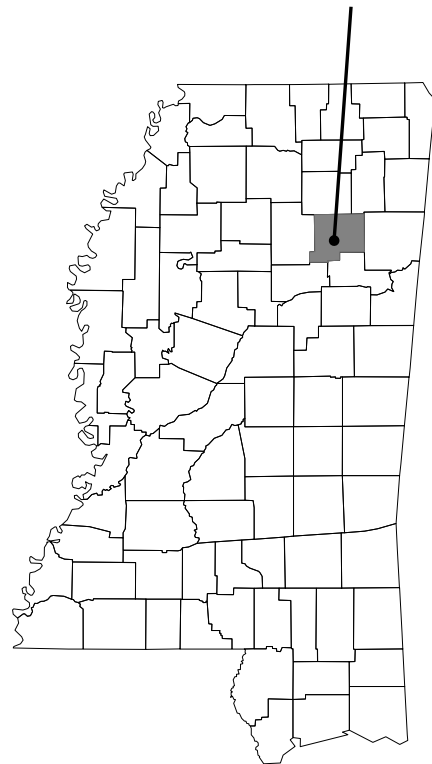


FLOOD INSURANCE STUDY



CHICKASAW COUNTY, MISSISSIPPI, AND INCORPORATED AREAS

Chickasaw County



Community Name	Community Number
CHICKASAW COUNTY (UNINCORPORATED AREAS)	280269
HOUSTON, CITY OF	280030
NEW HOULKA, TOWN OF	280067
OKOLONA, CITY OF	280031
WOODLAND, VILLAGE OF*	280068

*Non-floodprone Community

PRELIMINARY

JAN 06 2009



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
28017C000A

**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.

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

Effective Date: To be determined

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FLOOD INSURANCE STUDY

CHICKASAW 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 Chickasaw County, Mississippi including the incorporated areas of the Cities of Houston and Okolona, the Town of New Houlka, and the unincorporated areas of Chickasaw County (referred to collectively herein as Chickasaw County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

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

1.2 Authority and Acknowledgments

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

The hydrologic and hydraulic analyses for this study were performed by Watershed Concepts, for the Federal Emergency Management Agency (FEMA), under Contract No. EMA-2006-CA-5617. This study was completed in _____. Floodplain boundaries were delineated based on 10 meter Digital Elevation Models (DEMs) from the United States Geological Survey (USGS).

Base map information shown on this Flood Insurance Rate Map (FIRM) was derived from multiple sources. Base map information for Chickasaw County and all incorporated communities within Chickasaw County was provided in digital format by Mississippi Department of Environmental Quality (MDEQ) and Mississippi Emergency Management Agency (MEMA). Additional base map data was provided by local communities with Chickasaw County and the state of Mississippi. This information was compiled to create the FIRM panels. Users of this FIRM should be aware that minor adjustments may have been made to specific base map features for clarity and readability.

The coordinate system used for the production of DFIRM is Mississippi State Plane East (FIPS 2301), referenced to the North American Datum of 1983 and the GRS80. Distance units were measured in United States (U.S.) feet.

1.3 Coordination

The initial Consultation Coordination Officer (CCO) meeting was held on _____, and attended by representatives of FEMA, _____.

The results of the study were reviewed at the final CCO meeting held on _____, and attended by representatives of _____. 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 Chickasaw County, Mississippi, including the incorporated communities listed in Section 1.1.

For this FIS study no new detailed studies were performed.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon, by FEMA and the county of Chickasaw.

The areas studied by Enhanced Approximate methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction. Table 1, "Scope of Study", list the streams studied by limited detail.

Table 1, Scope of Study

Flooding Source	Enhanced Approximates
Brae Creek	From the confluence with Chico Creek to approximately 2.9 miles upstream of the confluence with Chico Creek

2.2 Community Description

Chickasaw County is in northeastern Mississippi. The county is bordered by the following areas: Pontotoc and Lee to the north; Monroe to the east; Clay and Webster to the south; and Calhoun to west. The county occupies approximately 504 square miles in area.

According to the United States (U.S.) Census Bureau 2000 Census, there are approximately 19, 440 inhabitants that make up Chickasaw County. Chickasaw County is served by U.S. Highway 45, Mississippi Highway 8, 15 and 41(Reference 1). The county seats for Chickasaw County are the cities of Houston and Okolona. Approximately 4,079 of Chickasaw County residents live in the City of Houston and 3,056 residents live in City of Okolona.

The average annual precipitation for the region is approximately 56 inches, and the average annual low temperature is approximately 50 degrees Fahrenheit (°F) and the high is 73

degrees Fahrenheit (°F). Chickasaw County consists mainly of forested, undeveloped lands. Vegetation is mostly pine and hardwood (Reference 2).

2.3 Principal Flood Problems

Intense seasonal rains and heavy rains from tropical storms and hurricanes are the major cause of floods on larger streams in Mississippi. Smaller streams usually flood as a result of convectional thunderstorms, which most often occur in the summertime. Other factors contributing to periodic inundations are caused by the cumulative effect of obstructions in floodplains.

2.4 Flood Protection Methods

Non-structural measures of flood reduction are being used to aid in the prevention of future flood damage in the City of Houston. These measures are in the form of land use regulations, regulated by a flood damage prevention ordinance, which controls building within the areas that have a high risk of flooding. Currently, no countywide flood protection methods exist for Chickasaw County.

3.0 ENGINEERING METHODS

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

Discharges for the 1-percent-annual chance recurrence interval for all enhanced approximates and new approximate study streams in Chickasaw County were determined using the Rural-East Region USGS regression equations for Mississippi as described in the USGS Water-Resources Investigations report 94-4002 (Reference 3).

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.

Cross section geometries were obtained from digital terrain data developed from USGS 10-meter DEMs.

Water-surface profiles for the streams studied by approximate methods were computed through the use of the U.S. Army Corps of Engineers (USACE) HEC_RAS version 3.1.2 water –surface profiles computer program (Reference 4). The model was run for the 1-percent-annual-chance

storm for the approximate studies.

The enhanced approximate study methodology used WISE as a preprocessor to HEC-RAS. WISE combined georeferenced data from the terrain model and miscellaneous shapefiles (such as streams and cross sections) with user input to create the input data file for HEC-RAS. Tools within WISE allowed the engineer to verify that the cross-section data was acceptable. The WISE program was used to generate the input data file for HEC-RAS. Then HEC-RAS was used to determine the flood elevation at each cross section of the modeled stream, and the resulting elevations were then imported back to WISE for creation of the flood boundaries.

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 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum. The datum conversion factor from NCVD29 to NAVD88 in Chickasaw County is 0.19 feet.

For additional information regarding conversion between the NGVD29 and NAVD88, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

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 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. For each stream studied by enhanced approximate and approximate methods, the 1-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1"=500' and 1"=1,000'.

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

4.2 Floodways

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

No floodways were computed for streams studied by enhanced approximate and approximate methods. 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 the 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood by more than 1.0 foot at any point. Typical relationship between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

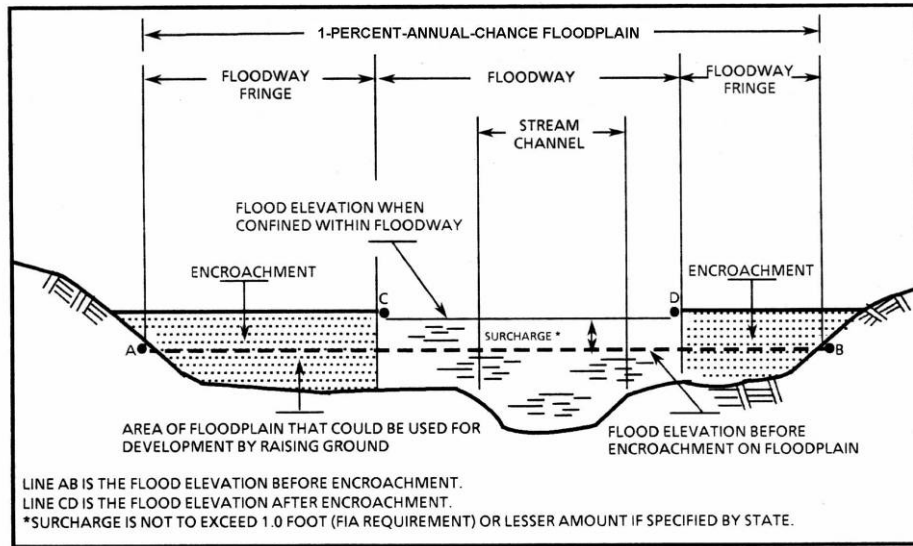


Figure 1. Floodway Schematic

5.0 INSURANCE 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 rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the Flood Insurance Study 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 X

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

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

Zone AO

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

Zone AR

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

Zone A99

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

Zone V

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

Zone VE

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

Zone X (Future Base Flood)

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

Zone D

Zone D is the flood insurance 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 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-floodplains calculated by hydraulic analyses.

The countywide FIRM presents flooding information for the entire geographic area of Chickasaw County, Mississippi. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. Additional 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
Chickasaw County (Unincorporated Areas)	June 03, 1977		September 01, 2008	
Houston, City of	June 28, 1974	July 23, 1976	September 04, 1985	
New Houlika, City of		None		
Okolona, City of	June 21, 1974	September 24, 1976	September 04, 1985	
Woodland, Village of ¹		None		

¹Non-floodprone Community

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
CHICKASAW COUNTY, MS
 AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

No previous FIS reports exist for Chickasaw County, Mississippi although previous FIRMs and FHBMS do exist.

This FIS report either 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. U.S. Census Bureau, 2000 Data for the State of Mississippi. United States Census 2000. June 2008, <http://www.census.gov/census2000/states/ok.html>.
2. National Weather Service. website, Memphis, Tennessee, Tupelo, MS monitoring station, June 23, 2008, <http://www.srh.noaa.gov/meg/tupcli.php>.
3. U.S. Geological Survey, Nationwide Summary of U.S. Geological Survey Regional Regression Equations for Estimating Magnitude and Frequency of Floods for Ungaged Sites, 1993, U.S. Geological Survey Water-Resources Investigations Report 94-4002.
4. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, Version 3.1.2, April 2004