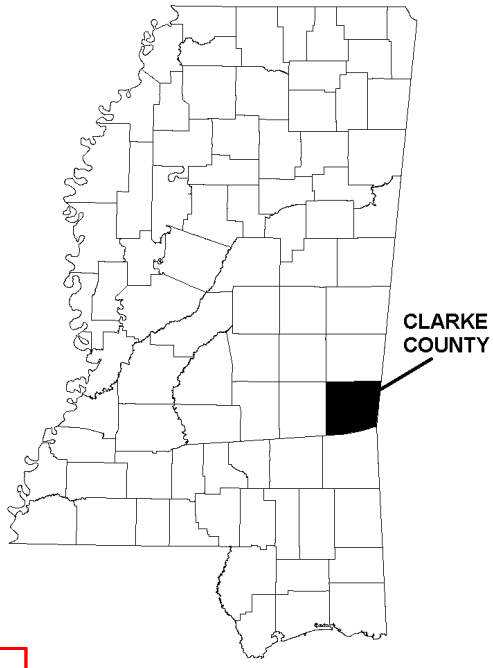
FLOOD INSURANCE STUDY

CLARKE COUNTY, MISSISSIPPI
AND INCORPORATED AREAS

Community Name	Community Number
CLARKE COUNTY (UNINCORPORATED AREAS)	280220
ENTERPRISE, TOWN OF	280314
PACHUTA, TOWN OF	280219
QUITMAN, CITY OF	280319
SHUBUTA, TOWN OF	280034
STONEWALL, TOWN OF	280035



PRELIMINARY

SEP 28 2010

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
28023CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

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

Selected Flood Insurance Rate Map panels for the community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

Old Zone	New Zone
A1 through A30	AE
B	X
C	X

This preliminary Flood Insurance Study contains profiles presented at a reduced scale to minimize reproduction costs. All profiles will be included and printed at full scale in the final published report.

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

Initial Countywide FIS Effective Date:

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

FIGURES

TABLES

EXHIBITS

FLOOD INSURANCE STUDY

CLARKE COUNTY, MISSISSIPPI AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Clarke County, including the Towns of Enterprise, Pachuta, Shubuta, Stonewall, the City of Quitman, and the unincorporated areas of Clarke County (referred to collectively herein as Clarke County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

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

The Digital Flood Insurance Rate Map (DFIRM) and FIS Report for this countywide study have been produced in digital format. Flood hazard information was converted to meet the Federal Emergency Management Agency (FEMA) DFIRM database specifications and Geographic Information standards and is provided in a digital format so that it can be incorporated into a local Geographic Information System and be accessed more easily by the community.

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.

This FIS was prepared to compile the unincorporated areas and incorporated communities within Clarke County into a countywide FIS. Information on the authority and acknowledgements for each jurisdiction is included in this countywide FIS, as compiled from their previously published FIS reports. The Unincorporated Areas of Clarke County and the Towns of Enterprise, Shubuta, and Stonewall had previously printed FIS reports.

The hydrologic and hydraulic analyses for the August 16, 1988 Clarke County Unincorporated Areas and the September 30, 1988 Town of Enterprise FIS were performed by the U.S. Department of the Interior, Geological Survey, Water Resources Division, the Study Contractor, for the Federal Emergency Management Agency

(FEMA), under Inter-Agency Agreement No. EMW-85-E-1823 Project Order No. 16. That study was completed in July 1986 (Reference 1, 6).

The hydrologic and hydraulic analyses for the Chickasawhay River in the July 19, 2000 Town of Shubuta FIS were prepared by Braswell Engineering, Inc., for FEMA under contract No. EMW-96-CO-0021. That work was completed in October 1998 (Reference 2).

The hydrologic and hydraulic analyses for the August 16, 1988 Town of Stonewall FIS were performed by the U.S Geological Study (the Study Contractor) for FEMA under Inter-Agency Agreement No. ENW-85-E-1823, Project Order No. 13. That study was completed in April 1986 (Reference 3).

For this initial countywide FIS, new hydrologic and hydraulic analyses were performed by the State of Mississippi for FEMA. This study was completed in August, 2010 under Contract No. EMA-2008-CA-5883.

Base map information shown on the Flood Insurance Rate Maps (FIRMs) was provided in digital format by the State of Mississippi and the U.S. Census Bureau. This information was photogrammetrically compiled at a scale of 1:400 from aerial photography dated March 2006 (Reference 4).

The digital FIRMs were produced using the State Plane Coordinate System, Mississippi East, FIPS Zone 2301. Distance was measured in feet. The horizontal datum was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

1.3 Coordination

An initial Consultation Coordination Officer (CCO) meeting (often referred to as the Scoping meeting) is held with representatives of the communities, FEMA, and the study contractors to explain the nature and purpose of the FIS and to identify the streams to be studied. A final CCO meeting (often referred to as the Preliminary DFIRM Community Coordination, or PDCC, meeting) is held with representatives of the communities, FEMA, and the study contractors to review the results of the study.

The dates of the historical initial and final CCO meetings held for the jurisdictions within Clarke County are shown in Table 1, “CCO Meeting Dates”:

For this countywide FIS, the initial CCO meeting was held on September 16, 2008, and attended by representatives of Mississippi Department of Environmental Quality, Mississippi Emergency Management Agency, Mississippi Geographic Information, LLC (the State study contractor), and Clarke County and the incorporated communities within Clarke County.

Table 1: CCO Meeting Dates

Community Name	Initial CCO Date	Final CCO Date
Clarke County (Unincorporated Area)	*	September 24, 1987
Town of Enterprise	*	November 18, 1987
Town of Stonewall	*	September 24, 1987

*Date not available

The final CCO meeting was held on October XX, 2010 to review and accept the results of this FIS. Those who attended this meeting included representatives of Mississippi Department of Environmental Quality, Mississippi Emergency Management Agency, Mississippi Geographic Information, LLC, and Clarke County and the incorporated communities within Clarke County. All problems raised at that meeting have been addressed in this study.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS report covers the geographic area of Clarke County, Mississippi, including the incorporated communities listed in Section 1.1. The scope and methods of this study were proposed to, and agreed upon, by FEMA, Clarke County, and the State of Mississippi.

Two types of analysis were used to develop this FIS report: redelineation of streams that had been previously studied with detailed methods and approximate methods analysis. Floodplain boundaries of streams that had been previously studied by detailed methods were redelineated based on more detailed up-to-date topographic mapping for this FIS report. Enhanced approximate analyses were used to study those areas having a low development potential or minimal flood hazards. Chickasawhay River, Chunky River, and Souinlovey Creek were redelineated based on available detail study data.

Table 2 presents Letters of Map Change incorporated into this countywide study.

Table 2: Letters of Map Change

Community Name	Flooding Source(s) and Project Identifier	Date Issued	Type
Clarke County Mississippi (Unincorporated Areas)	Chickasawhay River (00-04-381P)	July 19, 2001	LOMR

2.2 Community Description

Clarke County is in the east-central Mississippi along the Mississippi-Alabama state boundary. It is bordered on the north by Lauderdale County, Mississippi, on the south by Wayne County, Mississippi, on the west by Jasper County, Mississippi, and on the

east by Choctaw County, Alabama. Clarke County is served by the Illinois Central Gulf Railroad, the Norfolk Southern Railway, Interstate Highway 59, U.S Highways 11 and 45, and State Highways 18 and 510. The 2009 population of Clarke County was estimated to be 17,207 (Reference 5).

2.3 Principal Flood Problems

Flooding problems in Clarke County are due primarily to overflow of the Chickasawhay River and its major tributaries.

Peak stages and discharges have been recorded for the largest annual peak flows on the Chickasawhay River during the period of record (1905-86) at the Town of Enterprise. Due to the distribution of the storm and the shape of the basin, the magnitude of the 1961 peak flow decreased between the Towns of Enterprise and Quitman. About four miles downstream from the Town of Quitman, the 1961 flood crested at elevation 212.8 feet North American Vertical Datum (NAVD) and had an estimated discharge of 62,700 cubic feet per second (cfs). Peak stages and discharges are also listed for the Chunky River at Souinlovey Creek.

Table 3: Historic High Water Marks in Clarke County

FLOODING SOURCE AND LOCATION	DATE	ELEVATION (feet NAVD)	DISCHARGE (CFS)
CHICKASAWHAY RIVER			
At Enterprise	February 23, 1961	250.6	61,700
	April 1900	249.8	--
	April 14, 1979	249.5	49,800
	December 10, 1920	248.8	42,000
CHUNKY RIVER			
About 3 miles north of northern county boundary	March 4, 1979	295.6	40,900
	February 22, 1961	294.6	30,800
	April 13, 1974	294.4	29,800
At U.S. Highway 11 near Enterprise	April 1938	251.1	28,000
	February 22, 1961	252.9	32,500
SOUINLOVEY CREEK			
At U.S. Highway 11	April 1900	259.0	27,000
	April 7, 1964	256.3	20,000
	February 22, 1961	255.7	18,500
	April 1938	256.2	17,000

Flooding problems in the Town of Shubuta and the Town of Enterprise are due primarily to overflow of the Chickasawhay River (Reference 6).

2.4 Flood Protection Measures

At the present time, the Town of Stonewall in Clarke County has no flood protection measures with regards to the Chickasawhay River flooding. However, some clearing and channelization of small streams providing local runoff was done around 1978.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood-hazard data required for this study. Flood events of a magnitude that is 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

3.1.1 Methods for Flooding Sources with New or Revised Analyses in Current Study

For this countywide study, hydrologic analyses were carried out to establish peak elevation-frequency relationships for each flooding source studied by approximate methods affecting the community.

Peak discharges for all new approximate studied streams in Clarke County were determined using the East Region USGS regression equations for Mississippi described in the USGS Water-Resources Investigations report 91-4037 (Reference 7). For the discharges calculated based on regional regression equations, the rural regression values were updated to reflect urbanization as necessary.

3.1.2 Methods for Flooding Sources Incorporated from Previous Studies

This section describes the methodology used in previous studies of flooding sources incorporated into this FIS that were not revised for this countywide study. Hydrologic analyses were carried out to establish peak discharge-

frequency relationships for each studied flooding source affecting the community.

On the Chickasawhay River, the magnitude of the 1-percent-annual-chance flood was determined using a log-Pearson Type III statistical distribution (Reference 8). For the Chickasawhay River at the Town of Shubuta, peak discharges were computed using the U.S. Geological Survey (USGS) flood-frequency data for the Shubuta gage (#02477350) published in Annual Peak Stages and Discharges for Streamflow-Gaging Stations in Mississippi (WRI 91-4098) (Reference 9). The gage is located within the study reach at the First Street bridge.

For the Chunky River at U.S. Highway 11, the magnitude of the 1-percent-annual-chance flood was estimated using a regression equation for the U.S. Highway 11 crossing. Also, the 1-percent-annual-chance flood from the gage located upstream was transferred on the basis of drainage area. These two values were weighted on the basis of the difference in drainage area between the gaged site and U.S. Highway 11 following procedures outlined in the report "Flood Frequency of Mississippi Streams" (Reference 10).

The gaged value was determined using a log-Pearson Type III statistical distribution. The magnitude of the 1-percent-annual-chance flood attenuates between the stream gage near the Chunky River and U.S. Highway 11 due to the basin shape in the reach, where the stream length increases disproportionately.

On Souinlovey Creek, the magnitude of the 1-percent-annual-chance flood at State Highway 512 was transferred from U.S. Highway 11 on the basis of drainage area. The 1-percent-annual-chance flood was determined using a log-Pearson type III statistical distribution of records of annual peak discharge (1900, 1938, 1956-70) at this site. Due to some irregularities in the distribution, the shape of the flood-frequency curve was determined by the USGS instead of the normal Water Resources Council procedure.

Peak discharge-drainage area relationships for the 1-percent-annual-chance flood of each flooding source studied in detail in the community are shown in Table 4.

Table 4: Summary of Discharges for Detailed Streams

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (Sq.Mi.)	PEAK DISCHARGES (cfs) 10-percent	2-percent	1-percent	0.2-percent
CHICKASAWHAY RIVER					
At First Street Bridge	1,460	47,600	78,400	93,800	126,000
Just downstream of confluence of Fallen Creek	1,300	*	*	96,000	*
At River Road	923	*	*	68,000	*
At Bridge Street	918	*	*	67,800	*

Table 4: Summary of Discharges for Detailed Streams (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (Sq.Mi.)	PEAK DISCHARGES (cfs) 10-percent	2-percent	1-percent	0.2-percent
CHUNKY RIVER					
At U.S Highway 11	517	*	*	49,400	*
SOUINLOVEY CREEK					
At State Highway 512	181	*	*	31,700	*
At U.S Highway 11	174	*	*	31,000	*

*Data not available

3.2 Hydraulic Analyses

Hydraulic analyses were performed to estimate the elevation of flooding during the base flood event. 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 tables 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 in conjunction with the data shown on the FIRM.

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the FIRM (Exhibit 2).

The hydraulic analyses for this study 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.

3.2.1 Methods for Flooding Sources with New or Revised Analyses in Current Study

Water-surface profiles were computed through the use of the U.S. Army Corps of Engineers HEC-RAS version 3.1.2 computer program (Reference 11).

The approximate methodology used Watershed Information System (WISE) (Reference 12) as a preprocessor to HEC-RAS. Tools within WISE allowed the engineer to verify that the cross section data are acceptable. The WISE program was used to create the input data file for HEC-RAS. Then the HEC-RAS program was used to determine flood elevation at each cross section of the modeled stream. No floodway was calculated for streams studied by approximate methods.

3.2.2 Methods for Flooding Sources Incorporated from Previous Studies

The elevation of the 1-percent-annual-chance flood on the Chickasawhay River at Stonewall bridge and Desoto bridge was computed from the surveyed crest elevation and estimated discharge of the February 1961 flood, using discharge-conveyance computations (Reference 13).

Water-surface profiles for the Chickasawhay River at the Town of Shabuta were computed through the use of the U.S. Army Corps of Engineers HEC-2 step backwater computer program (Reference 14).

Roughness factors (Manning's "n") used in the hydraulic analyses in this study; were chosen by engineering judgment based on field observation of the channel and floodplain areas. For the Chickasawhay River, values ranged from 0.030 to 0.075 in the main channel and 0.08 to 0.23 for the overbank areas.

The elevation of the 1-percent-annual-chance flood on the Chunky River at U.S. Highway 11 was estimated from a stage-discharge relation for that site, which was developed from three flood measurements made in February and March 1956.

The elevation of the 1-percent-annual-chance flood on Souinlovey Creek at State Highway 512 was estimated using the stage and estimated discharge of the April 7, 1964, flood and discharge-conveyance ratios (Reference 15).

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 used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the completion of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are now prepared using NAVD 88 as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. It is important to note that adjacent counties may be referenced to NGVD 29, which may result in differences in base flood elevations across county lines.

Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by adding -0.03 feet to the NAVD 88 elevation. The -0.03 foot value is an average for the entire county. The BFEs 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. Elevations on the Flood Profiles and supporting data tables in the FIS report are shown at a minimum to the nearest 0.1 foot. For greater accuracy, users who wish to convert the

elevations in this FIS report to NGVD 29 should apply the stated conversion factor to elevations on the Flood Profiles and in the FIS report.

For more information regarding conversion between the NGVD and NAVD, see the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (Reference 16), 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 Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

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

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS report provides 1-percent-annual-chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevations; delineations of the 1- and 0.2-percent-annual-chance floodplains; and a 1-percent-annual-chance floodway. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS report as well as additional information that may be available at the local community 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 or limited detailed

methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using a Digital Terrain Model (DTM) which was compiled at a scale of 400 feet from imagery with a 2 foot ground sample distance (GSD). Part of the imagery acquisition occurred January through March, 2006 with additional acquisition occurring in January, 2007 (Reference 17). For each stream studied by approximate methods, the 1-percent-annual-chance floodplain boundaries were interpolated using the previously mentioned DTM (Reference 17).

For this study the 1- and 0.2-percent-annual-chance floodplain boundaries for streams studied by detailed methods 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 (Zone X). 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 streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2).

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 base flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 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 only been computed and shown for the Chickasawhay River in the Town of Shubuta. The floodway presented in this study was 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. The results of the floodway computations are tabulated for selected cross sections and provided in Table 5, “Floodway Data Table.” The computed floodway is shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either too close to be shown at map scale or collinear, only the floodway boundary is shown on the FIRM.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
CHICKASAWHAY RIVER								
A	4,550	1,920	19,281	10.9	193.7	193.7	194.0	0.3
B	6,800	1,339	16,702	10.8	194.5	194.5	195.2	0.7
C	12,800	4,977	53,406	1.8	197.7	197.7	198.6	0.9

[1]Feet above county boundary

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARKE COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

CHICKASAWHAY RIVER

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage and heightens potential flood hazards by further increasing velocities. To reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body.

No other floodways have been computed or shown for Clarke County. 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 BFEs 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, "Floodway Schematic."

No floodways were computed for streams studied by approximate methods because of limitations in the approximate study methodology.

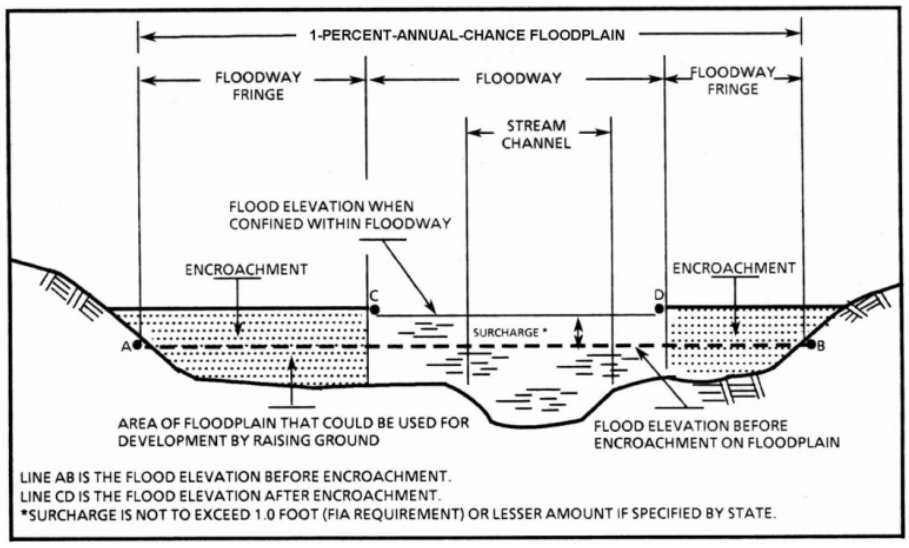


Figure 1. Floodway Schematic

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

Zone AE

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

Zone X

Zone X is the flood insurance rate 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 (sq. mi.), and areas protected from the base flood by levees. No BFEs or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

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

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use 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 Clarke 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 are presented in Table 6, “Community Map History.”

	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Clarke County (Unincorporated Areas)	November 29, 1974	November 11, 1977	August 16, 1988	NONE
Enterprise, Town of	January 19, 1979	July 18, 1980	January 1, 1987	September 30, 1988
Pachuta, Town of	November 8, 1974	September 6, 1978	April 2, 1986	NONE
Quitman, City of	November 14, 1980	NONE	January 1, 1986	NONE
Shubuta, Town of	June 7, 1974	June 25, 1979 July 11, 1980	September 1, 1991	July 19, 2000
Stonewall, Town of	June 7, 1974	August 1, 1975	August 16, 1988	NONE

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARKE COUNTY, MS
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

FIS reports were previously prepared for the unincorporated areas of Clarke County and the Towns of Enterprise, Shubuta, and Stonewall.

This FIS report supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the NFIP.

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

1. Federal Emergency Management Agency, *Flood Insurance Study, Clarke County, Mississippi, Unincorporated Areas*, Washington, D.C., August 16, 1988.

2. Federal Emergency Management Agency, *Flood Insurance Study, Town of Shubuta, Mississippi,* Washington, D.C., July 19, 2000.

3. Federal Emergency Management Agency, *Flood Insurance Study, Town of Stonewall, Mississippi, W*ashington, D.C., August 16, 1988.

4. State of Mississippi, 5-foot Contour Terrain Data, Developed from March 2006 Digital Orthophotography, Jackson, MS, 2010.

5. U.S. Census, http://www.census.gov/popest/counties/CO-EST2009-01.html accessed August 2010.

6. Federal Emergency Management Agency, *Flood Insurance Study, Town of Enterprise, Mississippi,* Washington, D.C., September 30, 1988.

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

8. U.S. Department of the Interior, Geological Survey, Interagency Advisory Committee on Water Data, Office of Water Data Coordination, Hydrology Subcommittee, Bulletin No. 17B, Guidelines for Determining Flood Flow Frequency. Spetember 1981, revised March 1982.

9. U.S. Department of the Interior, U.S. Geological Survey, K. Van Wilson, Jr. and Mark N. Landers, Water-Resources Investigations Report 91-4098, Annual Peak Stages and Discahrges for Streamflow-Gaging Stations in Mississippi, Jackson, Mississippi, 1991.

10. Mississippi State Highway Department, RD-76-014-PR, Flood Frequency of Mississippi Streams, B.E. Colson and J.W. Hudson, 1976.

11. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, Version 3.1.2, Davis, California, April 2004.

12. Watershed Concepts, a Division of Hayes, Seay, Mattern & Mattern, *Watershed Information System (WISE) Computer Software, Version 4.1 Beta*, Greensboro, North Carolina, July 2008.

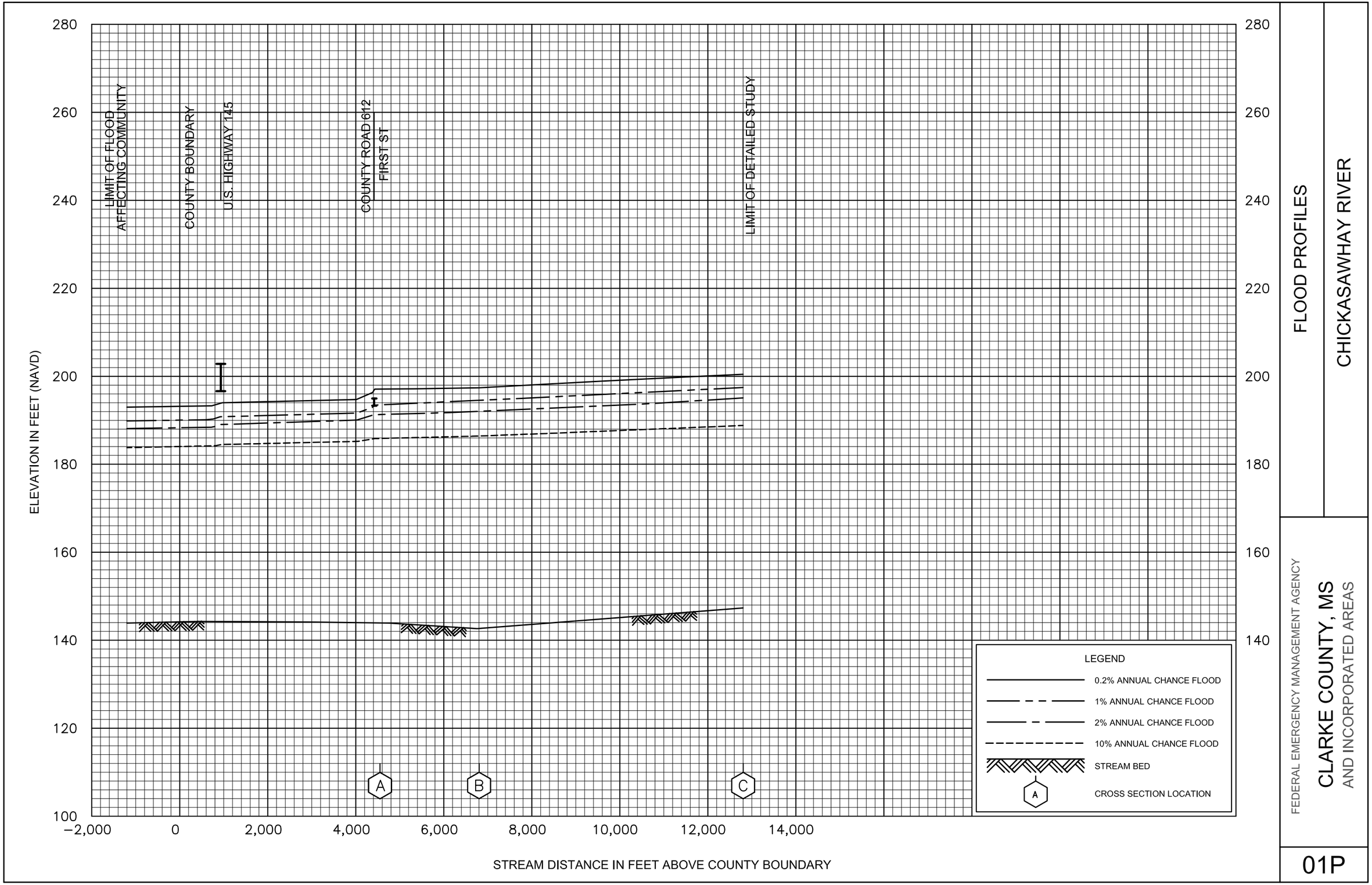
13. Mississippi Board of Water Commissioners, Bulletin 64-4, Floods of 1961 in Mississippi, K.V. Wilson, 1964.

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

15. Mississippi Board of Water Commissioners, Bulletin 68-1, Floods of 1961 in Mississippi, K.W. Wilson and B.E. Ellison, 1968.

16. Federal Emergency Management Agency. *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988 - Guidelines for Community Officals, Engineers, and Surveyors.* June 1, 1992. 3-0170.

17. State of Mississippi, 5-foot Contour Terrain Data, Developed from March 2006 Digital Orthophotography, Jackson, MS, 2010.



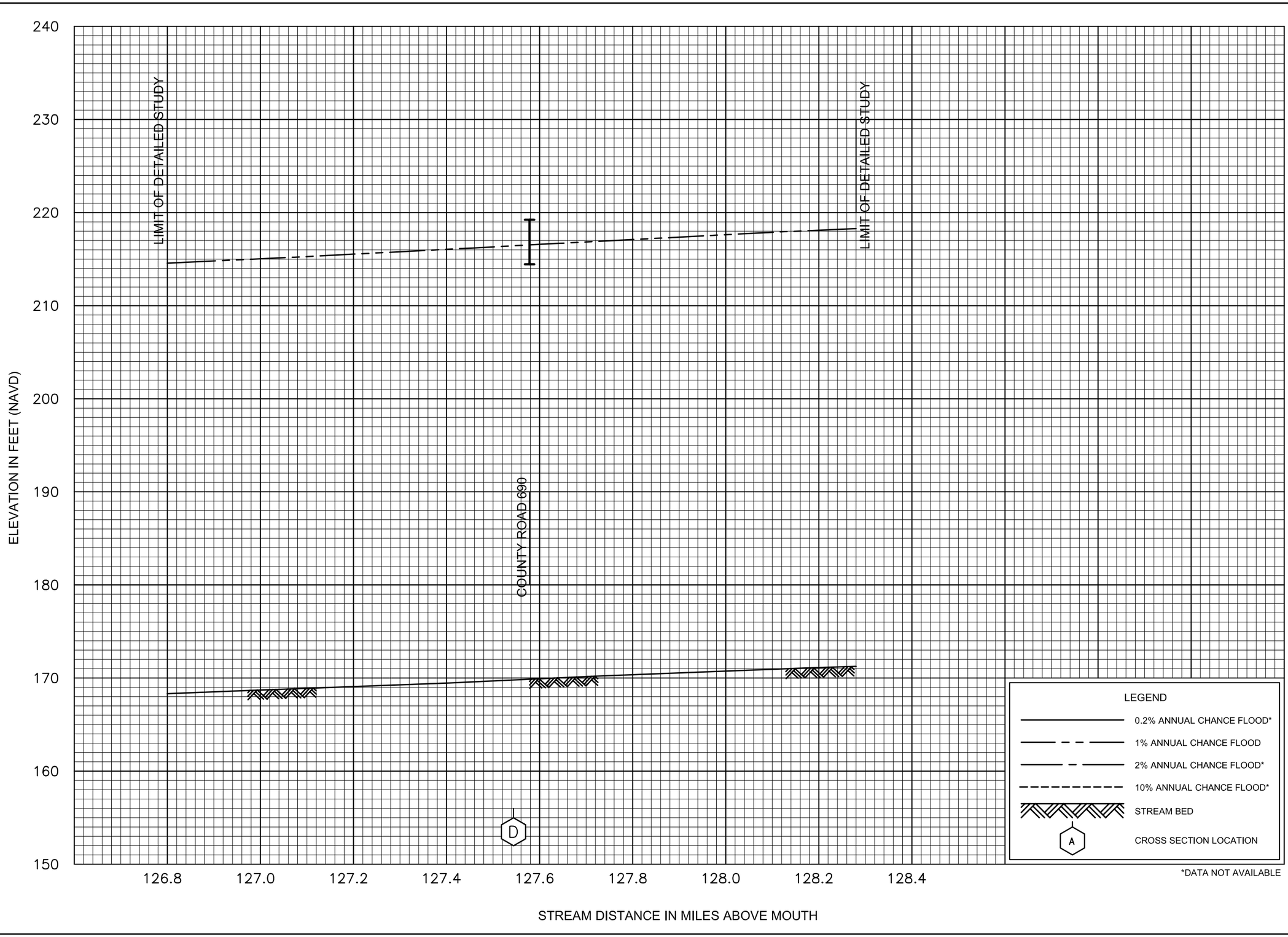
FLOOD PROFILES

CHICKASAWHAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARKE COUNTY, MS
AND INCORPORATED AREAS

01P



FLOOD PROFILES

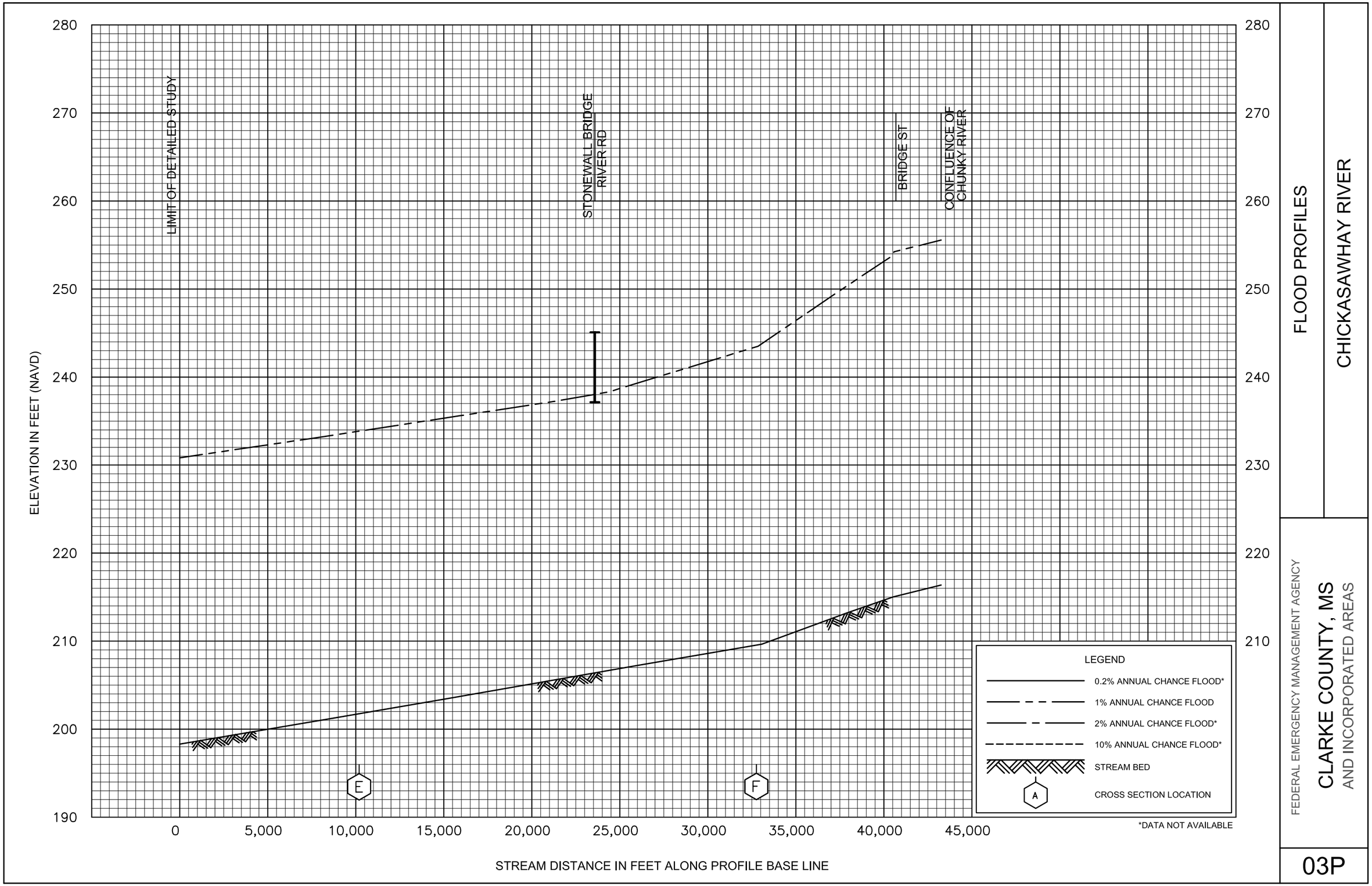
CHICKASAWHAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARKE COUNTY, MS

AND INCORPORATED AREAS

02P



FLOOD PROFILES

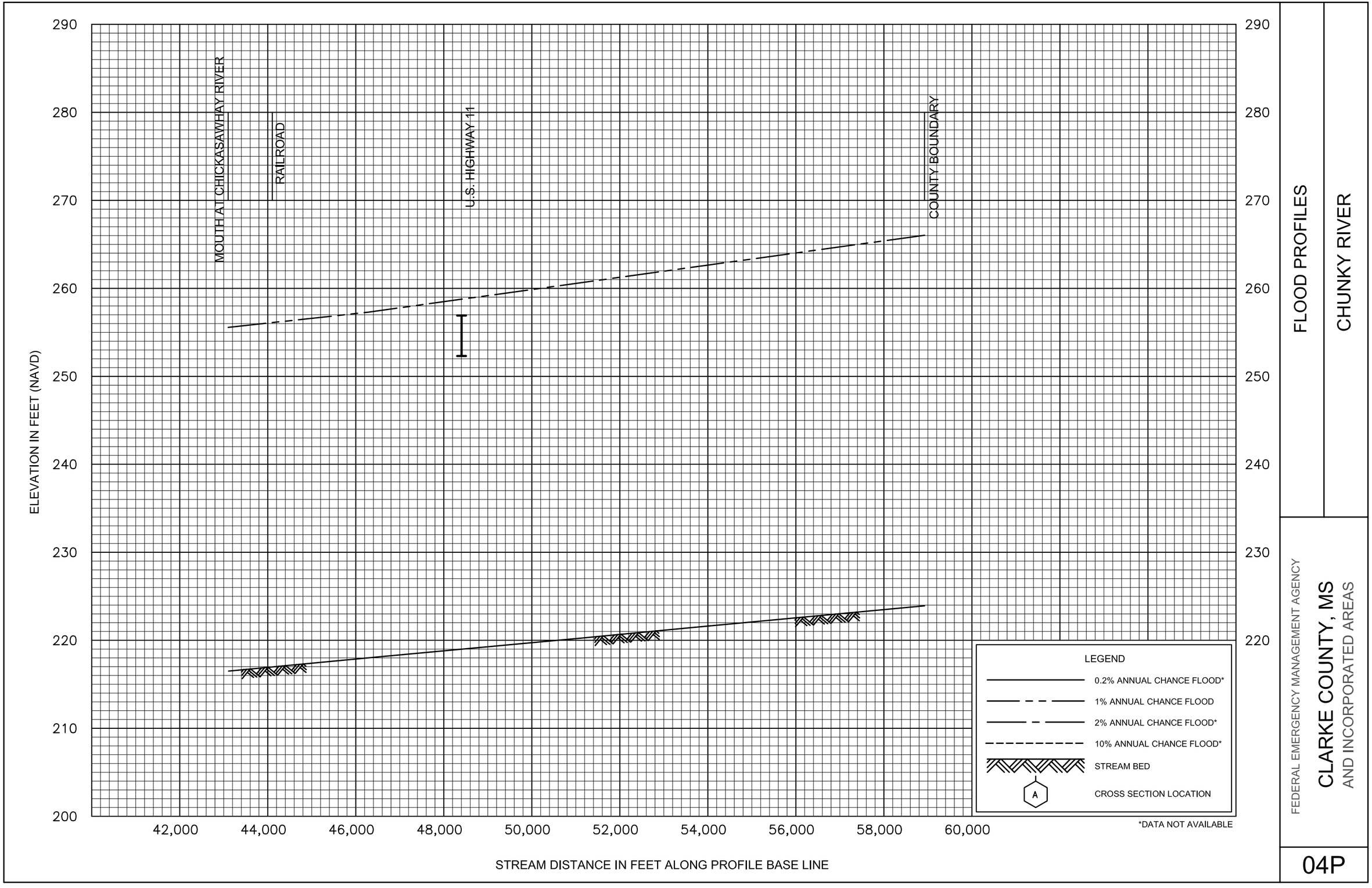
CHICKASAWHAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARKE COUNTY, MS

AND INCORPORATED AREAS

03P



FLOOD PROFILES

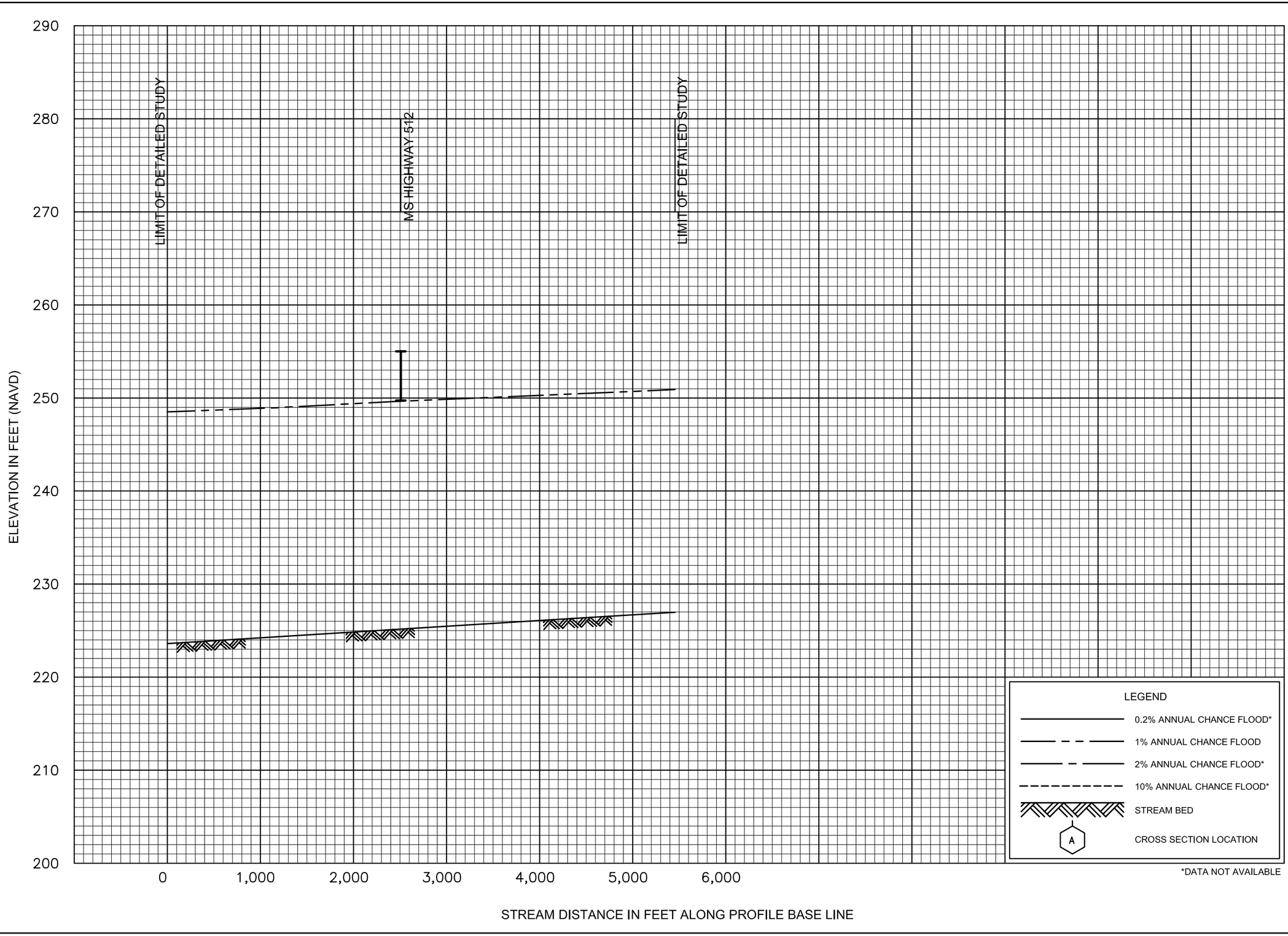
CHUNKY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARKE COUNTY, MS

AND INCORPORATED AREAS

04P



FLOOD PROFILES

SOUINLOVEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARKE COUNTY, MS

AND INCORPORATED AREAS

05P