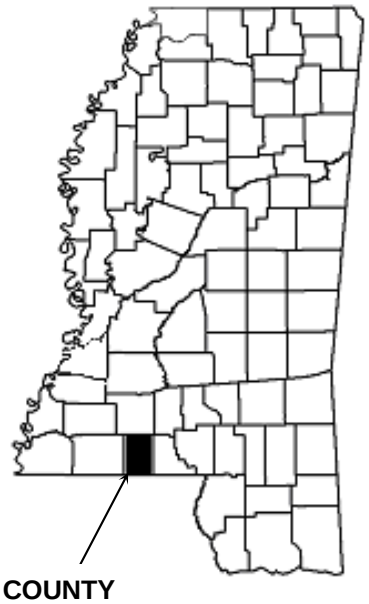
FLOOD INSURANCE STUDY

PIKE COUNTY, MISSISSIPPI
AND INCORPORATED AREAS



COMMUNITY NAME	COMMUNITY NUMBER
PIKE COUNTY (UNINCORPORATED AREAS)	280278
MAGNOLIA, TOWN OF	280297
McCOMB, CITY OF	280132
OSYKA, TOWN OF	280258
SUMMIT, TOWN OF[1]	280259

[1] NON-FLOODPRONE COMMUNITY

EFFECTIVE:

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
28113CV000A

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) report 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 report may be revised and republished at any time. In addition, part of this FIS report 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 report components.

Initial Countywide FIS Report Effective Date:

Revised Countywide FIS Report Dates:

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FLOOD INSURANCE STUDY
PIKE 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 Pike County, Mississippi, including the Cities of Magnolia and McComb, the Towns of Osyka and Summit, and unincorporated areas of Pike County (hereinafter referred to collectively as Pike 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 Pike 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.

September 15, 1989, FIS Pike County (Unincorporated Areas)

The hydrologic and hydraulic analyses for this study were performed by the U.S. Geological Survey (USGS) (the Study Contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1832. This study was completed in July 1987.

February 1979, FIS City of McComb

Identification of streams requiring detailed study was made in a meeting attended by representatives of the Federal Insurance Administration (FIA), The City of McComb, and Smith and Sanders, Inc. A notice of intent to perform a flood insurance study was published in the local newspaper on three separate occasions in February and March 1977.

Other coordination efforts include meetings and contacts with the Mississippi Research and Development Center, the USGS, the U.S. Army Corp of Engineers (USACE), and the U.S. Soil Conservation Service.

On August 1978, the results of the work performed by Smith and Sanders, Inc., was reviewed at a final coordination meeting attended by representatives of the FIA, the City of McComb, and Smith and Sanders, Inc.

This Countywide 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 November 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, FIPS ZONE 2302. The horizontal datum was the North American Datum of 1983, GRS 1980 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.

September 15, 1989, FIS Pike County (Unincorporated Areas)

Principal flooding problems for this study were identified at a community meeting held on February 12, 1985.

On October 18, 1988, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by the representatives of the Study Contractor, FEMA, and the community.

February 1979, FIS City of McComb

Identification of streams requiring detailed study was made in a meeting attended by representatives of the FIA, the City of McComb, and Smith and Sanders, Inc. A notice of intent to perform a flood insurance study was published in the local newspaper on three separate occasions in February and March 1977.

Other coordination efforts include meetings and contacts with the Mississippi Research and Development Center, the U.S. Geological Survey, the U.S. Army Corps of Engineers, and the U.S. Soil Conservation Service.

On August 1, 1978, the results of the work performed by Smith and Sanders, Inc., was reviewed at a final coordination meeting attended by representatives of the FIA, the City of McComb, and Smith and Sanders, Inc.

This Countywide FIS

For this countywide FIS, the Project Scoping Meeting was held on December 4, 2006 in McComb, MS. Attendees for these meetings included representatives from the Mississippi Department of Environmental Quality, Mississippi Emergency Management Agency, FEMA National Service Provider, Pike County, the City of McComb, the Town of Summit, the State, 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. 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 Pike 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.

September 15, 1989, FIS Pike County (Unincorporated Areas)

For the September 15, 1989, Pike County unincorporated areas, the following streams were studied by detailed methods: Tangipahoa River, Town Creek, and Bogue Chitto. Areas having low development potential or minimal flood hazards were previously studied using approximate methods. The results were shown on the Flood Hazard Boundary Map for Pike County, MS, and were incorporated into this FIS.

February 1979, FIS City of McComb

For the February 1979, City of McComb FIS, the following streams were studied by detailed methods: Little Tangipahoa River, Stream A, and Town Creek. The areas studied in detail were chosen with consideration given to all forecasted development and proposed construction for a time span of five years through January 1982. Flooding on several smaller streams, where the drainage area was less than one square mile, was studied by approximate methods.

This Countywide 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 streams that have been previously studied by detailed methods were redelineated based on best available topographic information.

2.2 Community Description

Pike County is in southwestern Mississippi on the border of Louisiana. The county is bordered by Tangipahoa and Washington Parishes, Louisiana, on the south, Amite County, Mississippi, on the west, Lincoln County, Mississippi, on the north, and Walthall County, Mississippi, on the east. Pike County is served by Interstate 55, State Highways 51, 55, and 98, and the Canadian National Railroad. The 2007 population for Pike County was 39,798 (Census.gov, 2008). The primary industries in Pike County include manufacturing, retail trade, and wholesale trade.

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

The climate of Pike County is characterized by warm summers and mild winters. The annual precipitation is 64.5 inches. Temperatures range from a January average of 49 ^{o}F to a July average of 81 ^{o}F (MSU Climatologist, 2008).

2.3 Principal Flood Problems

The principal flooding problems are along Bogue Chitto and the Tangipahoa River. An extreme flood in April 1983 is the largest known flood on Bogue Chitto for the period of record at the USGS stream gage station located at U.S. Highway 98. The flood had a peak discharge of 64,200 feet per second (cfs) and an elevation of 262.0 feet National Geodetic Vertical Datum of 1929 (NGVD). The flood had a recurrence interval slightly greater than 100 years at the gage. On the Tangipahoa River at State Highway 575, the April 1983 flood overtopped a section of the road east of the main channel and relief bridges by about 1.0 foot (USGS, 1983).

Portions of McComb have experienced periodic flooding after unusually heavy rainfall. The city's streets in particular have been damaged extensively on occasions by flood waters.

Heavy rains and thunderstorms struck McComb on May 12, 1971, resulting in extensive flooding of streets. Some homes in low-lying areas also were flooded, including at least one residence on South Magnolia Street.

On March 24, 1973, a rainfall that measured 4.11 inches in a 24 hour period overtaxed the city's storm sewer network resulting in the flooding of numerous streets. Some automobiles and buildings also were flooded. Many streets in the eastern portion of the city along Town Creek, particularly in the vicinity of South Magnolia Street, were covered with water.

On August 1, 1976, 2.01 inches of rain fell on the city in a six-hour period. Several streets experienced flash flooding. The Donna Heights residential area, south of the city off Wardlaw Road, was damaged by flood waters.

Flooding of streets and evacuation of homes occurred again in McComb on April 21, 1977, when 4.47 inches of rain fell in a 24 hour period. Magnolia Street was closed in several places because of high water.

2.4 Flood Protection Measures

Lake Tangipahoa is a recreational reservoir in Percy State Park, about 15 miles upstream of the Tangipahoa River limit of detailed study. The lake has a limited flood stage storage capability for floods in the county that does not extend to the detailed study reach for the 1-percent-annual-chance event.

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.

September 15, 1989, Pike County (Unincorporated Areas) FIS Analyses

The 1-percent-annual-chance flood discharge for Bogue Chitto at U.S. Highway 98 was determined by weighting estimates determined from the gage data with estimates determined using USGS regional regression equations (Colson and Hudson, 1976). The gage data estimates were determined using a Log-Pearson Type III statistical distribution, as outlined in Bulletin No. 17B (Dept. of Interior, 1982), and records annual peak flows for Bogue Chitto (1945 to 1989).

The 1-percent-annual-chance discharges for the Tangipahoa River at State Highway 584 were determined by weighting a gage station estimate transferred from downstream and a regional regression estimate. The 1-percent-annual-chance estimate for the Tangipahoa River gage at Louisiana State Highway 38 near the Town of Kentwood, Louisiana, was determined following Bulletin No. 17B (Dept. of Interior, 1982) procedures. The results were applied to the study area on the basis of drainage area ratios and weighted with the regional regression estimate for the 1-percent-annual-chance flood. Hydrologic data for Town Creek were taken from the Flood Insurance Study for McComb (FEMA, 1979).

February 1979, FIS City of McComb FIS Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each stream segment studied in detail in the community.

Peak discharge-frequency data for Little Tangipahoa River, Town Creek, and Stream A were computed using regional relationships relating basin characteristics to stream flow characteristics developed by the USGS. This methodology is defined in "Flood Frequency of Mississippi Streams" (USGS, 1976). The 500-year peak discharges were extrapolated from log-probability paper from the 10-, 50-, and 100-year flows. Adjustments for urbanization effects were made according to the methodology presented by the USGS in "An Approach to Estimating Flood Frequency for Urban Areas in Oklahoma" (USGS, 1974).

This Countywide FIS Analysis

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 2, "Summary of Discharges."

TABLE 1. SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. mi.)	PEAK DISCHARGES (cfs) 10-percent	2-percent	1-percent	0.2-percent
BOGUE CHITTO					
About 1.6 miles along hydraulic baseline downstream of confluence of Bars Branch	495	*	*	63,300	*
At U.S. Highway 98	492	*	*	63,300	*
About 1.3 miles along hydraulic baseline upstream of U.S. Highway 98	457	*	*	60,100	*
LITTLE TANGIPAHOA RIVER					
About 710 feet along hydraulic baseline downstream of Delaware Avenue	4.07	1,760	2,610	3,070	3,920
Cross Section D	3.40	1,480	2,210	2,630	3,370
About 1,390 feet along hydraulic baseline upstream of Smithdale Road	2.98	1,450	2,140	2,520	3,220
STREAM A					
South Magnolia Street	1.41	700	1,030	1,220	1,550
Bacot Avenue	1.19	620	910	1,070	1,370
TANGIPAHOA RIVER					
At State Border	159	*	*	27,800	*
At State Highway 575	157	*	*	27,800	*
TOWN CREEK					
About 0.4 miles upstream of Canadian National Railroad	4.00	*	*	3,930	*
U.S. Highway 98	3.98	2,400	3,410	3,930	4,920
Wilson Avenue (extended)	1.96	1,520	2,100	2,390	2,930
Avenue D (extended)	1.66	1,450	1,980	2,250	2,760
East Michigan Avenue	0.92	940	1,260	1,420	1,720

*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.

September 15, 1989, Pike County (Unincorporated Areas) FIS Analyses

For Bogue Chitto, the elevation of the 100-year flood at U.S. Highway 98 was determined using a stage-discharge relationship developed from numerous stage-discharge measurements at the site. Crest elevations from historic floods of 1955, 1971, and 1983 were recorded at points 8 miles upstream, 5 miles downstream, and at U.S. Highway 98. Those profiles are similar. The upstream and downstream slopes of the April 1983 flood were used to compute the 100-year profile.

For the Tangipahoa River, the 100-year crest elevation at State Highway 584 was determined based on conveyance computations and using discharge-conveyance ratios and flood profiles. The discharge-conveyance ratio was determined using an overbank discharge measurement made in March 1987. Conveyance computations were based on a cross section taken by field survey and supplemented by topographic maps. Roughness coefficients were selected by engineering judgment and used in the computations. The flood crest elevation for the February 1987 flood was estimated to have been greater than the mean annual flood in the study reach. The February 1987 flood profile slope was used to compute the 100-year profile throughout the study. For Town Creek, roughness values ranged from 0.035 to 0.06 for the channel and 0.05 to 0.15 for the overbank areas. Starting water-surface elevations for Town Creek were determined by the slope-area method.

Locations of the selected cross sections used in the hydraulic analyses were shown on the Flood Profiles and on the Flood Insurance Rate Map.

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals. In cases where the 50- and 100-year flood elevations are close together, due to limitations of the profile scale, only the 100-year profile were shown.

The hydraulic analyses for this study were based on the effects of unobstructed flow. The flood elevations shown on the Flood Profiles are thus considered valid only if hydraulic structures remained unobstructed, operate properly, and did not fail.

February 1979, City of McComb FIS Analyses

Cross section data for the streams in the study area were obtained by field measurement. All bridges and culverts were field surveyed to obtain elevation data and structural geometry. Cross sections were located at close intervals upstream and downstream of bridges and culverts to compute significant backwater effects of these structures. The locations of selected cross sections used in the hydraulic analyses were shown on the Flood Profiles. For streams for which a floodway was computed (Section 4.2), selected cross section locations were also shown on the Flood Boundary and Floodway Map.

Roughness coefficients (Manning's "n") for the computations were estimated on the basis of field inspection at each cross section. The roughness coefficients for the Little Tangipahoa River ranged from 0.035 to 0.070 for the main channel and 0.050 to 0.200 for the overbank areas. For Town Creek, roughness values for the channel vary from 0.035 to 0.060; in the overbank areas the range was 0.050 to 0.150. Roughness values for the Stream A channel ranged from 0.035 to 0.060, values for the flood plain varied from 0.070 to 0.150.

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals. Water-surface elevations of floods of the selected recurrence intervals were developed using the HEC-2 computer step-backwater model (USACE, 1976). Profiles were determined for the 10-, 2-, 1-, and 0.2-percent annual chance floods.

This Countywide FIS Analysis

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.

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

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

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

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

To obtain current elevation, description, and/or location information for benchmarks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit its website at 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.

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.

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 0.09 feet to the NAVD88 elevation. The 0.09 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, 1972). 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).

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. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (USGS, 1972).

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.

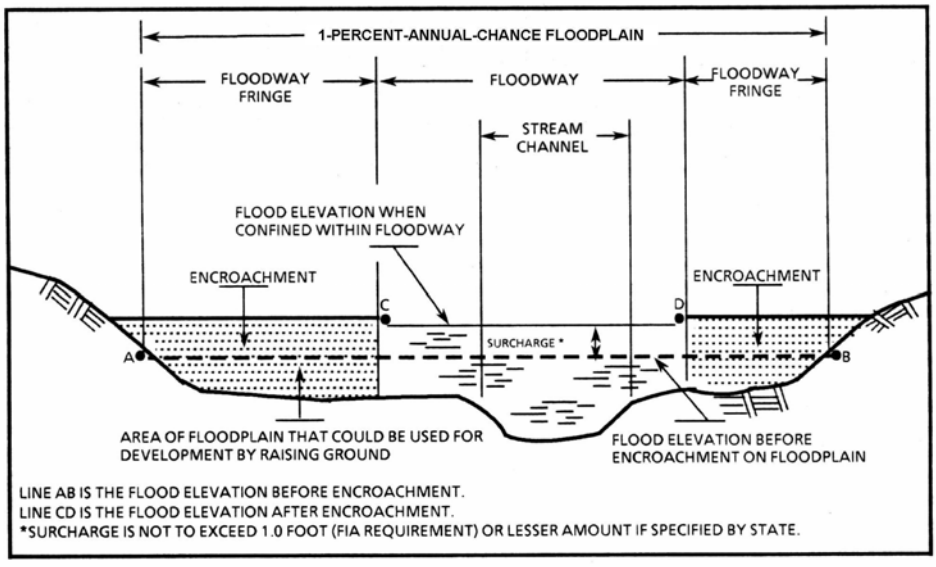
The floodway presented in this FIS report and on the FIRM was computed for certain stream segments on the basis of equal-conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections of detailed study streams (Table 2). For detailed study streams, in cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 2, "Floodway Data," for certain downstream cross sections are lower than the regulatory flood elevations in that area, which must take into account the 1-percent-annual-chance flooding due to backwater from other sources.

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. For detailed study streams, a listing of stream velocities at selected cross sections is provided in Table 2. In order to reduce the risk of property damage in areas where the stream velocities are high, the county may wish to restrict development in areas outside the floodway.

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.

Floodways were calculated for Little Tangipahoa River, Stream A, and Town Creek.



FLOODWAY SCHEMATIC Figure 1

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
LITTLE TANGIPAHOA RIVER								
A	67,100	203	1,071	2.87	387.8	387.8	388.8	1.0
B	67,670	227	1,392	2.21	390.4	390.4	390.8	0.4
C	68,520	456	1,719	1.79	391.9	391.9	392.6	0.7
D	70,030	283	1,355	1.94	396.8	396.8	397.8	1.0
E	71,075	372	2,300	1.14	401.0	401.0	401.7	0.7
F	72,290	472	3,529	0.71	402.3	402.3	403.1	0.8
STREAM A								
A	600	143	752	1.62	378.4	376.6[2]	376.9	0.3
B	1,200	127	396	3.08	379.3	377.4[2]	377.5	0.1
C	2,130	157	617	1.98	382.0	382.0	382.2	0.2
D	2,800	201	733	1.46	383.9	383.9	384.2	0.3
E	3,990	124	200	5.35	387.1	387.1	387.4	0.3

[1] FEET ABOVE MOUTH
[2] ELEVATION COMPUTED WITHOUT CONSIDERATION OF BACKWATER EFFECTS FROM TOWN CREEK

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

PIKE COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE TANGIPAHOA CREEK – STREAM A

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
TOWN CREEK								
A	10,875	251	795	5.00	366.5	366.5	367.4	0.9
B	12,070	459	1,927	2.10	371.5	371.5	371.8	0.3
C	13,270	58	418	9.40	373.2	373.2	374.1	0.9
D	15,550	153	815	2.93	381.5	381.5	382.5	1.0
E	16,730	233	882	2.71	384.1	384.1	385.1	1.0
F	18,275	247	806	2.79	389.1	389.1	390.0	0.9
G	18,640	273	2,012	1.12	394.3	394.3	394.4	0.1
H	20,000	300	748	1.90	394.6	394.6	395.0	0.4
I	20,510	134	465	3.05	397.3	397.3	397.5	0.2

[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

PIKE COUNTY, MS AND INCORPORATED AREAS

FLOODWAY DATA

TOWN CREEK

5.0 INSURANCE APPLICATION

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 Pike 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 5, “Community Map History.”

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Pike County (Unincorporated Areas)	June 10, 1977	--	September 15, 1989	--
City of McComb	April 11, 1975	--	August 1, 1979	--
City of Magnolia	November 25, 1977	--	July 1, 1987	--
Town of Osyka	--	--	--	--
Town of Summit[1]	June 10, 1977	--	September 15, 1989	--

[1] This community did not have its own FIRM prior to this countywide FIS. The land area for this community was previously shown on the FIRM for the unincorporated areas of Pike County, but was not identified as a separate NFIP community. Therefore, the dates for this community were taken from Pike County.

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

PIKE COUNTY, MS
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Pike 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 Pike County and should be considered authoritative for 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

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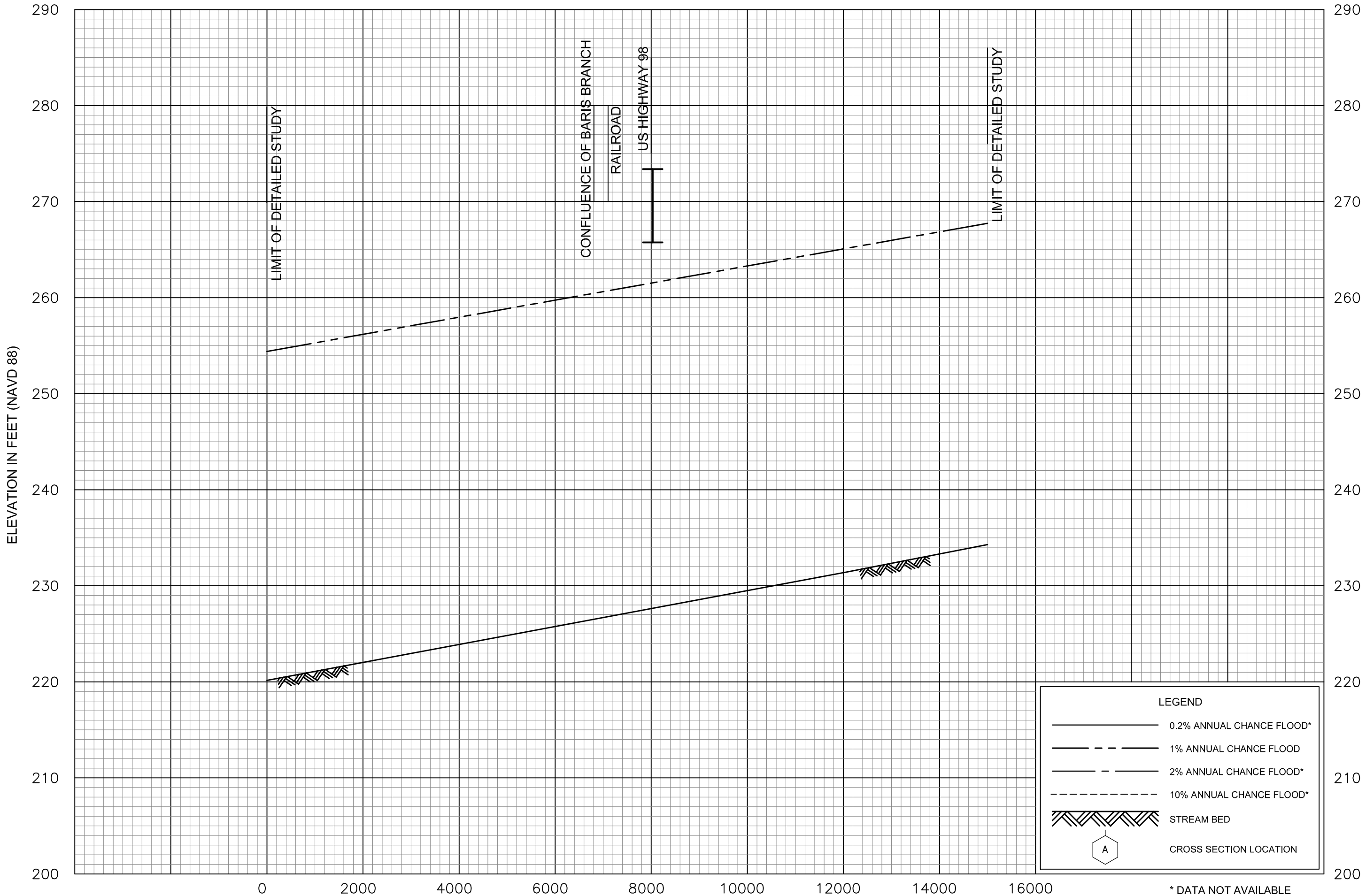


FLOOD PROFILES

BOGUE CHITTO

FEDERAL EMERGENCY MANAGEMENT AGENCY

PIKE COUNTY, MS
AND INCORPORATED AREAS

01P

ELEVATION IN FEET (NAVD 88)

450
440
430
420
410
400
390
380
370
360

LIMIT OF DETAILED STUDY
DELAWARE EXT AVENUE
ARROWHEAD DRIVE
SMITHDALE ROAD
LIMIT OF DETAILED STUDY

A
B
C
D
E
F

LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
A CROSS SECTION LOCATION

66,500 67,000 67,500 68,000 68,500 69,000 69,500 70,000 70,500 71,000 71,500 72,000 72,500

STREAM DISTANCE IN FEET ABOVE MOUTH

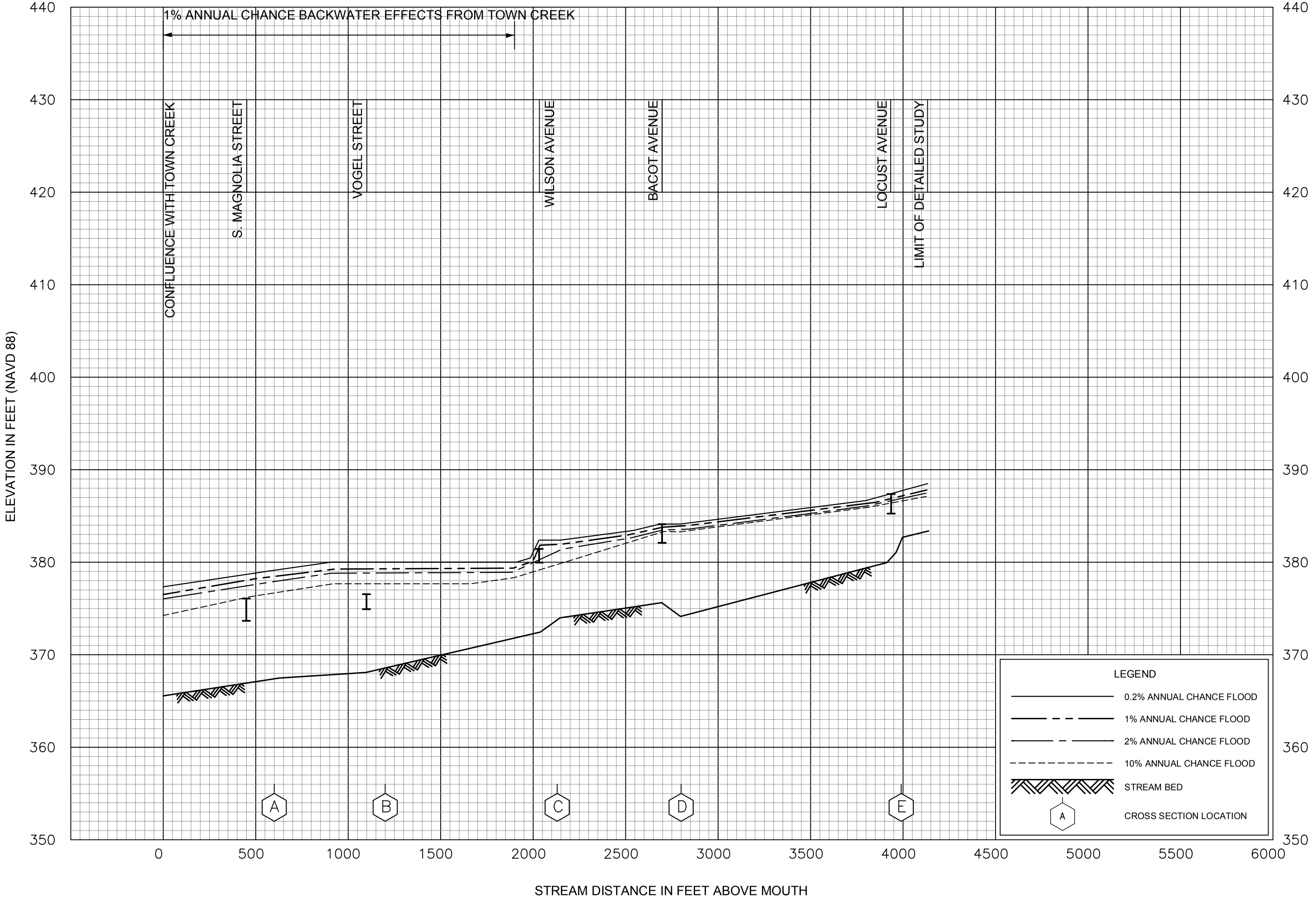
FLOOD PROFILES

LITTLE TANGIPAHOA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

PIKE COUNTY, MS
AND INCORPORATED AREAS

02P



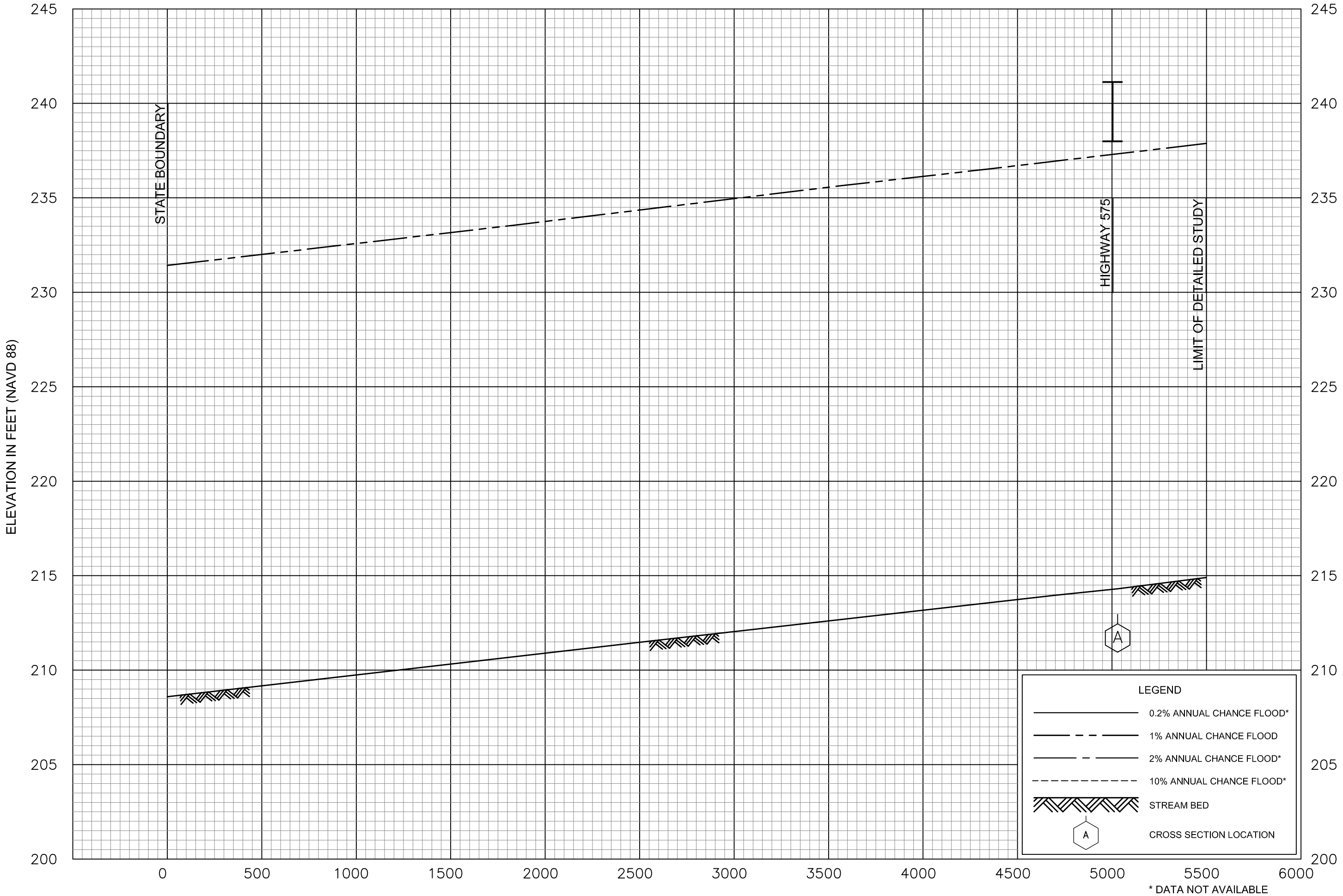
FLOOD PROFILES

STREAM A

FEDERAL EMERGENCY MANAGEMENT AGENCY

PIKE COUNTY, MS
AND INCORPORATED AREAS

03P



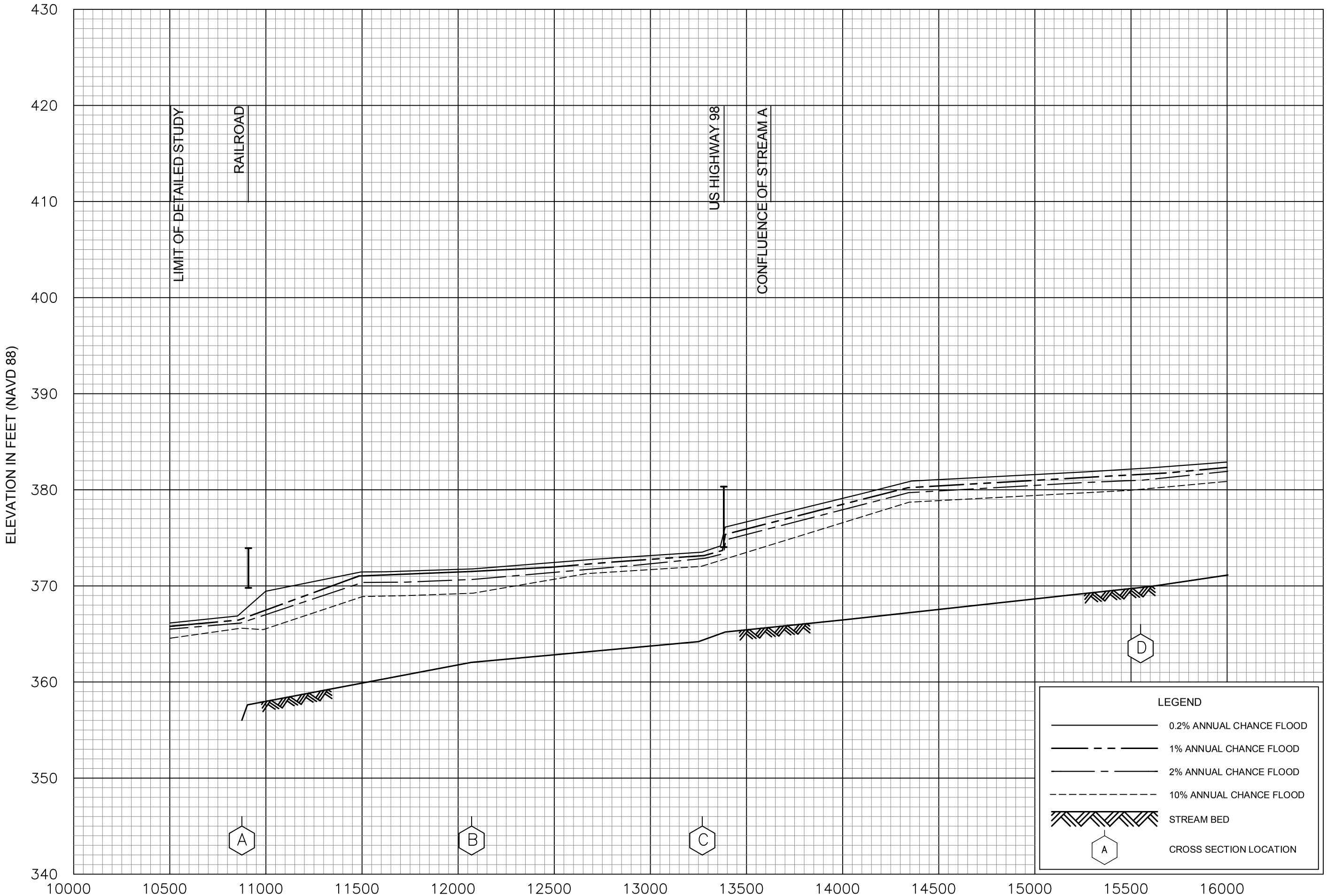
FLOOD PROFILES

TANGIPAHOA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

PIKE COUNTY, MS
AND INCORPORATED AREAS

04P



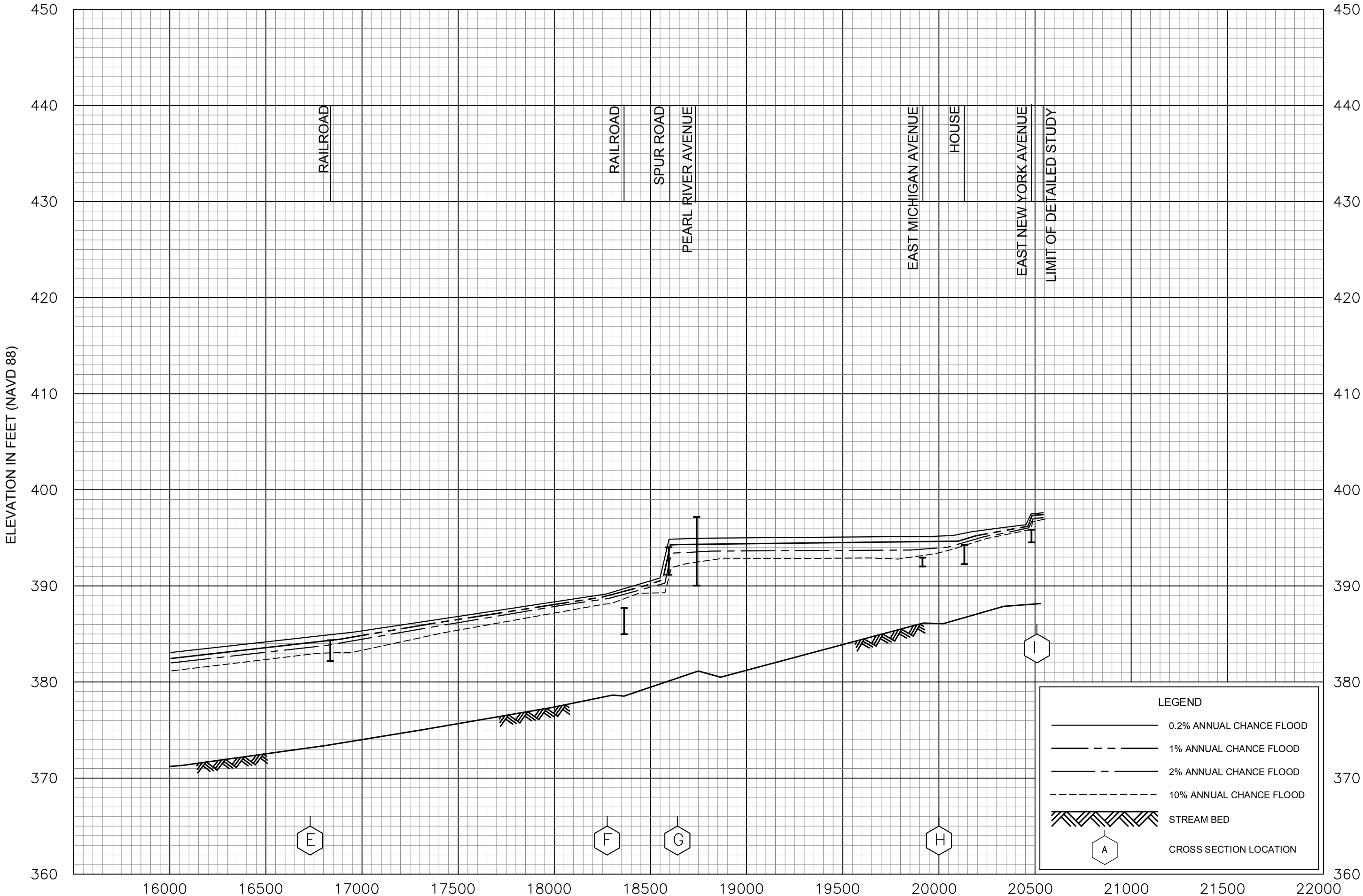
FLOOD PROFILES

TOWN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PIKE COUNTY, MS
AND INCORPORATED AREAS

05P



FLOOD PROFILES

TOWN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PIKE COUNTY, MS
AND INCORPORATED AREAS

06P