p>
<p>OTHER AREAS OF FLOOD HAZARD</p>	
	<p>Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.</p>
	<p>Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.</p>
	<p>Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.</p>
<p>OTHER AREAS</p>	
	<p>Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible</p>
	<p>Unshaded Zone X: Areas determined to be outside the 0.2% annual chance flood hazard</p>
<p>FLOOD HAZARD AND OTHER BOUNDARY LINES</p>	
	<p>Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)</p>
	<p>Limit of Study</p>
	<p>Jurisdiction Boundary</p>
	<p>Limit of Moderate Wave Action (LIMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet</p>
<p>GENERAL STRUCTURES</p>	
 <p><i>Aqueduct</i> <i>Channel</i> <i>Culvert</i> <i>Storm Sewer</i></p>	<p>Channel, Culvert, Aqueduct, or Storm Sewer</p>

Figure 3: Map Legend for FIRM

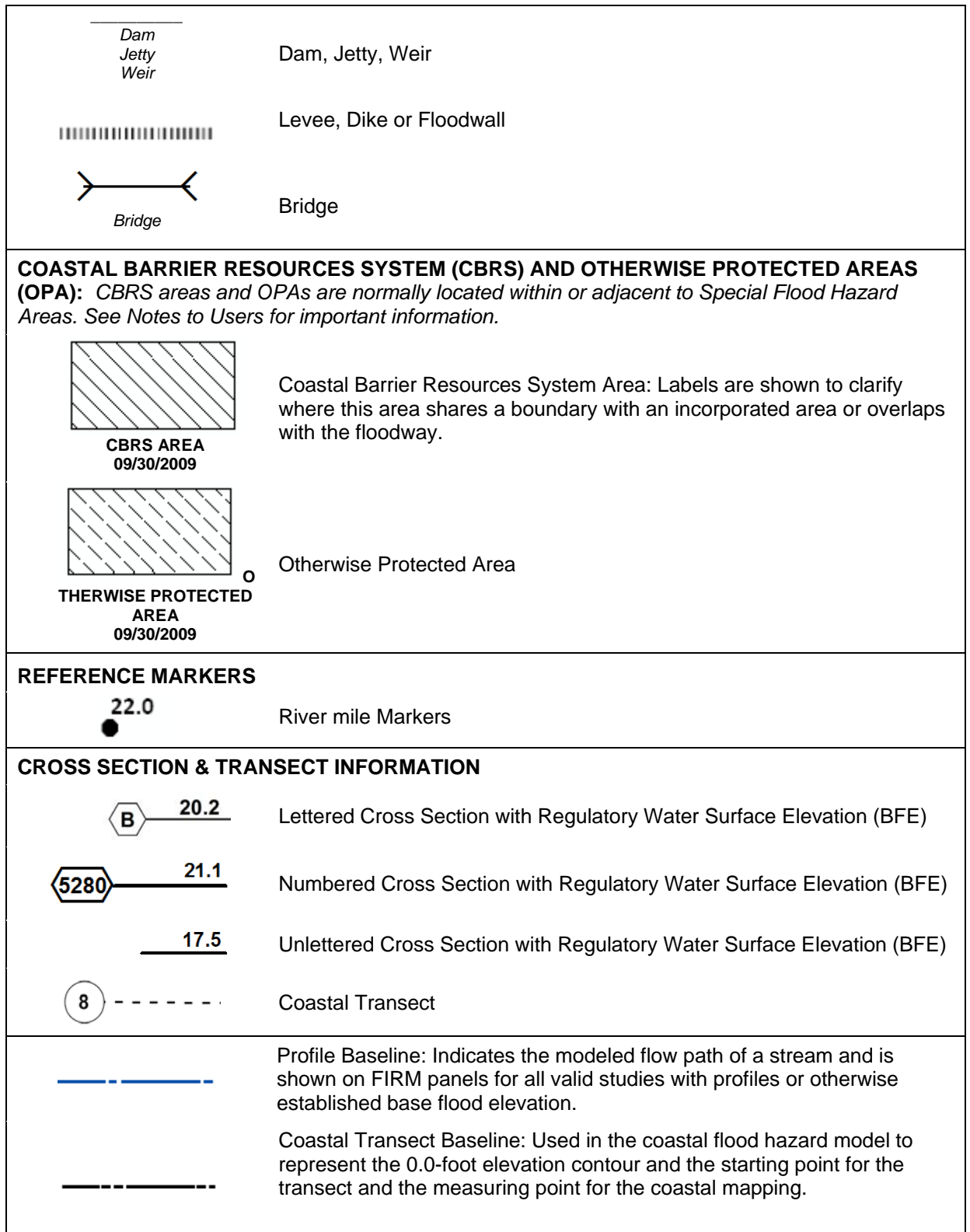





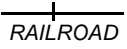





Figure 3: Map Legend for FIRM

	Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available)
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
<u>Missouri Creek</u>	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
<u>MAPLE LANE</u>	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
⁴² 76 ^{000m} E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Marion County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, “Map Legend for FIRM”, describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Marion County, MS, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

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. The procedures to remove these areas from the SFHA are described in Section 6.4 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
All Zone A Streams included in the 1979 FIS report	Marion County and Incorporated Areas	Various	Various	03180003 03180004	Various	N	A	04/1978
Balls Mill Creek	City of Columbia	Confluence with Oxbow Lake	Approximately 2,650 feet upstream of State Highway 198	03180004	4.6	Y	AE	01/1978
Balls Mill Creek Tributary	City of Columbia	Approximately 4,400 feet above the confluence with Balls Mill Creek	Approximately 770 feet upstream of RA Johnson Drive	03180004	1.2	Y	AE	09/2009
Beaver Dam Creek	Marion County	Confluence with Upper Little Creek	Approximately 3,300 feet downstream of Rocky Branch Road	03180004	3.7	N	A	06/2013
Clear Creek	Marion County	Confluence with Pearl River	At County Boundary	03180004	9.3	N	A	06/2013
Dry Creek	City of Columbia	Confluence with Pearl River	Approximately 3,725 feet upstream of Park Avenue	03180004	2.3	Y	AE	06/2013
Graves Creek	Marion County	Confluence with Upper Little Creek	Approximately 2,700 feet downstream of State Highway 44	03180004	6.4	N	A	06/2013

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Harper Creek	Marion County	Approximately 2,500 feet downstream of railroad	Approximately 5,000 feet upstream of State Highway 35	03180004	5.1	N	A	06/2013
Hurricane Creek	Marion County	Approximately 3,500 feet downstream of Old Highway 35	Just upstream of Davis Road	03180004	6.3	N	A	06/2013
Jones Creek	City of Columbia	Confluence with Pearl River	Approximately 1,340 feet upstream of State Highway 13	03180004	1.8	Y	AE	01/1978
Lower Little Creek	Marion County	Just upstream of State Highway 43	County Boundary	03180004	11.8	N	A	06/2013
Middle Fork Creek	Marion County	Confluence with Lower Little Creek	County Boundary	03180004	0.5	N	A	06/2013
Mill Creek Number 3	Marion County	Confluence with Upper Little Creek	County Boundary	03180004	2.5	N	A	06/2013
Mill Creek Number 3 Tributary 1	Marion County	Confluence with Mill Creek Number 3	County Boundary	03180004	0.3	N	A	06/2013
Pearl River	City of Columbia Marion County	Approximately 0.32 miles upstream of the confluence of Dillon Creek	Approximately 1.88 miles downstream of the confluence of Cypress Creek	03180003 03180004	26.6	Y	AE	9/2009
Polk Creek	Marion County	County Boundary	County Boundary	03180004	0.3	N	A	06/2013

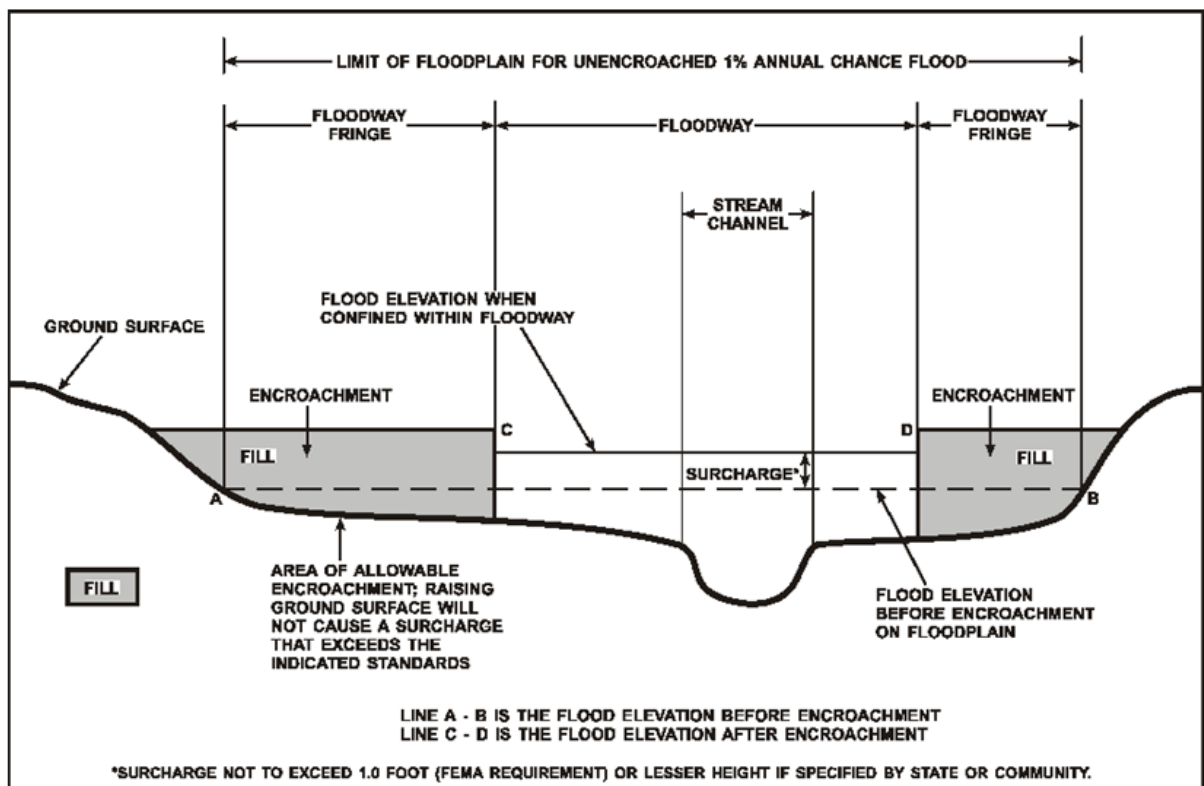
Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Richland Creek	Marion County	Confluence with Silver Creek	Just upstream of State Highway 586	03180004	0.7	N	A	06/2013
Sandy Hook Creek	Marion County	Confluence with Pearl River	Approximately 20,000 feet upstream of State Highway 35	03180004	5.2	N	A	06/2013
Silver Creek	Marion County	Confluence with Pearl River	At Water Valley Road	03180004	3.7	Y	AE	04/1978
Silver Creek	Marion County	At Water Valley Road	Just downstream of Taylor Road	03180004	7.2	N	A	06/2013
Tenmile Creek	Marion County	Approximately 3,500 feet downstream of Williamson Lane	Just upstream of Knoxo Columbia Road	03180004	12.7	N	A	06/2013
Upper Little Creek	Marion County	Confluence with Pearl River	Approximately 4,800 feet upstream of State Highway 13	03180004	4.7	Y	AE	04/1978
Upper Little Creek	Marion County	Approximately 4,800 feet upstream of State Highway 13	County Boundary	03180004	19.2	N	A	06/2013
Upper Little Creek	Marion County	County Boundary	At Mount Gilead Road	03180004	5.7	N	A	06/2013
Webb Creek	City of Columbia	Confluence with Dry Creek	Approximately 1,830 feet upstream of West Avenue	03180004	1.2	Y	AE	06/2013

2.2 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 balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

Figure 4: Floodway Schematic



To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

All floodways that were developed for this FIS project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Non-Encroachment Zones

This section is not applicable to this FIS Project.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this FIS project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this FIS project.

Figure 5: Wave Runup Transect Schematic

[Not applicable to this FIS project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this FIS project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this FIS project.

Figure 6: Coastal Transect Schematic

[Not applicable to this FIS project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this FIS project

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, “Map Legend for FIRM.” Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Marion County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Columbia, City of	A, AE, X
Marion County, Unincorporated Areas	A, AE, X

3.2 Coastal Barrier Resources System

This section is not applicable to this FIS project.

Table 4: Coastal Barrier Resources System Information

[Not applicable to this FIS project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Black	03170007	Black Creek	Affects a small portion of the northeastern corner of the county. No studied streams are within the basin.	1,267
Middle Pearl-Silver	03180003	Pearl River	Affects the northern portion of Marion County.	1,218
Lower Pearl	03180004	Pearl River	Largest watershed within Marion County, encompassing over 75% of the county	1,821
Bogue Chitto	03180005	Bogue Chitto Creek	Affects a small portion of the western section of Marion County. No studied streams are within the basin.	1,209

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Marion County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
All sources	Most flooding in Marion County occurs due to flash flooding. From January 1950 to April 2008, the county was affected by 24 instances of flooding. River, stream and creek flooding resulting from heavy precipitation or spring meltdown from the northern and central regions of the county poses a threat to the low lying regions within the county. In June 1997, the City of Columbia experienced six inches of rain within a 3 hour period. Thirty businesses and eight residential structures experienced flood damage resulting in \$15,000,000 in property damage (HMP 2008).
Pearl River	The Pearl River represents the largest single flooding source within Marion County. Historically, the largest flood events occur in the spring, especially April. The three highest stages in the last 50 years occurred in April. Flash flooding in Columbia is exacerbated when such downpours coincide with a high river stage.

Table 7 contains information about historic flood elevations in the communities within Marion County.

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Pearl River	US Highway 98 Near Columbia, MS	29.9	1874	>500	USGS gage

4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Marion County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

[Not applicable to this FIS project]

4.4 Levees

This section is not applicable to this FIS project.

Table 9: Levees

[Not applicable to this FIS Project]

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources 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 at least once on the average during any 10-, 25-, 50-, 100-, 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-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% 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 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 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.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table . Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10. Stream gage information is provided in Table 12.

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Balls Mill Creek	At Cross Section B	5.59	2,340	*	3,560	4,010	5,170
Balls Mill Creek	At Cross Section D	4.77	2,310	*	3,460	3,860	4,940
Balls Mill Creek	At Cross Section E	3.54	2,280	*	3,300	3,640	4,600
Balls Mill Creek	At Cross Section I	3.15	2,260	*	3,250	3,570	4,490
Balls Mill Creek	At U.S. Highway 98	1.14	870	*	1,220	1,340	1,680
Balls Mill Creek	At Park Avenue	1.00	680	*	950	1,090	1,360
Balls Mill Creek Tributary	At Lumberton Road	1.70	*	*	*	1,538	*
Balls Mill Creek Tributary	At RA Johnson Road	0.87	*	*	*	1,137	*
Dry Creek	At confluence with Pearl River	5.0	2,378	2,786	3,098	3,339	3,960
Dry Creek	Approximately 250 feet upstream of Main Street	3.9	2,039	2,388	2,655	2,860	3,390
Dry Creek	Just upstream of West Avenue	3.6	1,939	2,266	2,519	3,339	3,208
Jones Creek	At Mouth	5.52	1,800	*	2,730	3,090	3,950
Jones Creek	At Evergreen Street	4.93	1,580	*	2,420	2,770	3,570
Jones Creek	At State Highway 13	4.73	1,540	*	2,400	2,740	3,550
Pearl River	At U.S. Highway 98	5,690	53,200	*	64,190	102,200	114,700

*Not calculated for this FIS project

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Silver Creek	At U.S. Highway 98	37.4	8,200	*	10,700	11,400	13,300
Silver Creek	At Cross Section F	37.0	9,000	*	13,000	14,500	18,000
Silver Creek	At State Highway 587	36.8	9,510	*	15,400	17,300	22,600
Silver Creek	At Cross Section K	35.6	9,200	*	14,900	16,700	21,900
Silver Creek	At Water Valley Road	33.2	9,030	*	14,600	16,400	21,500
Upper Little Creek	At Cross Section B	125	14,000	*	22,800	25,900	33,800
Upper Little Creek	At Cross Section E	122	13,700	*	22,300	25,300	33,100
Webb Creek	At confluence with Dry Creek	1.0	917	1065	1180	1265	1487
Webb Creek	At West Avenue	0.7	715	828	916	980	1148
Webb Creek	Approximately 620 feet upstream of West Avenue	0.5	482	557	616	658	771

*Not calculated for this FIS project

Figure 7: Frequency Discharge-Drainage Area Curves

[Not applicable for this FIS Project]

Table 11: Summary of Non-Coastal Stillwater Elevations

[Not applicable for this FIS Project]

Table 12: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Pearl River	0248900	USGS	Pearl River Near Columbia, MS	5,720	1874	2006

5.2 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. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS 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.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
All Zone A streams included in the 1979 FIS	Various	Various	unknown	unknown	1979	A	No specific analysis methodology described
Balls Mill Creek	Confluence with Oxbow Lake	Approximately 2,650 feet upstream of State Highway 198	USGS Regional Regression Equations 1976	HEC-2	04/1978	AE w/ Floodway	
Balls Mill Creek Tributary	Approximately 4,400 feet above the confluence with Balls Mill Creek	Approximately 1,140 feet upstream of Eagle Day Avenue	USGS Regional Regression Equations 1991	HEC-RAS 3.1.3	09/2009	AE w/ Floodway	
Balls Mill Creek Tributary	Approximately 770 feet upstream of RA Johnson Drive	Approximately 200 feet downstream of Pearl Street	USGS Regional Regression Equations 1976	HEC-2	4/1978	AE w/ Floodway	
Beaver Dam Creek	Confluence with Upper Little Creek	Approximately 3,300 feet downstream of Rocky Branch Road	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Clear Creek	Confluence with Pearl River	At County Boundary	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Dry Creek	Confluence with Pearl River		USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	AE w/ Floodway	Previous study unverified in CNMS
Graves Creek	Confluence with Upper Little Creek	Approximately 2,700 feet downstream of State Highway 44	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Harper Creek	Approximately 2,500 feet downstream of railroad	At State Highway 35	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Hurricane Creek	Approximately 3,500 feet downstream of Old Highway 35	Just upstream of Davis Road	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Jones Creek	Confluence with Pearl River	Approximately 1,340 feet upstream of State Highway 13	USGS Regional Regression Equations 1976	HEC-2	04/1978	AE w/ Floodway	
Lower Little Creek	Just upstream of State Highway 43	County Boundary	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Middle Fork Creek	Confluence with Lower Little Creek	County Boundary	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Mill Creek Number 3	Confluence with Upper Little Creek	County Boundary	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Mill Creek Number 3 Tributary 1	Confluence with Mill Creek Number 3	County Boundary	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Pearl River	Approximately 0.32 miles upstream of the confluence of the Dillon Creek	Approximately 1.88 miles downstream of the confluence of Cypress Creek	Gage Data	HEC-RAS 3.1.3	09/2009	AE w/ Floodway	
Polk Creek	County Boundary	County Boundary	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Richland Creek	Confluence with Silver Creek	Just upstream of State Highway 586	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Sandy Hook Creek	Confluence with Pearl River	Approximately 20,000 feet upstream of State Highway 35	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Silver Creek	Confluence with Pearl River	At Water Valley Road	USGS Regional Regression Equations 1976	HEC-2	04/1978	AE w/ Floodway	
Silver Creek	At Water Valley Road	Just downstream of Taylor Road	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Tenmile Creek	Confluence with Pearl River	At Knoxo Columbia Road	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Upper Little Creek	Confluence with Pearl River	Approximately 4,800 feet upstream of State Highway 13	USGS Regional Regression Equations 1976	HEC-2	04/1978	AE w/ Floodway	
Upper Little Creek	Approximately 4,800 feet upstream of State Highway 13	County Boundary	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Upper Little Creek	County Boundary	At Mount Gilead Road	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	A	Effects of hydraulic structures were not considered in the model.
Webb Creek	Confluence with Dry Creek	Approximately 1,830 feet upstream of West Avenue	USGS Regional Regression Equations 1991	HEC-RAS 4.1	06/2013	AE w/ Floodway	Previous study unverified in CNMS

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
All Zone A Streams studied post-2011	0.05	0.15
Balls Mill Creek	0.05-0.08	0.070-0.20
Balls Mill Creek Tributary	0.040	0.10-0.11
Dry Creek	0.04-0.05	0.06-0.12
Jones Creek	0.04-0.08	0.06-0.20
Pearl River	0.055	0.150
Silver Creek	0.05-0.08	0.07-0.20
Upper Little Creek	0.05-0.08	0.07-0.20
Webb Creek	0.04-0.05	0.08-0.15

Coastal Analyses

This section is not applicable to this FIS Project.

Table 15: Summary of Coastal Analyses

[Not applicable to this FIS Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this FIS Project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not applicable to this FIS Project]

Table 16: Tide Gage Analysis Specifics

[Not applicable to this FIS Project]

5.3.2 Waves

This section is not applicable to this FIS Project.

5.3.3 Coastal Erosion

This section is not applicable to this FIS Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this FIS Project.

Table 17: Coastal Transect Parameters

[Not applicable to this FIS Project]

Figure 9: Transect Location Map

[Not applicable to this FIS Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this FIS Project.

Table 18: Summary of Alluvial Fan Analyses

[Not applicable to this FIS Project]

Table 19: Results of Alluvial Fan Analyses

[Not applicable to this FIS Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at 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

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 archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to

access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Marion County are provided in Table 20.

Table 20: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Tilton	SE	31.375	90.000	-0.079
Oak Vale	SE	31.375	89.875	-0.089
Bunker Hill	SE	31.375	89.750	-0.062
Bassfield	SE	31.375	89.625	-0.049
Darbin	SE	31.250	90.000	-0.072
Morgantown	SE	31.250	89.875	-0.118
Columbia North	SE	31.250	89.750	-0.108
Improve	SE	31.250	89.625	-0.072
Kokomo	SE	31.125	90.000	-0.121
Sandy Hook NW	SE	31.125	89.875	-0.141
Columbia South	SE	31.125	89.750	-0.148
Pinebur	SE	31.125	89.625	-0.105
Dexter	SE	31.00	89.875	-0.177
Sandy Hook	SE	31.00	89.750	-0.190
Baxterville SW	SE	31.00	89.625	-0.135
Average Conversion from NGVD29 to NAVD88 = -0.10 feet				

Table 21: Stream-by-Stream Vertical Datum Conversion

[Not applicable to this FIS Project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA’s FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For

example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA’s *Guidelines and Standards for Flood Risk Analysis and Mapping*, www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Digital Orthophoto	MDEQ	2006	1:400	Marion County flown leaf off 2006, 2-ft Pixel resolution
Digital Orthophoto	USDA-FSA	2014	1:12,000	1 Meter resolution NAIP imagery acquired by the USDA
Political boundaries	MARIS	2010	1:5,000	Municipal and county boundaries
Transportation Features	MARIS and MDEQ	2011	1:4,800	Roads and railroads, were delineated from 2006 2' Pixel orthoimagery
Surface Water Features	MARIS (State NHD Steward for USGS)	2012	1:24,000	Streams, rivers, and lakes were derived from NHD data
Public Land Survey System (PLSS)	MARIS	2010	1:24,000	PLSS data were digitized from 7.5 minute USGS quadrangles (Quads dated 1960 - 1989)
Benchmarks	NGS	2013	1:24,000	Benchmarks located using NGS data sheets
Airports	MARIS	2010	1:5,000	Statewide Runways extracted from the US Census Bureau 2010 TIGER Line files

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. 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.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway

boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Scale	Contour Interval	Citation
Columbia, City of	Dry Creek Webb Creek	Photogrametric Digital Terrain Model	1:4,800	5 ft	State of MS 2006
Columbia, City of	Balls Mill Creek Tributary Jones Creek	Topographic maps	1:24,000	10 ft	USGS 1970
Marion County	All Zone A streams	Photogrametric Digital Terrain Model	1:4,800	5 ft	State of MS 2006
Marion County	Balls Mill Creek Silver Creek Pearl River Upper Little Creek	Topographic maps	1:24,000	10 ft	USGS 1970

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	6,950	1,918	4,627	0.87	142.5	142.5	143.5	1.0
B	8,950	766	5,904	0.68	145.5	145.5	146.4	0.9
C	12,000	697	2,794	1.38	146.6	146.6	147.6	1.0
D	16,050	1,014	2,298	1.58	157.2	157.2	158.2	1.0
E	17,710	372	1,437	2.53	165.3	165.3	166.2	0.9
F	17,985	345	1,601	2.27	167.3	167.3	168.3	1.0
G	18,400	303	1,957	1.86	169.1	169.1	170.0	0.9
H	20,175	175	1,499	2.38	174.2	174.2	174.7	0.5
I	21,720	119	607	2.21	180.2	180.2	180.3	0.1
J	22,985	131	539	2.49	184.8	184.8	185.6	0.8
K	24,300	101	462	2.66	191.6	191.6	192.5	0.9

¹Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
MARION COUNTY, MS
 AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BALLS MILL CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	5,100	193	919	1.48	144.0	142.9 ²	143.9	1.0
B	5,470	541	1,915	0.63	144.0	143.9 ²	144.2	0.3
C	6,422	315	1,340	0.69	144.0	143.9 ²	144.5	0.6
D	7,041	198	717	1.52	144.9	144.0 ³	144.6	0.6
E	7,726	300	2,270	0.54	146.5	146.2 ³	146.9	0.7
F	8,800	275	1,747	0.98	147.0	146.3 ³	147.0	0.7
G	10,276	250	884	1.64	152.2	152.1 ³	153.0	0.9

¹Feet above mouth

²Elevation computed without consideration of backwater effects from Pearl River

³Elevation computed without consideration of backwater effects from Balls Mill Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, MS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BALLS MILL CREEK TRIBUTARY

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1061	60	436	7.7	145.7	133.5 ²	133.9	0.4
B	2682	123	781	3.7	145.7	142.1 ²	142.2	0.1
C	3371	43	327	8.7	145.7	143.4 ²	143.5	0.1
D	5061	125	629	4.5	152.1	152.1	152.8	0.7
E	6403	82	363	7.8	156.8	156.8	156.9	0.1
F	7619	120	936	2.9	161.5	161.5	162.0	0.5
G	9180	54	413	6.6	167.7	167.7	168.0	0.3
H	10223	45	299	9.0	170.0	170.0	170.4	0.4
I	11337	121	657	4.1	172.7	172.7	173.6	0.9

¹Feet above mouth

²Elevation computed without consideration of backwater effects from Pearl River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
MARION COUNTY, MS
 AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: DRY CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	360	93	575	5.37	145.7	134.7 ²	135.0	0.3
B	1,330	139	532	5.81	145.7	139.9 ²	140.8	0.9
C	2,810	138	1,018	3.04	146.3	146.3	147.0	0.7
D	3,780	105	835	3.70	149.7	149.7	150.3	0.6
E	4,460	161	1,064	2.90	152.0	152.0	152.9	0.9
F	5,430	63	561	4.94	155.9	155.9	156.4	0.5
G	6,400	165	1,203	2.30	158.0	158.0	158.6	0.6
H	7,350	195	917	3.02	161.3	161.3	162.0	0.7
I	8,360	160	963	2.88	165.1	165.1	166.1	1.0
J	9,310	134	876	3.13	170.9	170.9	171.7	0.8

¹Feet above mouth

²Elevations computed without consideration of backwater effects from Pearl River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, MS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: JONES CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	123.90	9,400	14,482	2.12	129.8	129.8	130.7	0.9
B	126.36	11,500	53,793	1.62	131.1	131.1	132.1	1.0
C	127.66	9,800	17,846	2.35	132.0	132.0	132.9	0.9
D	129.00	6,200	65,968	3.80	133.1	133.1	134.0	0.9
E	132.90	9,750	85,155	3.07	136.4	136.4	137.4	1.0
F	135.88	7,270	28,217	1.77	144.9	144.9	145.7	0.8
G	139.40	7,030	62,061	3.37	149.6	149.6	150.3	0.7
H	142.00	7,282	56,991	3.48	152.9	152.9	153.7	0.8
I	145.24	7,878	76,335	3.45	155.1	155.1	156.0	0.9
J	147.18	9,800	98,637	2.54	156.8	156.8	157.7	0.9
K	150.46	3,300	29,747	6.58	158.9	158.9	159.7	0.8

¹Miles Above Mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, MS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PEARL RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	8,000	3,210	18,365	0.62	144.3	144.3	145.3	1.0
B	11,500	1,900	6,753	1.69	146.4	146.4	147.4	1.0
C	12,850	323	1,942	5.87	152.8	152.8	153.7	0.9
D	13,125	241	1,890	6.03	154.7	154.7	155.5	0.8
E	13,550	272	2,051	5.56	156.1	156.1	157.1	1.0
F	14,000	439	3,533	4.10	157.7	157.7	158.7	1.0
G	14,600	425	4,233	3.43	159.2	159.2	160.2	1.0
H	14,925	646	4,700	3.68	162.1	162.1	163.1	1.0
I	17,150	465	5,787	2.99	167.3	167.3	168.3	1.0
J	19,100	606	5,704	3.03	170.5	170.5	171.4	0.9
K	23,775	867	6,709	2.49	180.8	180.8	181.7	0.9
L	27,250	549	5,403	3.04	189.3	189.3	190.2	0.9

¹Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, MS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SILVER CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	14,800	822	8,580	3.02	139.8	139.8	140.7	0.9
B	18,800	854	6,977	3.71	143.7	143.7	144.5	0.8
C	22,950	717	6,830	3.79	147.6	147.6	148.4	0.6
D	25,500	145	2,236	11.31	151.2	151.2	151.7	0.5

¹Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, MS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: UPPER LITTLE CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	281	34	216	5.9	145.7	135.5 ²	135.5	0.0
B	894	36	187	6.1	145.7	141.2 ²	141.2	0.0
C	2028	147	861	1.5	151.2	151.2	152.1	0.9
D	2861	110	561	2.3	152.9	152.9	153.5	0.6
E	4059	40	147	7.3	157.0	157.0	157.2	0.2
F	5322	117	253	9.1	163.3	163.3	163.3	0.0
G	6218	33	76	8.7	172.0	172.0	172.0	0.0

¹Feet above mouth

²Elevations computed without consideration of backwater effects from Pearl River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY MARION COUNTY, MS AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: WEBB CREEK

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not applicable for this FIS Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable for this FIS Project.

Table 26: Summary of Coastal Transect Mapping Considerations

[Not applicable for this FIS Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions to FIS projects may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, “Map Repositories”).

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA. A LOMA cannot be issued for properties located on the PFD (primary frontal dune).

To obtain an application for a LOMA, visit www.fema.gov/floodplain-management/letter-map-amendment-loba and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at www.fema.gov/online-tutorials.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/floodplain-management/letter-map-amendment-loma for the “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill” or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the “Flood Map-Related Fees” section.

A tutorial for LOMR-F is available at www.fema.gov/online-tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions and download the form “MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision”. Visit the “Flood Map-Related Fees” section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Marion County FIRM are listed in Table .

Table 27: Incorporated Letters of Map Change

[Not applicable for this FIS Project]

6.5.4 Physical Map Revisions

PMRs are an official republication of a community’s NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community’s chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit <http://www.fema.gov> and visit the “Flood Map Revision Processes” section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy,

known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Marion County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFM) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, “Community Map History.” A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.
- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or “pending” (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.
- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.
- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.
- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.
- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Marion County FIRMs in countywide format was 07/18/2011.

Table 28: Community Map History

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Columbia, City of	05/31/1974	05/31/1974	01/16/1976	09/28/1979	07/18/2011 09/04/1981
Marion County Unincorporated Areas	12/23/1977	12/23/1977	N/A	09/28/1979	07/18/2011

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Zone A streams included in 1979 FIS	03/1979	Smith and Sanders, Inc.	H-0457	04/1978	Marion County
Zone A streams included in TBD FIS	TBD	State of Mississippi	EMA-2010-CA-5081	06/2013	Marion County
Balls Mill Creek	03/1979	Smith and Sanders, Inc.	H-0457	04/1978	Marion County
Balls Mill Creek Tributary	07/18/2011	State of Mississippi	EMA-2007-CA-5774	09/2009	City of Columbia
Dry Creek	TBD	State of Mississippi	EMA-2010-CA-5081	06/2013	City of Columbia
Jones Creek	03/1979	Smith and Sanders, Inc.	H-0457	01/1978	City of Columbia
Pearl River	03/1979	Smith and Sanders, Inc.	H-0457	03/1979	City of Columbia and Marion County
Pearl River	07/18/2011	State of Mississippi	EMA-2007-CA-5774	09/2009	City of Columbia and Marion County

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Silver Creek	03/1979	Smith and Sanders, Inc.	H-0457	04/1978	Marion County
Upper Little Creek	03/1979	Smith and Sanders, Inc.	H-0457	04/1978	Marion County
Webb Creek	TBD	State of Mississippi	EMA-2010-CA-5081	10/2013	City of Columbia

7.2 Community Meetings

The dates of the community meetings held for this FIS project and any previous FIS projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Columbia, City of	3/1979	07/1976	Initial CCO	FIA, this community and the study contractor
		02/1977-03/1977	Notice of Intent	Notice of Intent published in local newspapers
Marion County and Incorporated Areas	07/18/2011	03/19/2008	Scoping	FEMA, MDEQ, Marion County, City of Columbia, and the Study Contractor
		04/22/2010	CCO Open House	FEMA, MDEQ, Marion County, City of Columbia, and the Study Contractor
	TBD	02/07/2012	Discovery	FEMA, MEMA, MDEQ, Lower Pearl watershed communities,, and the Study Contractor
		09/17/2015	Flood Risk Review	MEMA, MDEQ, Lower Pearl watershed communities,, and the Study Contractor
		TBD	Final CCO and Open House	
		TBD	Resilience	
	Marion County, Unincorporated Areas	10/1/1974	07/1976	Initial CCO
02/1977-03/1977			Notice of Intent	Notice of Intent published in local newspapers

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see <http://www.fema.gov>.

Table 31 is a list of the locations where FIRMs for Marion County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 31: Map Repositories

Community	Address	City	State	Zip Code
Marion County, Unincorporated Areas	E911 Dispatch Center 217 Broad Street	Columbia	MS	39429
City of Columbia	Columbia City Hall 201 Second Street	Columbia	MS	39429

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the state NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of state and local GIS data in their state.

Table 32: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov

FEMA Region IV	Federal Emergency Management Agency 3003 Chamblee Tucker Road Atlanta, GA 30341 (770) 220-5200
Other Federal Agencies	
USGS website	http://www.usgs.gov
Hydraulic Engineering Center website	http://www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Stacey Ricks, CFM Mississippi Emergency Management Agency P.O. Box 5644 Pearl, MS 39208 Phone: 601-933-6605 sricks@mema.ms.gov
State GIS Coordinator	Jim Steil Director, MARIS 3825 Ridgewood Road Jackson, MS 39211 Phone: 601-432-6357 jsteil@ihl.state.ms.us
Statewide Regulatory Coordinator	Stacey Ricks, CFM Mississippi Emergency Management Agency P.O. Box 5644 Pearl, MS 39208 Phone: 601-933-6605 sricks@mema.ms.gov

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

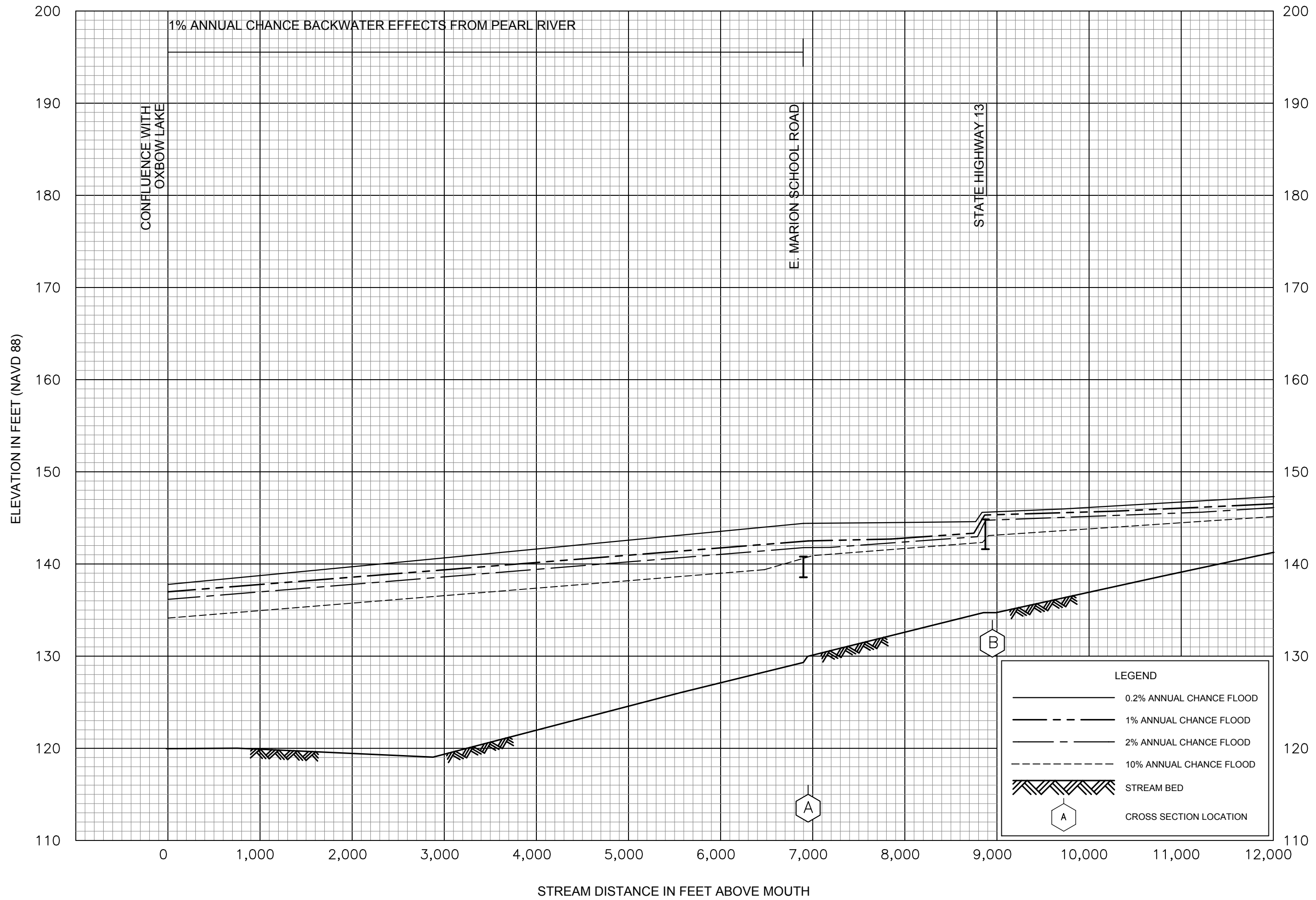
Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
SMPDD	Southern Mississippi Planning and Development District	<i>Marion County, Mississippi Multi-Jurisdictional Hazard Mitigation Plan 2008-2013</i>	--	Gulfport, MS	2008	
HUD 1979	U.S. Department of Housing and Urban Development, Flood Insurance Administration	<i>Flood Insurance Study, Marion County (Unincorporated Areas)</i>	--	Washington, D.C.	March 1979	
HUD 1979	U.S. Department of Housing and Urban Development, Flood Insurance Administration	<i>Flood Insurance Study, City of Columbia</i>	--	Washington, D.C.	March 1979	
FIS 2011	Federal Emergency Management Agency	<i>Flood Insurance Study, Marion County and Incorporated Areas</i>	--	Washington, D.C.	July 18, 2011	
WRC	United States Water Resource Council	"Guidelines for Determining Flood Flow Frequency" Bulletin 17	--	--	1976	
HEC-2 1973	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<u>HEC-2 Water Surface Profiles, Generalized Computer Program</u>	--	Davis, California	October 1973	

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
HEC-2 1976	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<u>HEC-2 Water Surface Profiles, Generalized Computer Program</u>	--	Davis, California	11/1976	
HEC-2 1991	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<u>HEC-2 Water Surface Profiles Generalized Computer Program</u>	--	Davis, California	05/1991	
HEC-RAS 2003	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<u>HEC-RAS River Analysis System, User's Manual, version 3.1.3</u>	--	Davis, California	05/2003	http://www.hec.usace.army.mil
HEC-RAS 2010	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<u>HEC-RAS River Analysis System, User's Manual, version 4.1.0</u>	--	Davis, California	01/2010	http://www.hec.usace.army.mil
USACE 2004	U.S. Army Corps of Engineers, Topographic Engineering Center	<u>Corpscon Version 6.0.1</u>	--	Alexandria, Virginia	08/2004	
USGS 1972	U.S Department of the Interior, Geological Survey	<u>7.5 Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet, Brookhaven, Mississippi</u>	--	--	1972	
USGS 1974	U.S Department of the Interior, Geological Survey, Water Resources Division	<u>An Approach to Estimating Flood Frequency for Urban Areas in Oklahoma</u>	--	Oklahoma City, Oklahoma	07/1974	

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USGS 1976	U.S Department of the Interior, Geological Survey	<u>Flood Frequency of Mississippi Streams</u>	B.E. Colson and J.W. Hudson	--	1976	
USGS 1991	U.S. Department of the Interior, Geological Survey	<u>Flood Characteristics of Mississippi Streams</u> , Water-Resources Investigations Report 91-4037	Mark N. Landers and K. Van Wilson, Jr.	Jackson, MS	1991	
USGS 1973	U.S. Department of the Interior, U.S. Geological Survey	<u>Map of Flood Prone Areas</u> , Columbia North, Columbia South, Morgantown, Mississippi	--	--	1973	



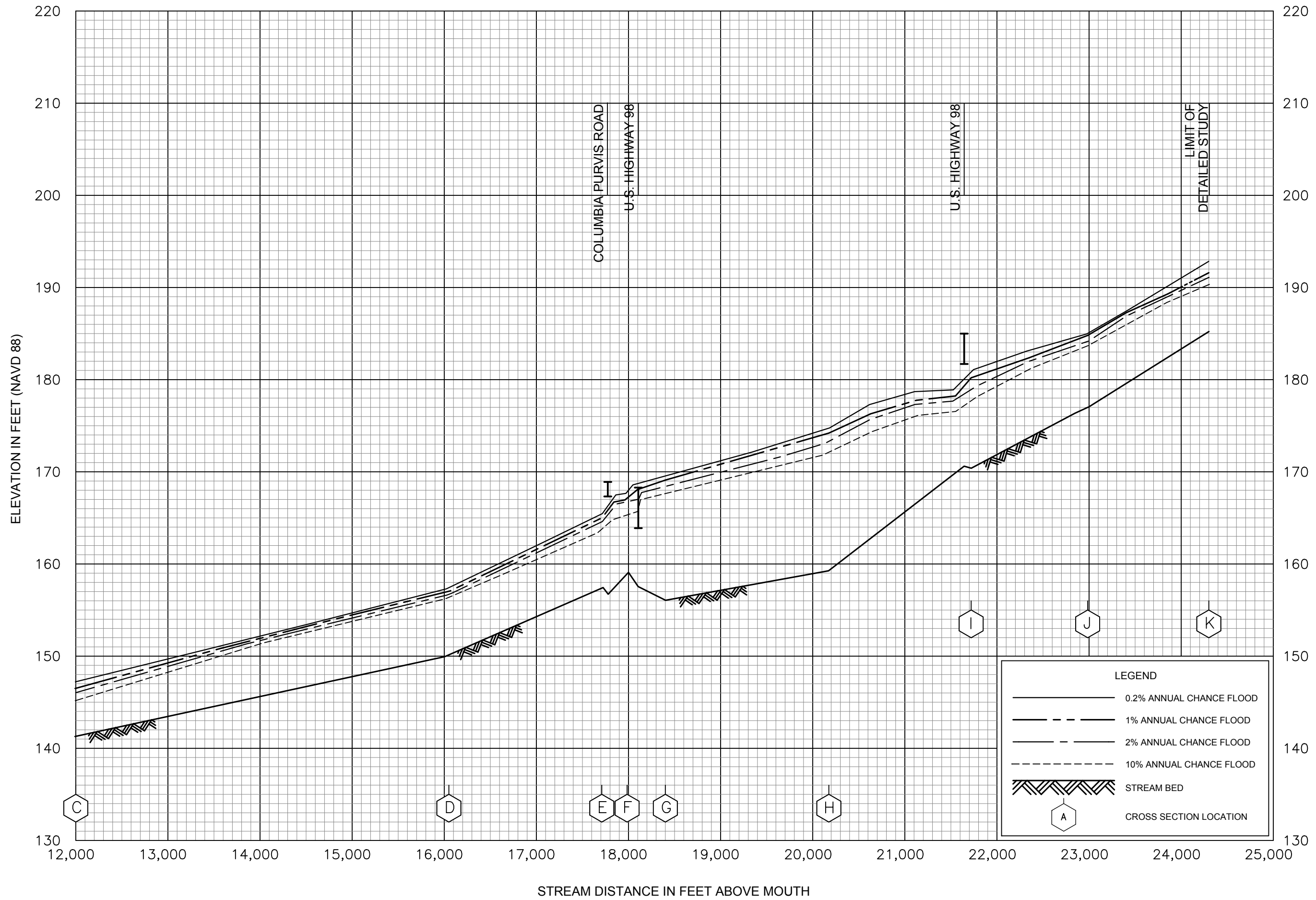
FLOOD PROFILES

BALLS MILL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, MS
AND INCORPORATED AREAS

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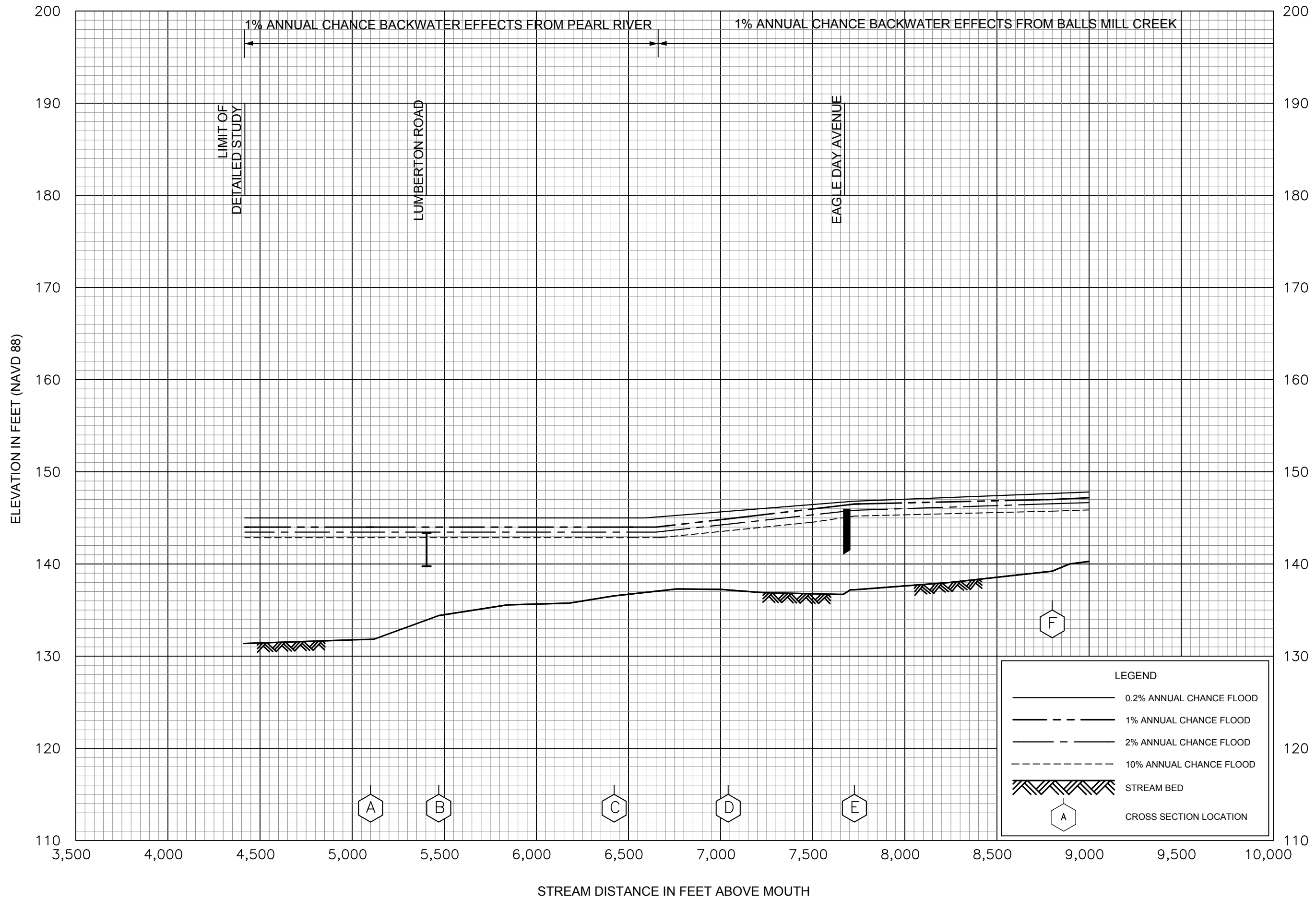


FLOOD PROFILES

BALLS MILL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, MS
AND INCORPORATED AREAS



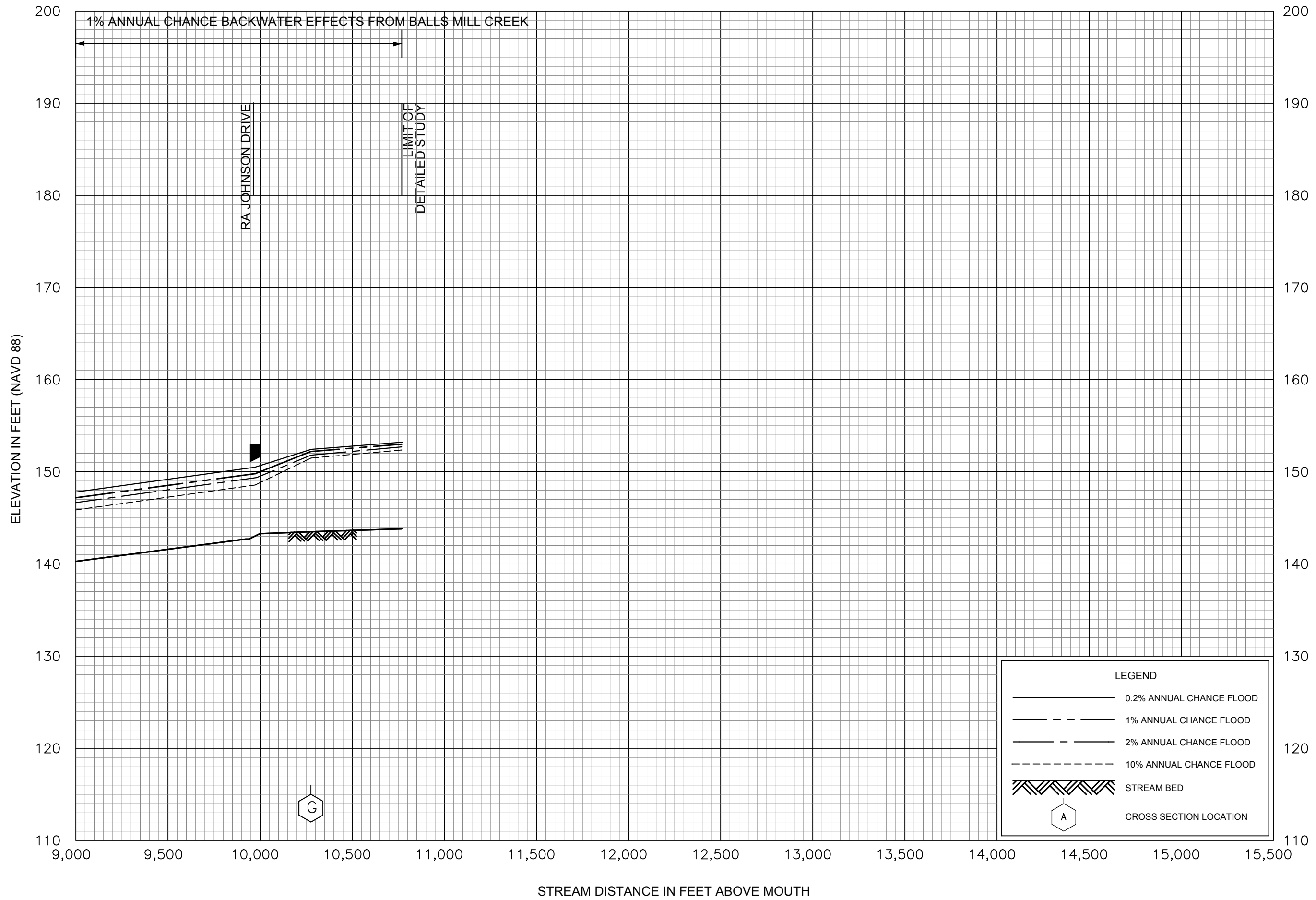
FLOOD PROFILES

BALLS MILL CREEK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

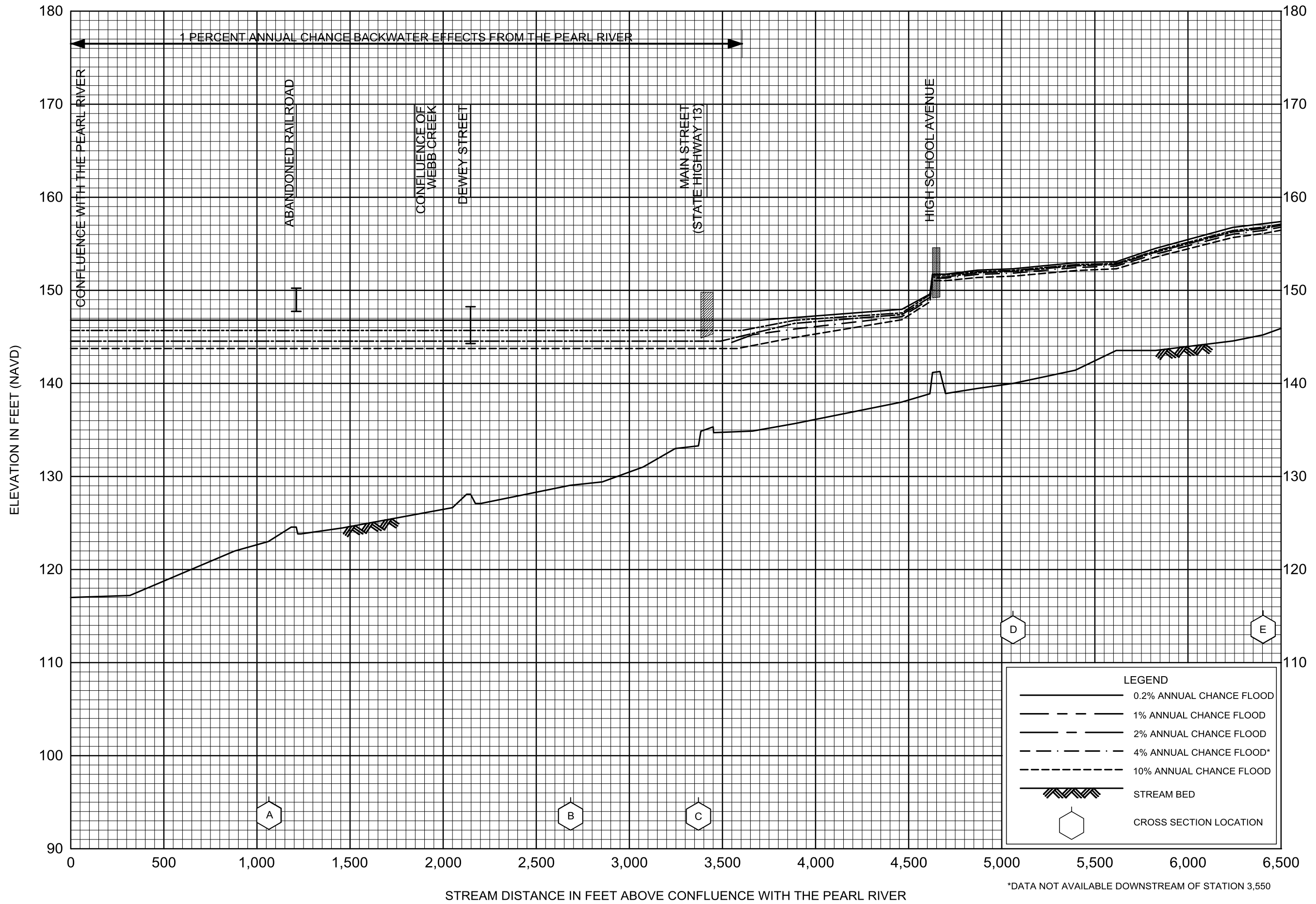
MARION COUNTY, MS
AND INCORPORATED AREAS

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FLOOD PROFILES
BALLS MILL CREEK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY
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AND INCORPORATED AREAS

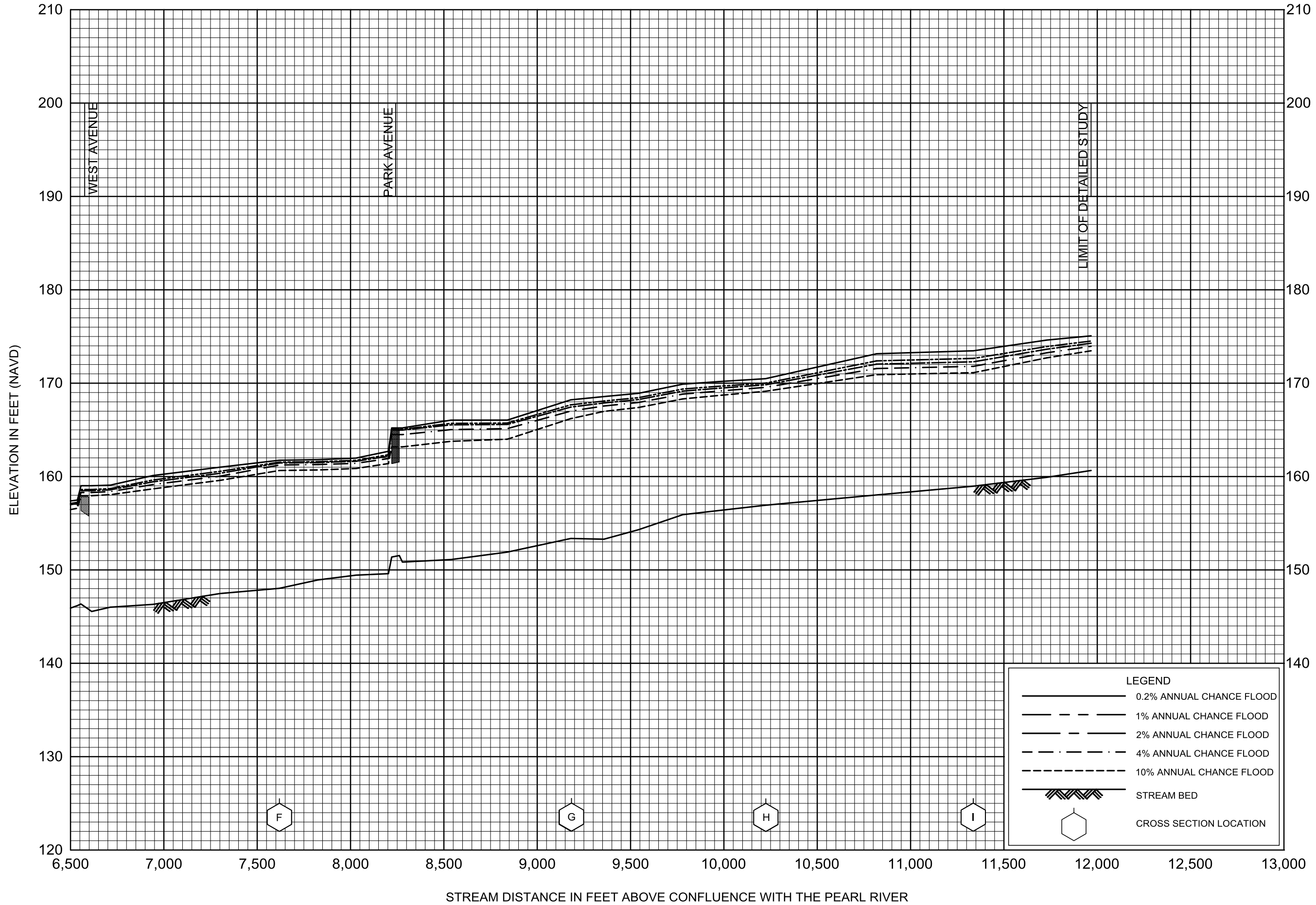


*DATA NOT AVAILABLE DOWNSTREAM OF STATION 3,550

FLOOD PROFILES

DRY CREEK

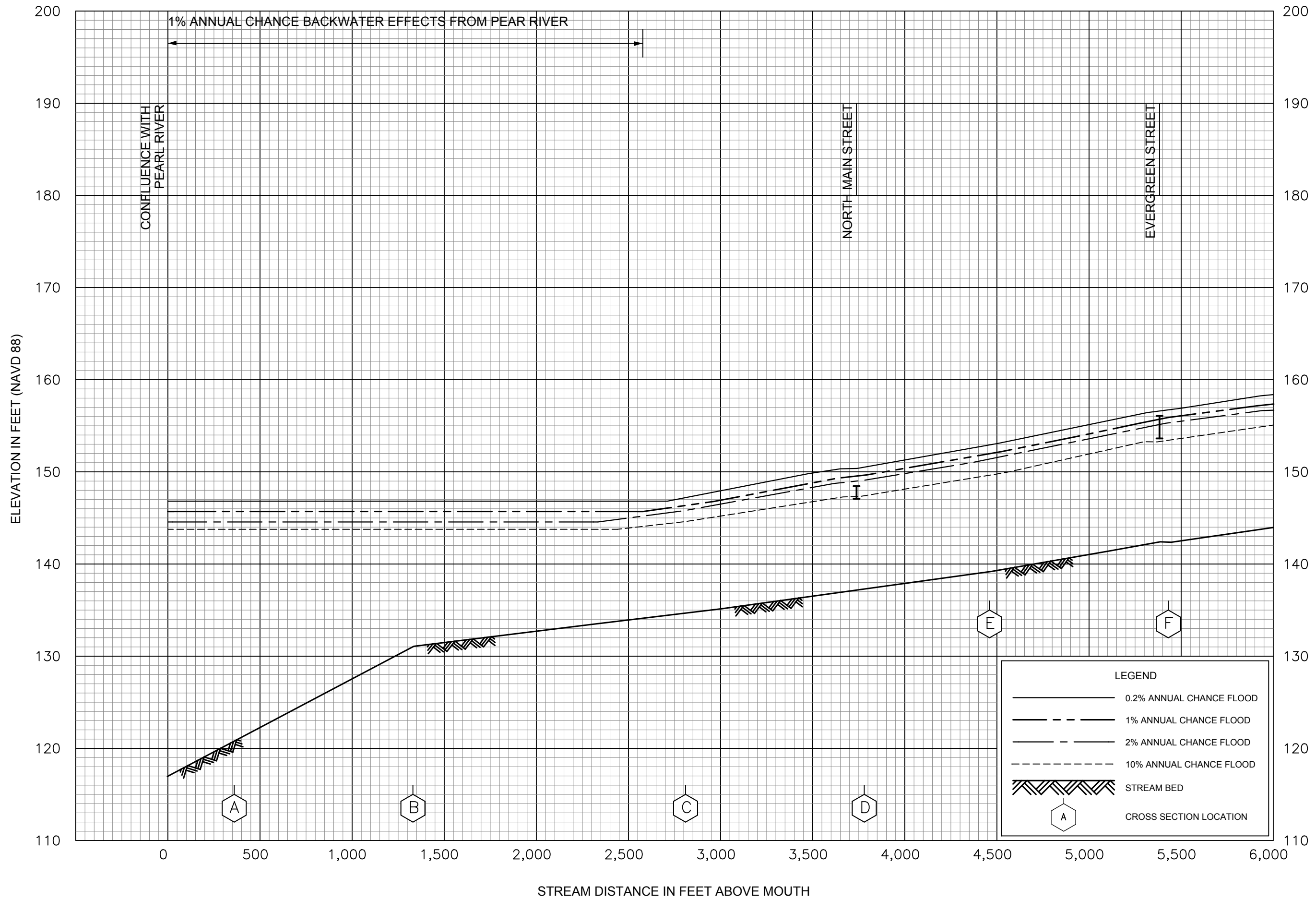
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DRY CREEK

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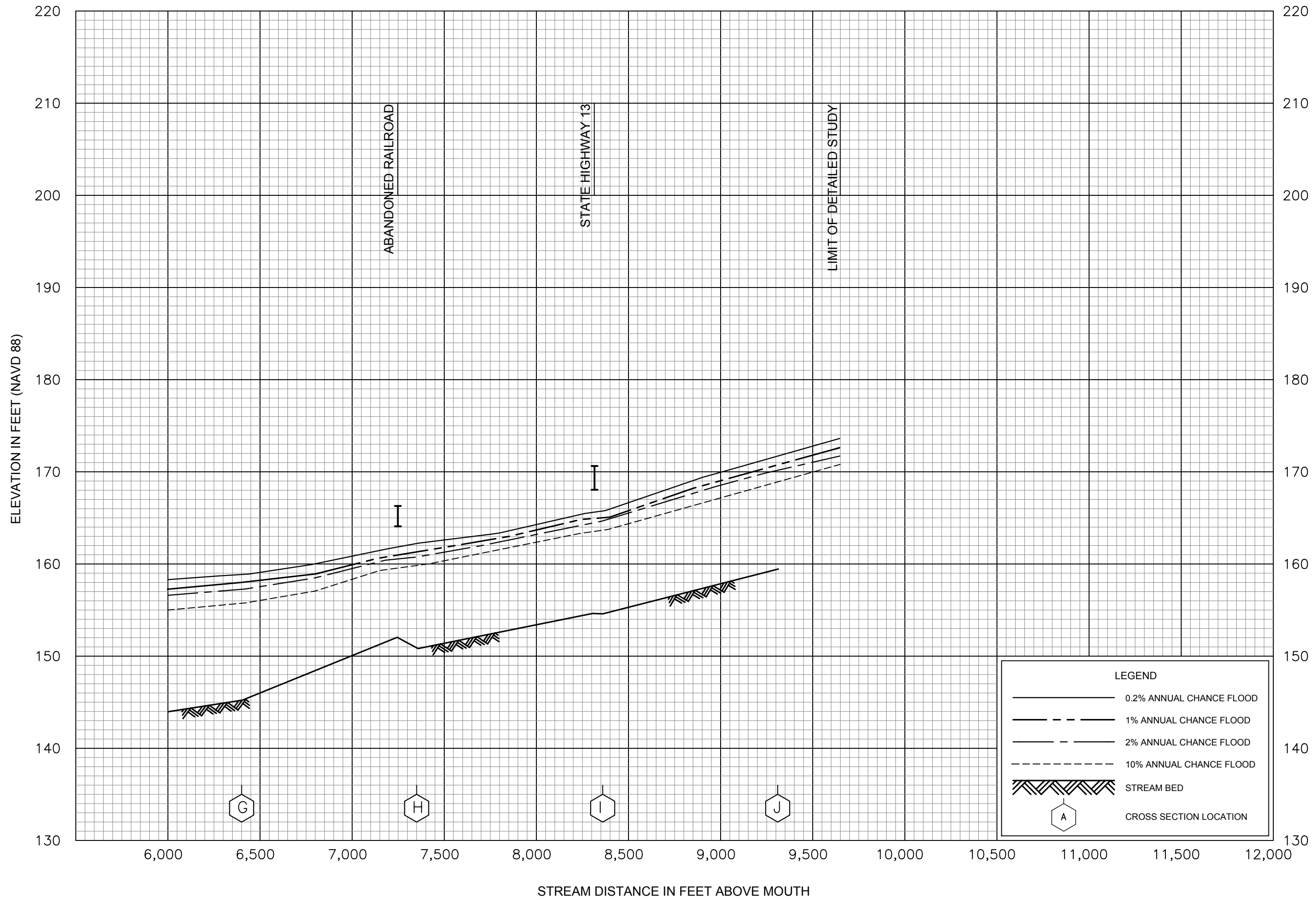
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JONES CREEK

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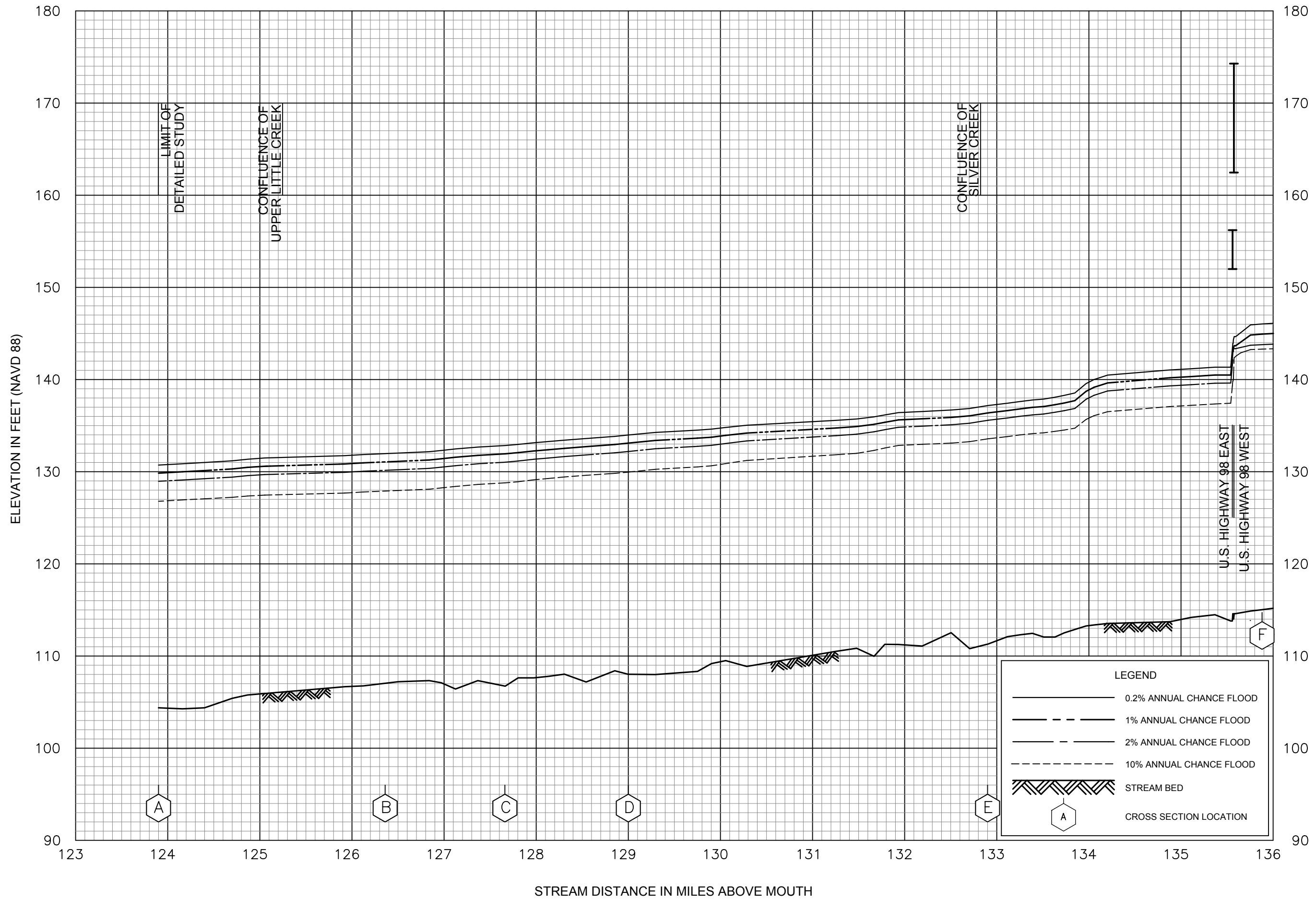
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JONES CREEK

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08P



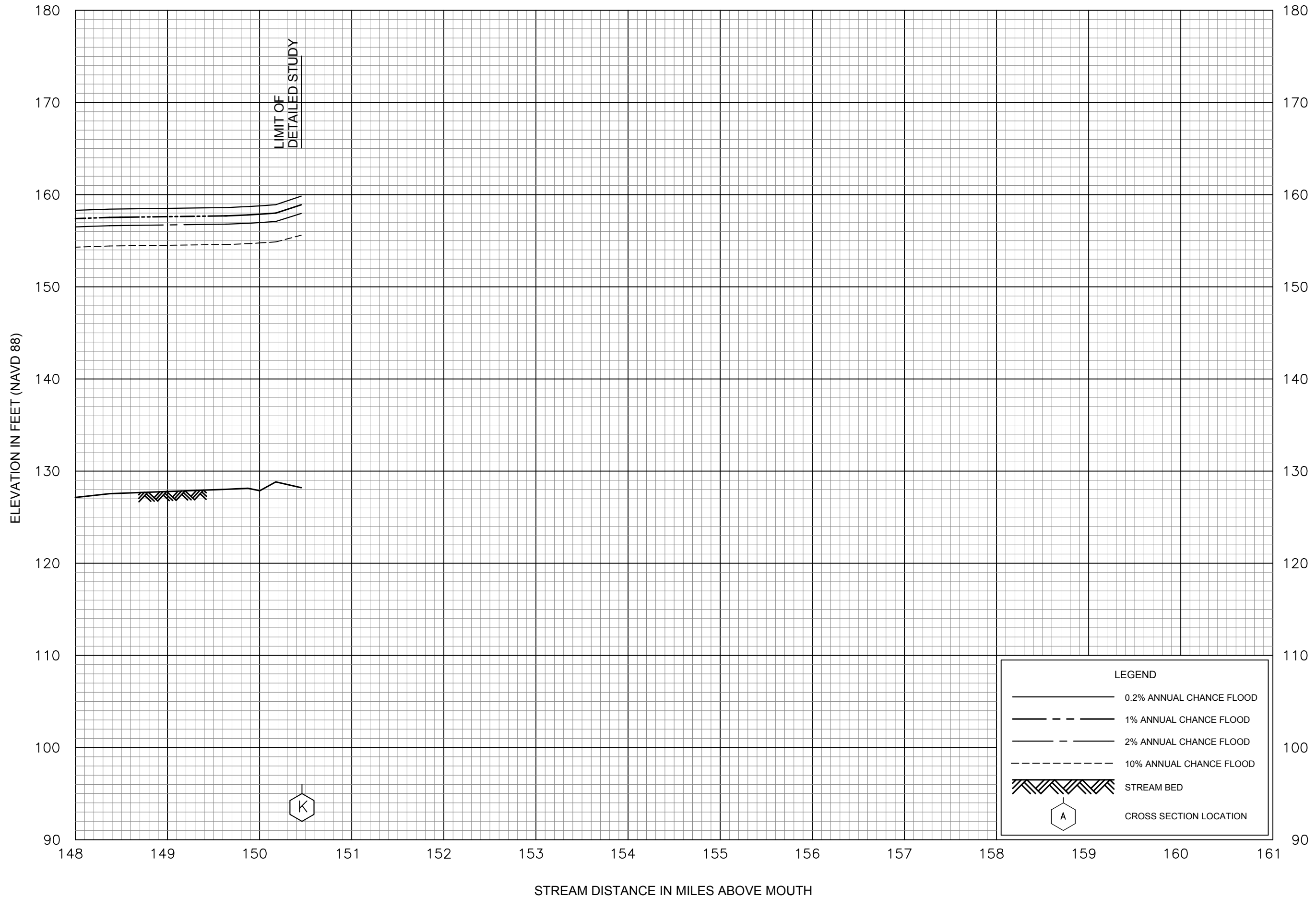
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PEARL RIVER

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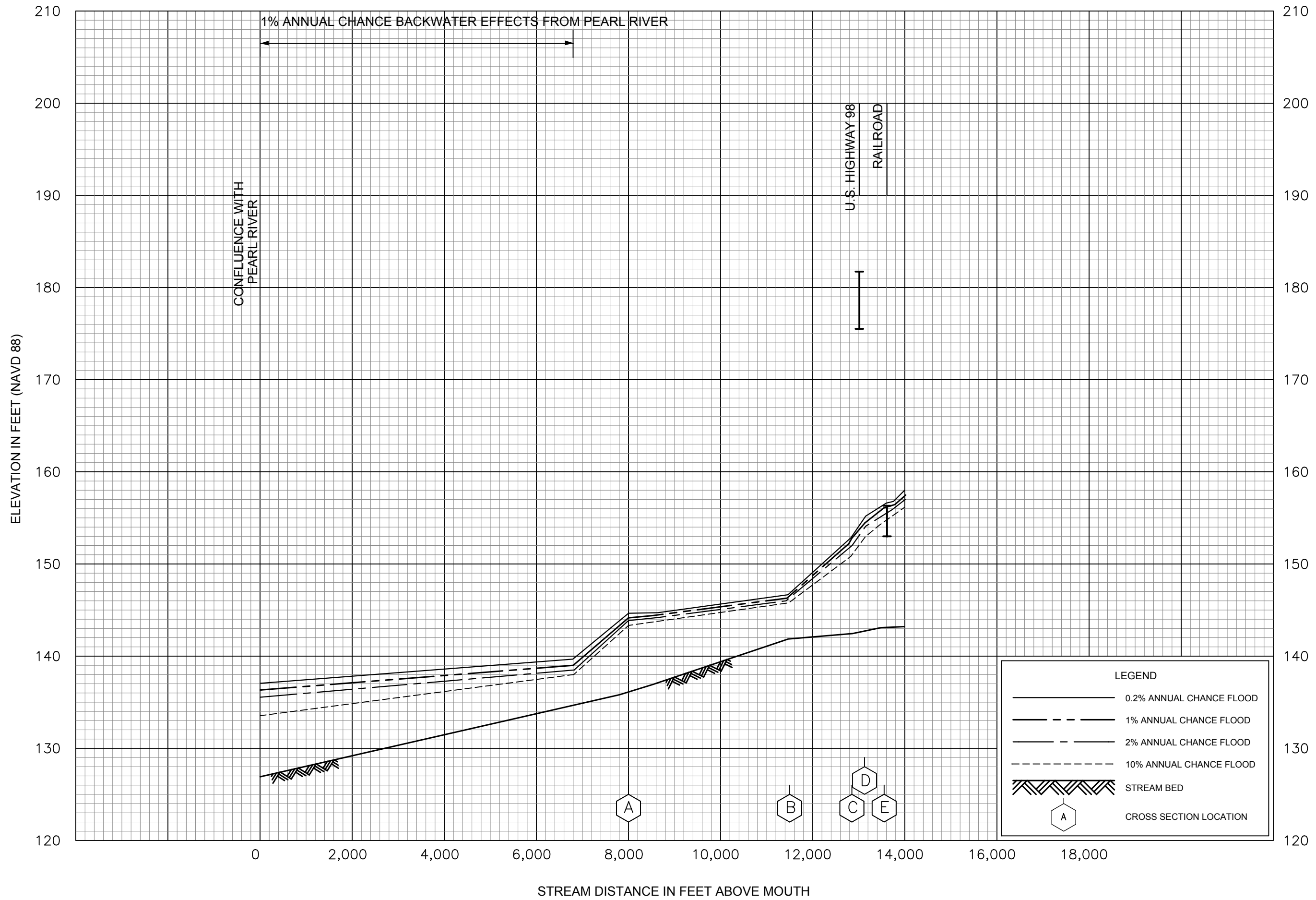
MARION COUNTY, MS
AND INCORPORATED AREAS

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FLOOD PROFILES
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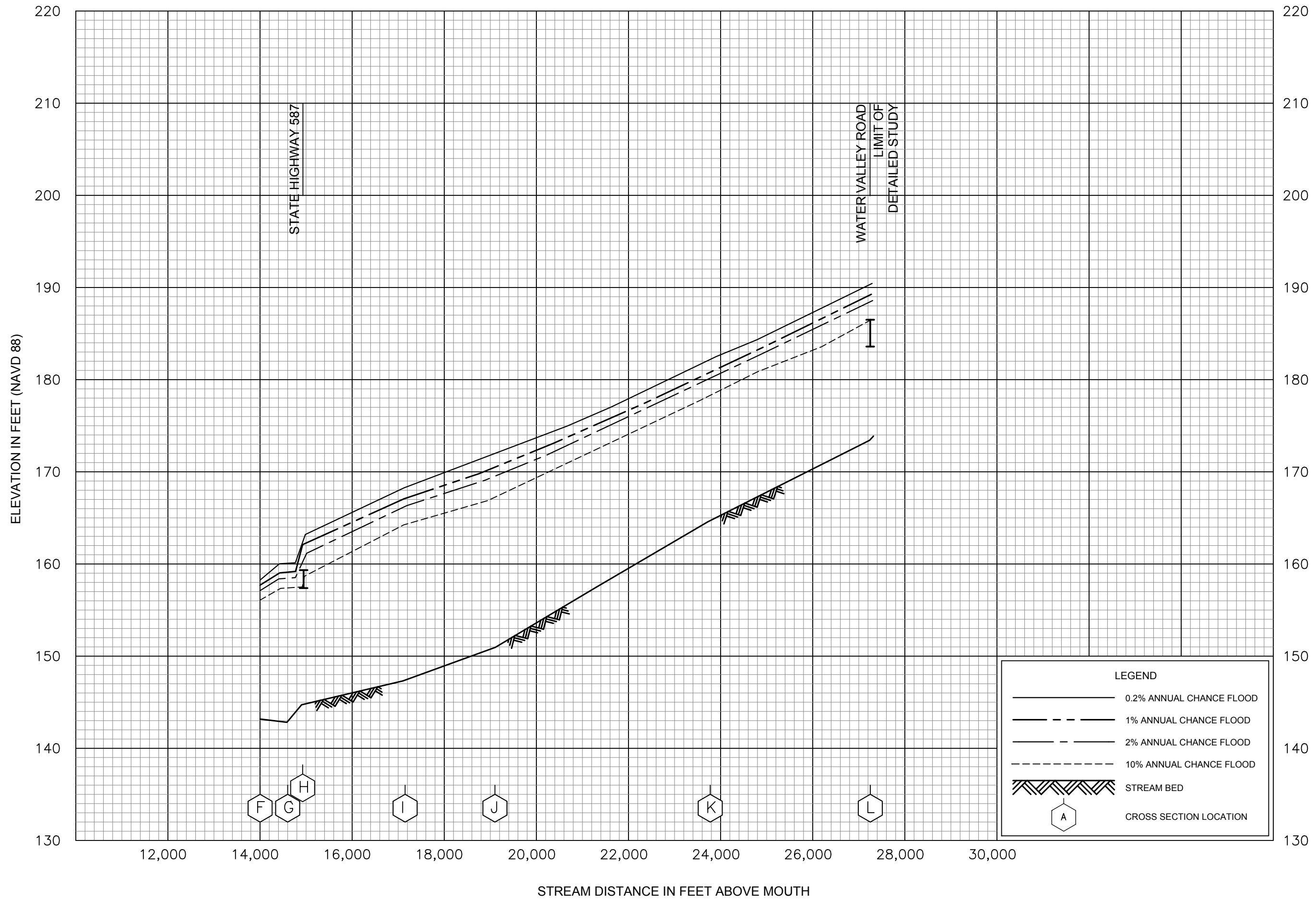


FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, MS
AND INCORPORATED AREAS

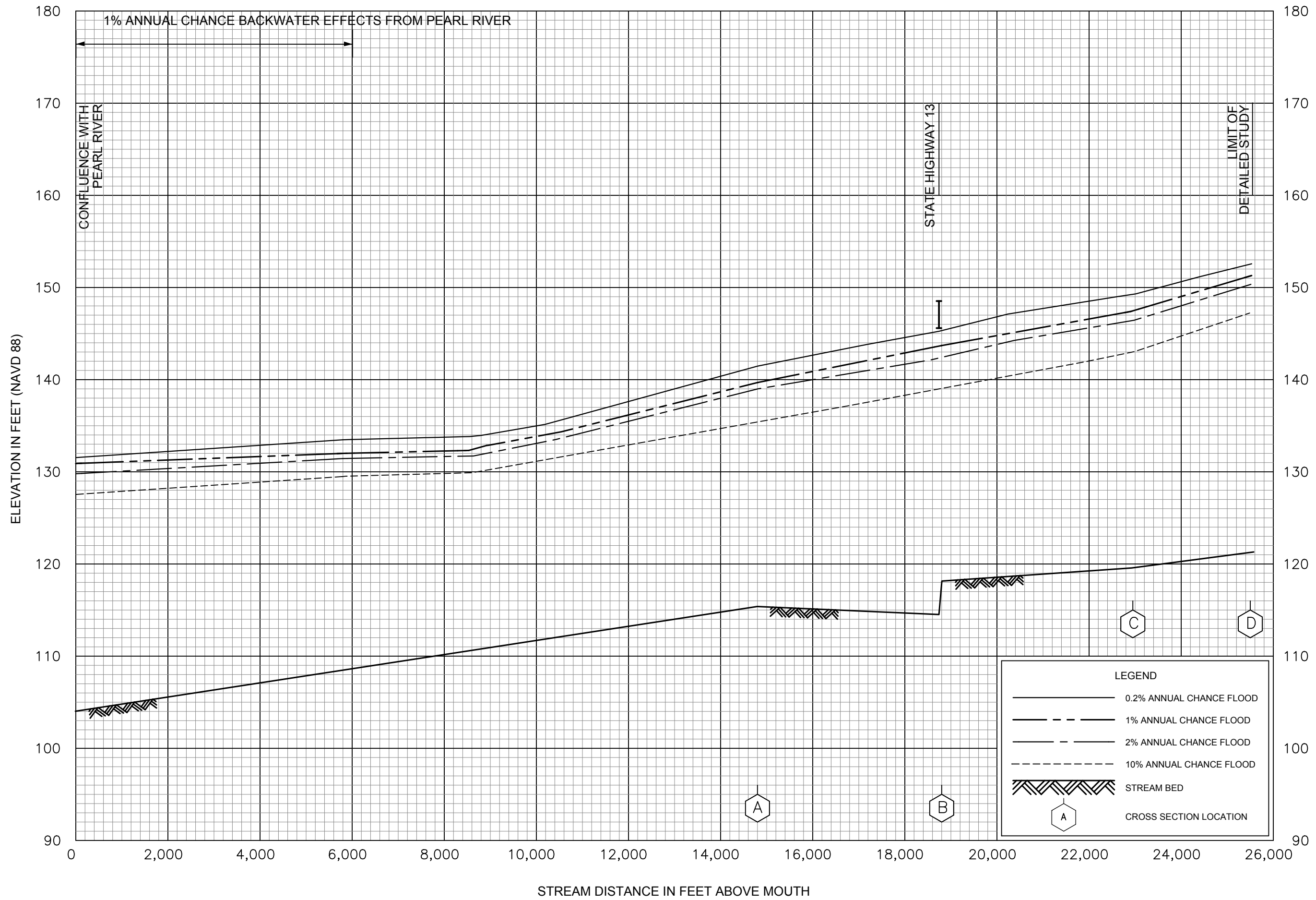


FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

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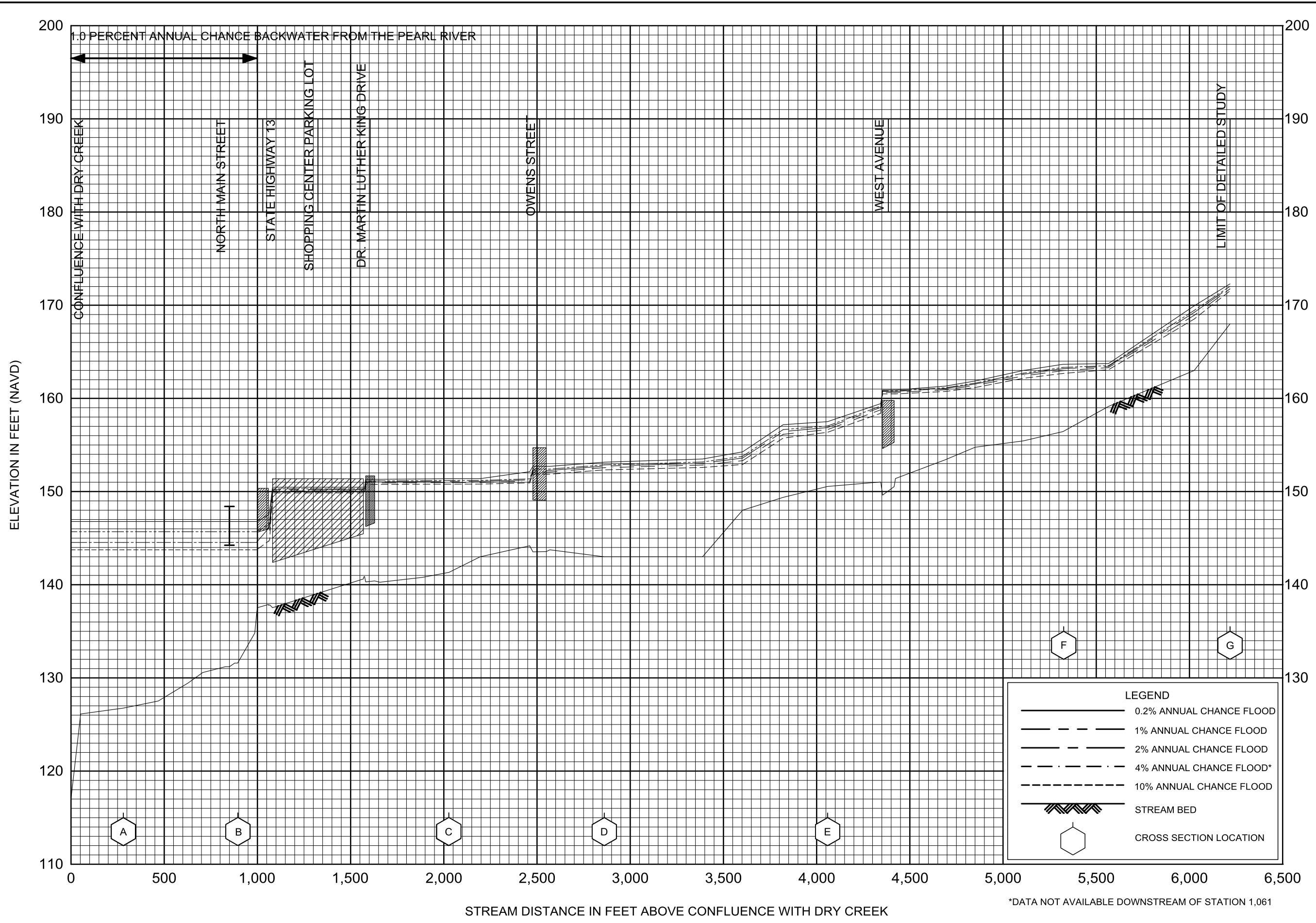


FLOOD PROFILES

UPPER LITTLE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, MS
AND INCORPORATED AREAS



FLOOD PROFILES

WEBB CREEK

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 MARION COUNTY, MS
 AND INCORPORATED AREAS