

FLOOD INSURANCE STUDY



WALTHALL COUNTY, MISSISSIPPI AND INCORPORATED AREAS

COMMUNITY NAME

TYLERTOWN, CITY OF

WALTHALL COUNTY
(UNINCORPORATED AREAS)

COMMUNITY NUMBER

280175

280307



**WALTHALL
COUNTY**

REVISED: **TBD**



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER

28147CV000B

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

This FIS report was revised on **TBD**. Users should refer to Section 10.0, Revisions Description, for further information. Section 10.0 is intended to present the most up-to-date information for specific portions of this FIS report. Therefore, users of this report should be aware that the information presented in Section 10.0 supersedes information in Sections 1.0 through 9.0 of this FIS report.

Initial Countywide FIS Effective Date: July 6, 2010

Revised Countywide FIS Dates: **TBD**

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**FLOOD INSURANCE STUDY
WALTHALL COUNTY, MISSISSIPPI AND INCORPORATED AREAS**

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and supersedes the FIS reports and/or Flood Insurance Rate Maps (FIRMs) in the geographic area of Walthall County, Mississippi, including the Town of Tylertown, and unincorporated areas of Walthall County (hereinafter referred to collectively as Walthall County).

This FIS 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. This information will also be used by Walthall County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the 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 FIS report are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

January 16, 1992, Town of Tylertown FIS

The hydrologic and hydraulic analyses in this study were performed by the Vicksburg District of the U.S. Army Corps of Engineers (USACE) for the Federal Emergency Management Agency under Inter-Agency Agreement No. EMW-89-E-2994, Project Order No. 3B. That work completed in April 1990.

July 6, 2010, Walthall County and Incorporated Areas FIS

The hydrologic and hydraulic analyses for this countywide FIS were performed by the State of Mississippi for the Federal Emergency Management Agency (FEMA), under Contract No. EMA-2006-CA-5617. This study was completed in September 2008.

The digital base map information files were provided by the U.S. Army Corps of Engineers—Vicksburg District, 4155 East Clay Street, Vicksburg, MS 39183, phone number (601) 631-5053. The digital orthophotography was acquired in March 2006, with the imagery processed to a 2-foot pixel resolution.

The digital FIRM was produced using the Mississippi State Plane Coordinate System, West Zone, FIPZONE 2302. The horizontal datum was the North American Datum of 1983, GRS 80 spheroid. Distance units were measured in U.S. feet.

1.3 Coordination

An initial Consultation Coordination Officer's (CCO) meeting is held with representatives from FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held with representatives from FEMA, the community, and the study contractor to review the results of the study.

January 16, 1992, Town of Tylertown FIS

On April 25, 1989, an initial Consultation Coordination Officer's (CCO) meeting was held with representatives of FEMA, the USACE (the study contractor), and the Town of Tylertown to determine the streams to be studied by detailed methods.

On February 26, 1991, a final CCO meeting was held with representatives of FEMA, the study contractor, and the town to review the results of this study.

July 6, 2010, Walthall County and Incorporated Areas FIS

For this countywide FIS, the Project Scoping Meeting was held on December 4, 2006 in Enon, MS. Attendees for these meetings included representatives from the Mississippi Department of Environmental Quality, Mississippi Emergency Management Agency, FEMA National Service Provider, Walthall County, and the Study Contractor. Coordination with county officials and Federal, State, and regional agencies produced a variety of information pertaining to floodplain regulations, available community maps, flood history, and other hydrologic data.

On May 13, 2009, a final CCO meeting was held with representatives of FEMA, the study contractor, and local officials to review the results of this study. All problems raised in the meetings have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Walthall County, Mississippi, and its incorporated communities listed in Section 1.1 Several flooding sources within the county were studied by approximate methods. Approximate analyses are 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 the State of Mississippi.

January 16, 1992, Town of Tylertown FIS

Flooding caused by the overflow of Dry Creek and Magees Creek was studied in detail.

Areas having low development potential or minimal flood hazards were previously studied using approximate analyses. The results that were shown on the previously printed Flood Insurance Study for the Town of Tylertown (FEMA, 1988) are incorporated into this Flood Insurance Study.

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 April 1995. The scope and methods of study were proposed to and agreed upon by FEMA and the Town of Tylertown.

July 6, 2010, Walthall County and Incorporated Areas FIS

For this countywide FIS, several flooding sources within the county were studied by approximate methods. Approximate analyses are used to study those areas having a low developmental potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon, by FEMA and the State of Mississippi.

Floodplain boundaries of stream that have been previously studied by detailed methods were redelineated based on best available topographic information.

2.2 Community Description

Walthall County is in southwestern Mississippi on the border of Louisiana. The county is bordered by Washington Parish, Louisiana, on the south, Pike County, Mississippi, on the west, Lawrence County to the north, and Marion County, Mississippi, on the east. Walthall County is served by U.S. Highway 98, State Highways 27, 44, 48, 583, and 585. The 2013 population for Walthall County was 14,931 (U.S. Census Bureau, 2013). The primary industries in Walthall County include manufacturing, retail trade, and wholesale trade (Walthall County Economic Development Authority, 2015).

Soils in the area are moderately well-drained silt on gently rolling terrain. Along streams, however, there are thick deposits of poorly-drained silt. Vegetation in the area varies from abundant stands of pine found in many undeveloped areas to bushy cutover land found along many stream banks.

The climate of Walthall County is characterized by warm summers and mild winters. The annual precipitation is 66.2 inches. Temperatures range from a January average of 49.5 °F to a July average of 81 °F (MSU Climatologist, 2015).

2.3 Principal Flood Problems

Low-lying areas of Tylertown are subject to periodic headwater flooding caused by the inability of streams to accommodate heavy rainfalls.

Strong storms, capable of causing flooding, can occur at any time of the year, but are more prevalent in the summer and fall. The most recent storm occurred on January 24, 1990. A severe storm occurred on April 5 and 6, 1983, producing 11 inches of rain in a 12-hour period, and 15.3 inches of rain in a 36-hour period, causing extensive flooding in the Mill Creek basin.

2.4 Flood Protection Measures

No flood protection measures on the studied streams within Walthall County.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the communities, 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-, 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-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent 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 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 peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community.

January 16, 1992, Town of Tylertown FIS Analyses

Flows for the streams studied by detailed methods were derived using synthetic rainfall methods from the U.S. Weather Bureau Technical Paper No. 40 (U.S. Department of Commerce, 1963). The 24-hour rainfall amounts were distributed into 0.05-hour increments and arranged in a sequence considered to be critical for runoff. Runoff hydrographs were developed by applying the distributed synthetic rainfall to unit hydrographs using the USACE HEC-1 computer program (USACE, 1970). The infiltration rate value for initial loss was 0.25 inch, and the infiltration loss rate was 0.025 inch per hour. Snyder's unit graph coefficients were used to develop unit hydrographs. Runoff was routed through the basin using the Modified Puls method.

July 6, 2010, Walthall County and Incorporated Areas FIS

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by limited detail methods affecting the communities. Peak discharges were calculated based on USGS regional regression equations (U.S. Department of the Interior, 1991). For the discharges calculated based on regional regression equations, the rural regression values were modified to reflect stream gage weighting and/or urbanization as necessary.

A summary of the drainage area-peak discharge relationships for all the streams is shown in Table 1, "Summary of Discharges."

TABLE 1. SUMMARY OF DISCHARGES

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (sq. mi.)</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-percent</u>	<u>2-percent</u>	<u>1-percent</u>	<u>0.2-percent</u>
DRY CREEK					
At confluence with Magees Creek	9.71	*	*	6,730	*
MAGEES CREEK					
Downstream of confluence of Collins Creek	175.18	*	*	36,390	*
Downstream of confluence of Dry Creek	153.51	*	*	32,690	*

*Data not available

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. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data table in the FIS report. 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.

January 16, 1992, Town of Tylertown FIS Analyses

Cross section data for the channels, bridges, and overbank areas were taken from field surveys and U.S. Geological Survey (USGS) topographic maps (U.S. Department of Interior, 1970).

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (USACE, 1984). Stage-storage relationships were developed by running an arbitrary range of discharges through the defined project area. These were run through the HEC-1 model to route the hydrographs through the study area using the Modified Puls method. High-water marks from the April 5-6, 1983 storm were used to verify the HEC-2 model. Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Starting water-surface elevations for Magees Creek were developed using the slope/area method. For Dry Creek, starting water-surface elevations were determined by coincident stages at its confluence with Magees Creek.

Channel roughness factors (Manning's "n") used in the hydraulic computations were based on field observation and engineering judgment. Channel "n" values ranged from 0.050 to 0.075, and overbank "n" values ranged from 0.100 to 0.150.

July 6, 2010, Walthall County and Incorporated Areas FIS

Cross section geometries were obtained from a combination of terrain data and field surveys. Bridges and culverts located within the limited detailed study limits were field surveyed to obtain elevation data and structural geometry.

Downstream boundary conditions for the hydraulic models were set to normal depth using a starting slope calculated from values taken from topographic data, or where applicable, derived from the water-surface elevations. Water-surface profiles were computed through the use of the USACE HEC-RAS version 3.1.3 computer program (USACE, 2003). The model was run for the 1-percent annual chance storm for the limited detail and approximate studies.

The hydraulic analyses for this countywide FIS were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

3.3 Vertical Datum

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 in use for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the finalization of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. Structure and ground elevations in the community must, therefore, be referenced to NAVD88. It is important to note that adjacent communities may be referenced to NGVD29. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities. The elevations shown in the FIS report and on the FIRM for Walthall County are referenced to NAVD88.

Ground, structure, and flood elevations may be compared and/or referenced to NGVD29 by applying a conversion factor. To convert elevations from NAVD88 to NGVD29, add 0.13 feet to the NAVD88 elevation. The 0.13 feet value is an average for the entire county. The adjustment value was determined using the USACE Corpscon 6.0.1 computer program (USACE, 2004) and topographic maps (U.S. Department of the Interior, 1970). The BFE's shown on the FIRM represent whole-foot rounded values. For example, a BFE of 12.4 feet will appear as 12 feet on the FIRM, and 12.6 feet as 13 feet. Users who wish to convert the elevations in this FIS report to NGVD29 should apply the stated conversion factor to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1-foot.

For more information regarding conversion between the NGVD and the NAVD, see the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address <http://www.ngs.noaa.gov>).

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. Interested individuals may contact FEMA to access this data.

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 flood elevations and delineations of the 1- and 0.2-percent-annual-chance 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, Floodway Data Table and Summary of Stillwater Elevations 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. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section.

The 1- and 0.2-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), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-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.

For the streams studied by limited detailed and approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2). Floodplain boundaries for these streams, as well as those streams that have been previously studied by detailed methods, were generated using USGS 10-meter Digital Elevation Models (USGS), then refined using detailed hydrographic 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 floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

Floodways have not been shown or computed for this community. Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the community.

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 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.

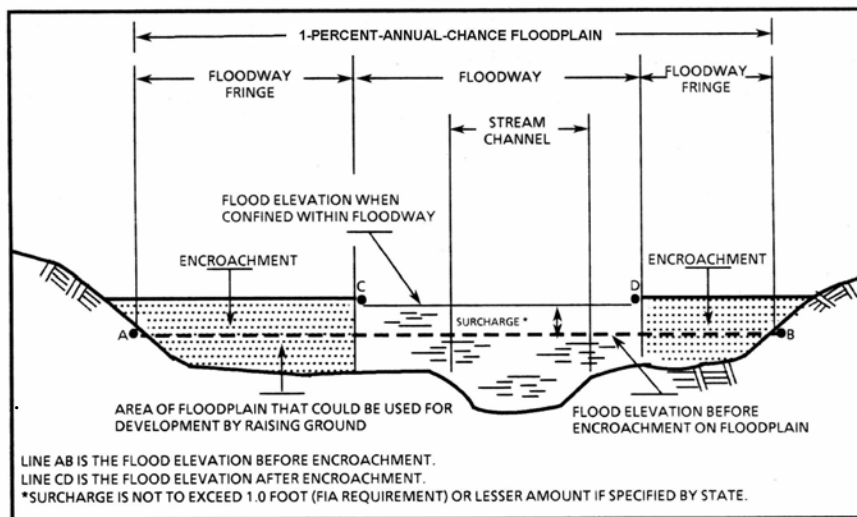


FIGURE 1. FLOODWAY SCHEMATIC

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 base (1-percent annual chance) flood elevations (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 rate 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 base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within the zone.

Zone AO

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

Zone A99

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

Zone V

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

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 1-percent coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations 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 base flood by levees. No BFEs or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate 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 risk 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 BFEs or average depths. Insurance agents use the zones and BFEs 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 floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The countywide FIRM presents flooding information for the entire geographic area of Walthall County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community, up to and including this countywide FIS are presented in Table 2, "Community Map History."

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Town of Tylertown	June 28, 1974	November 19, 1976 September 5, 1980	September 30, 1988	January 16, 1992 July 6, 2010
Walthall County (Unincorporated Areas)	February 24, 1978	--	August 1, 1986	July 6, 2010

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALTHALL COUNTY, MS
 AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Walthall County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS reports, FIRMs, and/or FBFMs for all of the incorporated and unincorporated jurisdictions within Walthall County.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting Federal Insurance and Mitigation Division, FEMA Region IV, Koger-Center Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, GA 30341.

9.0 BIBLIOGRAPHY AND REFERENCES

Federal Emergency Management Agency, Flood Insurance Study, Town of Tylertown, Walthall County, Mississippi, Washington, D.C., September 30, 1988

Mississippi State Climatologist (October 16, 2008), Website, Starkville, Mississippi, http://www.msstate.edu/dept/geosciences/sc_normals.htm

U.S. Department of Commerce, Weather Bureau, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, Washington, D.C., 1961, Revised 1963

U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-1 Flood Hydrograph Package, Davis, California, October, 1970

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

U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, User's Manual, version 3.1.3, Davis, California, May 2003

U.S. Army Corps of Engineers, Topographic Engineering Center, Corpscon Version 6.0.1, Alexandria, Virginia, August 2004

U.S. Census Bureau, Website–2013 Population Estimate

Walthall County Economic Development Authority, Website–2015 Profile

U.S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet: Tylertown, Mississippi-Louisiana, 1970; Tylertown SE, Mississippi-Louisiana, 1970

U.S. Department of the Interior, Geological Survey, Flood Characteristics of Mississippi Streams, Water-Resources Investigations Report 91-4037, Jackson, MS, 1991

U.S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour interval 10 Feet: Darbun, Mississippi, 1970; Dexter, Mississippi, 1970; Jayess, Mississippi, 1970; Mesa, Mississippi, 1970; Kokomo, Mississippi, 1970; Sandy Hook, Mississippi-Louisiana, 1970; Tylertown, Mississippi-Louisiana, 1970; Tylertown SE, Mississippi-Louisiana, 1970.

10.0 **REVISIONS DESCRIPTION**

This section has been added to provide information regarding significant revisions made since the original FIS report and DFIRM were printed. Future revisions may be made that do not result in the republishing of the FIS report.

10.1 First Revision (Revised **TBD**)

a. Acknowledgments

The hydrologic and hydraulic analyses for this revision were performed by the State of Mississippi for FEMA under Contract No. EMA-2010-CA-5081. This study was completed in May 2014.

The digital base map information files were provided by the USDA Farm Service Agency. The digital orthophotography was acquired in 2014 during “Leaf-on” conditions, with the imagery processed to a 1-meter pixel resolution.

The digital topographic data source for Walthall County is a digital terrain model (DTM) dataset developed through stereo-compilation of 2006 statewide 2-foot resolution orthophotography. The DTM is deemed adequate to support a 5-foot elevation contour.

The streams studied as part of this revision reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for Walthall County. 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 in the FIS report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the maps. Flood hazards associated with unstudied flooding sources have not been determined and should be investigated to ensure that existing or proposed development is relatively safe from flooding.

b. Coordination

A Project Discovery Meeting was held on February 7, 2012. Attendees for this meeting included representatives from the Mississippi Department of Environmental Quality, Mississippi Emergency Management Agency, the Office of U.S. Senator Thad Cochran, and FEMA Region IV. A Project Flood Risk Review meeting was held on September 16, 2015. Attendees for this meeting included representatives from the Mississippi Department of Environmental Quality, Mississippi Emergency Management Agency. On **TBD**, the results of this FIS revision were presented at a final coordination meeting attended by

representatives of the State of Mississippi and its contractor, FEMA, and the community.

c. Scope

In this revision, the following table lists the flooding sources, which were newly studied by limited detailed methods.

TABLE A. REVISED STREAMS STUDIED BY APPROXIMATE METHODS

<u>Stream</u>	<u>Limits of New Study</u>
East Fork Pushepatapa Creek	From the state boundary with Louisiana to approximately 850 feet upstream of Brandon Bay Road
Sandy Hook Creek	From the county boundary upstream with Marion to approximately 825 feet upstream of Stogner Road
West Fork Pushepatapa Creek	From the state boundary with Louisiana to approximately 450 feet upstream of Lees Chapel Road

Floodplain boundaries for the previously mentioned streams were updated on the following panels:

28147C0250F 28147C0275F 28147C0300F

d. Hydrologic and Hydraulic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by limited detail methods affecting the communities. Peak discharges were calculated based on USGS regional regression equations (U.S. Department of the Interior, 1991). For the discharges calculated based on regional regression equations, the rural regression values were modified to reflect stream gage weighting and/or urbanization as necessary.

Cross section geometries were obtained from a combination of terrain data and field surveys. Bridges and culverts located within the limited detailed study limits were field surveyed to obtain elevation data and structural geometry. The Manning’s “n” values used for the revised studies were 0.05 for the channel and 0.15 for the overbanks.

Downstream boundary conditions for the hydraulic models were set to normal depth using a starting slope calculated from values taken from topographic data, or where applicable, derived from the water-surface elevations. Water-surface profiles were computed through the use of the USACE HEC-RAS version 4.1.0 computer program (USACE, 2010). These studies were intended to provide flood hazard data for portions of relatively large streams (drainage area greater than 10 square miles) and as a means for performing enhanced HAZUS analyses for this portion of the Lower Pearl Watershed.

e. Floodplain Boundaries

For the streams studied by the approximate method, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2). Floodplain boundaries for these streams were generated using the DTM described in section a. FIRM Panels 28147C0250F, 28147C0275F and 28147C0300F that are republished for this revision were produced using the 2012 FIRM specifications. 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 A contains the full list of these notes.

Figure A: FIRM Notes to Users

<p style="text-align: center;">NOTES TO USERS</p> <p>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.</p> <p>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.</p> <p>For community and countywide map dates, refer to Table 2 in this FIS Report.</p> <p>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.</p> <p><u>PRELIMINARY FIS REPORT:</u> 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.</p>
<p>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.</p> <p><u>BASE FLOOD ELEVATIONS:</u> 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.</p>

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.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "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 East, FIPS ZONE 2301. 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.

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 other sections of 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.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Walthall County, MS, corresponding revisions to the FIRM Index will be incorporated within the FIS to reflect the effective dates of those panels. Please refer to Table 2 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 Walthall 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 B shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Walthall County.





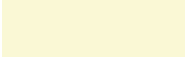


Figure B: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *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.*

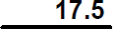
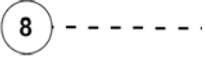


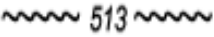










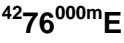


Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

- Zone A 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.
- Zone AE 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.
- Zone AH 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>Zone AO</p> <p>Zone AR</p> <p>Zone A99</p> <p>Zone V</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>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>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>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>
<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>

	2 Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
<p>Aqueduct Channel Culvert Storm Sewer</p>	Channel, Culvert, Aqueduct, or Storm Sewer
<p>Dam Jetty Weir</p>	Dam, Jetty, Weir
	Levee, Dike or Floodwall
<p>Bridge</p>	Bridge
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): <i>CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.</i>	
<p>CBRS AREA 09/30/2009</p>	Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.
<p>THERWISE PROTECTED AREA 09/30/2009</p>	Otherwise Protected Area
REFERENCE MARKERS	
<p>22.0</p>	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
<p>20.2</p>	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
<p>21.1</p>	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)

	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Coastal Transect
 	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation. Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
	Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available)
3 ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
4 ZONE AO (DEPTH 2)	Zone designation with Depth
5 ZONE AO	Zone designation with Depth and Velocity
6 (DEPTH 2)	
7 (VEL 15 FPS)	
BASE MAP FEATURES	
	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
	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
	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)

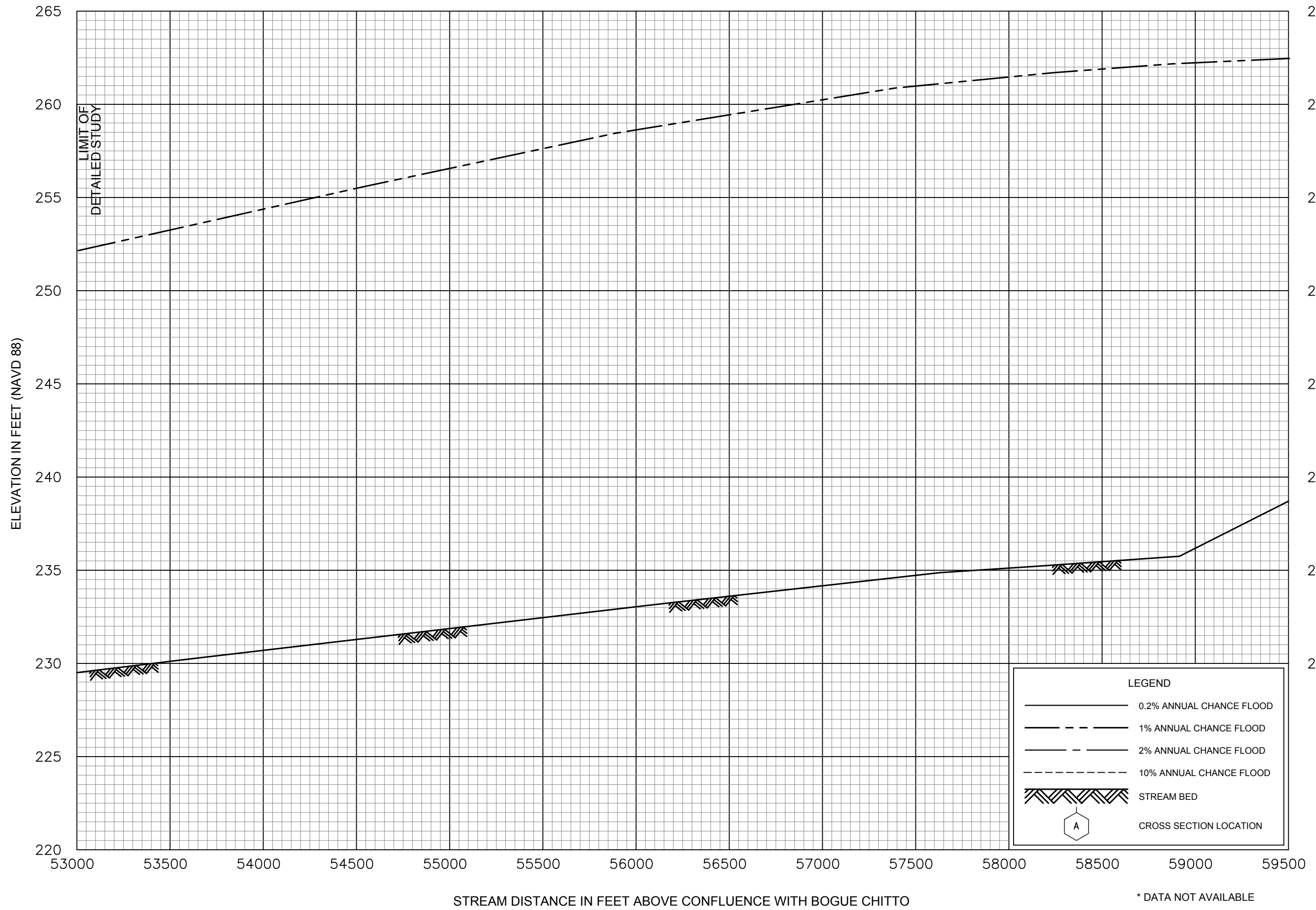
80° 16' 52.5"

Corner Coordinates (Latitude, Longitude)

f. Bibliography and References

U.S. Army Corps of Engineers (January 2010). Hydrologic Engineering Center, HEC-RAS River Analysis System, User's Manual, version 4.1.0, Davis, California.

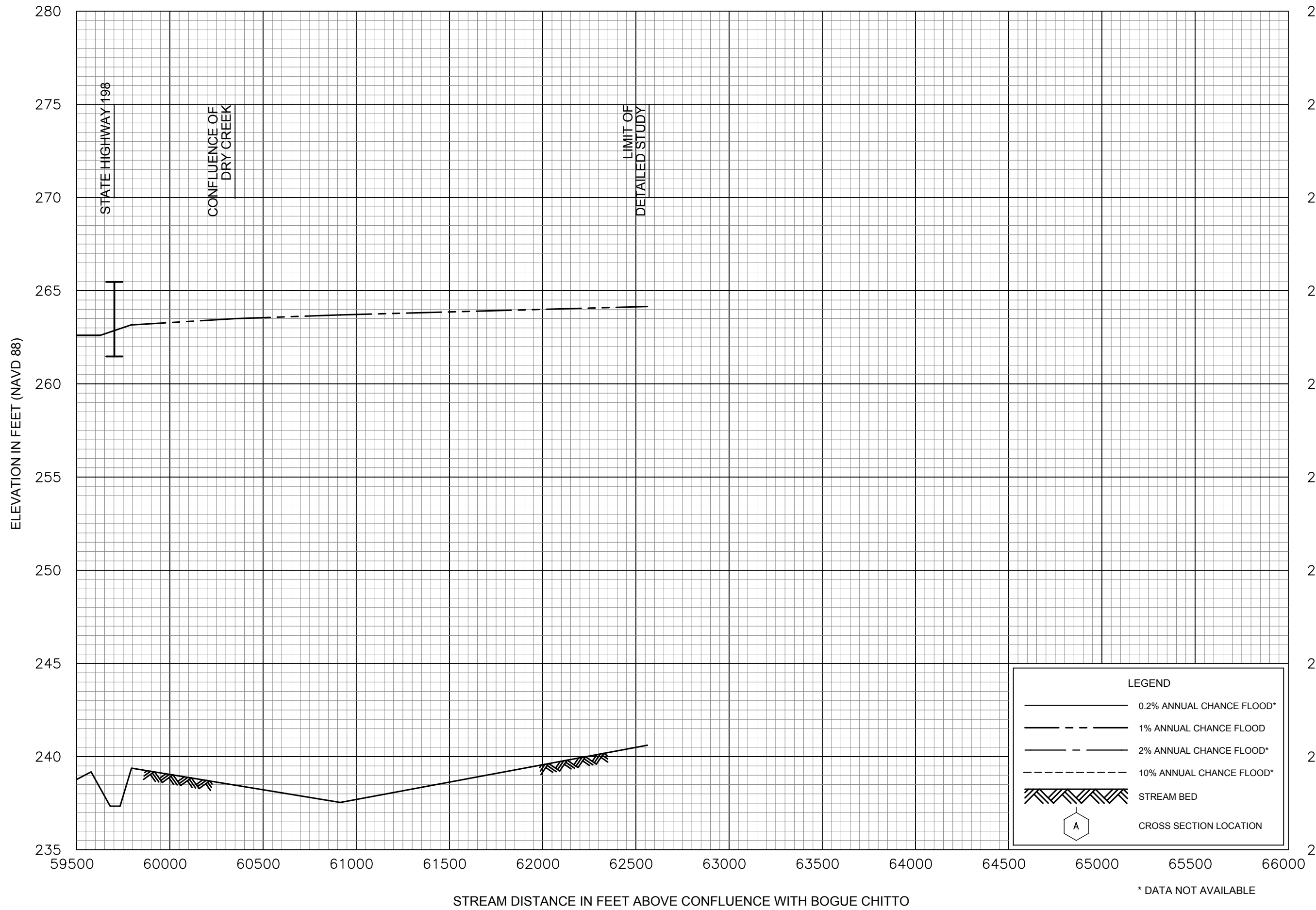
U.S. Department of the Interior (1991). Geological Survey, Flood Characteristics of Mississippi Streams, Water-Resources Investigations Report 91-4037, Jackson, MS.



FLOOD PROFILES
MAGEES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALTHALL COUNTY, MS
AND INCORPORATED AREAS

* DATA NOT AVAILABLE



FLOOD PROFILES
MAGEES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
WALTHALL COUNTY, MS
AND INCORPORATED AREAS

03P