

CITY OF TUSCALOOSA



FLOODPLAIN MANAGEMENT PLAN

FMPC Meeting #2
July 8, 2015



CITY OF TUSCALOOSA
FLOODPLAIN MANAGEMENT PLAN

ORGANIZATION OF 2015 FMP

2015 Floodplain Management Plan Structure

- **Chapter 1** – Introduction
- **Chapter 2** – Community Profile
- **Chapter 3** – The Planning Process
- **Chapter 4** – Risk Assessment
- **Chapter 5** – Mitigation Strategy
- **Chapter 6** – Plan Maintenance Procedures



CITY OF TUSCALOOSA
FLOODPLAIN MANAGEMENT PLAN

ORGANIZATION OF 2015 FMP APPENDICES

2015 Floodplain Management Plan Structure

- **Appendices and Supporting Documentation:**
- A - Resolution Establishing Planning Process
- **B - Hazard Profile Data**
- C - Community Mitigation Capabilities
- D - Committee Meeting Documentation
- E - Community Involvement Documentation
- F – Adopting Resolution



10-STEP PLANNING PROCESS

FMP Chapters	CRS Planning Step
Chapter 1 – Introduction	
Chapter 2 – Community Profile	
Chapter 3 – The Planning Process	Step 1: Organize to prepare the plan Step 2: Involve the public Step 3: Coordinate
Chapter 4 – Risk Assessment	Step 4: Assess the hazard Step 5: Assess the problem
Chapter 5 – Mitigation Strategy	Step 6: Set goals Step 7: Review possible activities Step 8: Draft an action plan
Chapter 6 – Plan Maintenance	Step 9: Adopt the plan Step 10: Implement, evaluate, revise



REVIEW DRAFT UPDATES

New drafts

- **Chapter 2** – Community Profile
- **Chapter 4** – Hazard Assessment
- **App. B** – Hazard Profile Data



CHAPTER 2 – COMMUNITY PROFILE

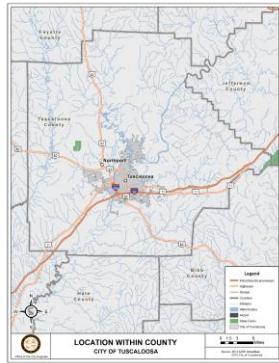
Sections

- 2.1 History & Geographic Setting
- 2.2 Government
- 2.3 Physical Features
- 2.4 Climate
- 2.5 Demographics
- 2.6 Economy
- 2.7 Transportation



2.1 History & Geographic Setting

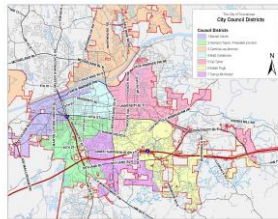
- Founded in 1819
- 70.3 sq. mi.



CHAPTER 2, SECTION 2.2

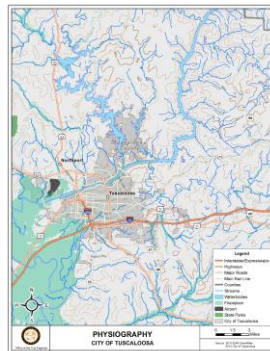
2.2 Government

- Mayor-Council form of government
- Seven city council members; elected by district
- City council committees



2.3 Physical Features

- Black Warrior River; Lake Tuscaloosa
- BWR Watershed – 6,276 sq. miles in AL
- Forested hills in NE; marshy, low-lying plains in SW



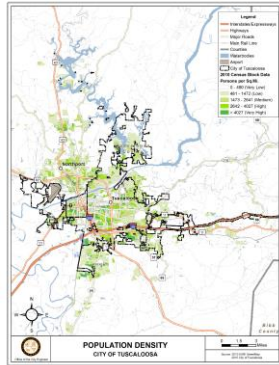
CHAPTER 2, SECTION 2.4

2.4 Climate

- Avg. annual rainfall 53 inches
- Avg. winter temp. 46.4 degrees
- Avg. summer temp. 80.4 degrees
- Avg. season snowfall 0.5 inches

2.5 Demographics

- Population 96,122 (2014 Census est.)
- 6% increase in population (2000-2010)
- Projections for 2016 – 17% increase from 2010



CHAPTER 2, SECTION 2.6

2.6 Economy – Business & Industry

- Primary employers – education, healthcare, government
- Manufacturing and service sectors
- Major Employers: University of Alabama, DCH Regional Medical Center, The Westervelt Company, Tuscaloosa County B.O.E.

CHAPTER 2, SECTION 2.6

2.6 Economy – Income & Housing

- Median Household Income - \$38,519
- 26.3% individuals below poverty level
- 43,468 total housing units
- 22.6% of owner-occupied housing units valued b/t \$150,000 - \$199,999
- Median Home Value - \$163,500

2.7 Transportation

- Access to I-20/59
- U.S. Hwys 11, 43, 82
- Tuscaloosa Trolley, Greyhound
- Tuscaloosa Municipal Airport
- Rail service – KCS & NS



CHAPTER 4 – HAZARD ASSESSMENT

Subsections

- 4.1 Overview
- 4.2 Flood Hazard Profile
- 4.3 Previous Occurrence
- 4.4 Future Events
- 4.5 Other Natural Hazards

CHAPTER 4 – HAZARD ASSESSMENT

Part A

- Address this chapter in 2 parts
- Part A focuses on Assessing the Hazard (Step 4)
- Part B will focus on Assessing the Problem (Step 5)

CHAPTER 4, SECTION 4.2

4.2 Flood Hazard Profile

- Flooding vs. Flash Flooding
- Flash flooding results in water level rise within 6 hours of the rainfall event
- Typical for most of Tuscaloosa (Black Warrior River being an exception)

4.2.1 Special Flood Hazard Area

- Black Warrior River;
- Canal Creek;
- Big Creek;
- Mill Creek;
- Tabor Hill Creek;
- Black Warrior River Tributary No. 2;
- Black Warrior River Tributary No. 3A;
- Black Warrior River Tributary No. 3;
- North River;
- Yellow Creek;
- Bee Branch;
- Hurricane Creek;
- Cottondale Creek;
- Cottondale Creek Tributary No. 1;
- Rum Creek;
- Cypress Creek;
- Cibbes Mill Creek;
- Cibbes Mill Creek Tributary No. 1;
- Cibbes Mill Creek Tributary No. 2;
- Cibbes Mill Creek Tributary No. 3;
- Cibbes Mill Creek Tributary No. 4;
- Cibbes Mill Creek Tributary No. 5;
- Cibbes Mill Creek Tributary No. 5A;
- Cibbes Mill Creek Tributary No. 5B;
- Cibbes Mill Creek Tributary No. 6;
- Cibbes Mill Creek Tributary No. 7;
- Moody Swamp Tributary 1;
- Moody Swamp Tributary 2; and
- Moody Swamp Tributary 3



4.2.1 Special Flood Hazard Area

- Black Warrior River;
- Canal Creek;
- Big Creek;
- Mill Creek;
- Tator Hill Creek;
- Black Warrior River Tributary No. 2;
- Black Warrior River Tributary No. 3A;
- Black Warrior River Tributary No. 3;
- North River;
- Yellow Creek;
- Soap Branch;
- Hurricane Creek;
- Cottontail Creek;
- Cottontail Creek Tributary No. 1;
- Plum Creek;
- Cypress Creek;
- Cibbes Mill Creek Tributary No. 1;
- Cibbes Mill Creek Tributary No. 2;
- Cibbes Mill Creek Tributary No. 3;
- Cibbes Mill Creek Tributary No. 4;
- Cibbes Mill Creek Tributary No. 5;
- Cibbes Mill Creek Tributary No. 6A;
- Cibbes Mill Creek Tributary No. 6B;
- Cibbes Mill Creek Tributary No. 6;
- Cibbes Mill Creek Tributary No. 7;
- Moody Swamp Tributary 1;
- Moody Swamp Tributary 2; and
- Moody Swamp Tributary 3



CHAPTER 4, SECTION 4.2.2

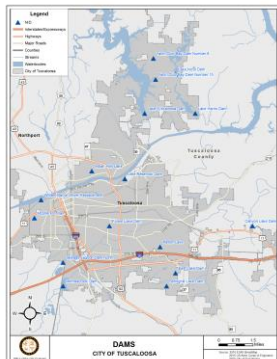
4.2.2 Repetitive Loss

- Defined as those properties for which two or more flood insurance claims of more than \$1,000 have been paid by the NFIP within any 10-year period.
- City is currently in the process of updating the repetitive property list as part of the CRS entry



4.2.4 Dams, Levees, and Land Subsidence

- Less Frequent Flood Hazards
- Corps of Engineers National Inventory of Dams (16 total)
- 5 dams owned by the City (4 public water supply and 1 sewage lagoon)
- 1 Federally owned and operated (Oliver Lock and Dam)
- Remaining 10 dams privately owned



4.2.4 Dams, Levees, and Land Subsidence

- Risk Assessment Factors
- Height of dam
- Storage/volume of the impoundment
- Development downstream of the impoundment in the potential flowpath
- Lake Tuscaloosa potentially high risk

Table 4-2. Dam Failure Flood Hazard Risk Assessment, City of Tuscaloosa

Name	Flood Hazard Risk
Mimosa Park Dam	Low
Indian Hills Lake	Moderate
East Lake Dam	Moderate
Forest Lake Dam	Moderate
Sewage Lagoon Dam North	Low
Little Reservoir Dam	Low
Lake Harris Dam	Low
Lake Tuscaloosa Dam	High
Patton Lake	Low
Springhill Lake Dam	Moderate
Canyon Lake Dam	Low
Yacht Club Bay Dam Number 8	Low
Lake Nicol Dam	Low
McPherson Dam	N/A
Yacht Club Bay Dam Number 15	Low
William Bacon Oliver Replacement	Moderate



CHAPTER 4, SECTION 4.2.4

4.2.4 Dams, Levees, and Land Subsidence

- Less Frequent Flood Hazards
- Corps of Engineers National Levee Database
- No known levees
- City of Northport is protected by Northport Levee System but provides no benefit to the City of Tuscaloosa



4.2.4 Dams, Levees, and Land Subsidence

- Less Frequent Flood Hazards
- Land subsidence occurs when large amounts of groundwater is withdrawn from certain types of rock
- Karst topography
- Low risk



4.3 Previous Occurrence

- Table of recent flood events (2004-Present) within the City of Tuscaloosa compiled from the NWS Birmingham Office information and news media information.

Table 4-3. Major Flood Events in the City of Tuscaloosa, 2004-Present

Date	Type	Description
September 16, 2004	Hurricane Ivan	Approximately 3.6" of rainfall from September 15 – 17
June 10, 2005	Tropical Storm Arlene	Approximately 3.5" of rainfall
July 10, 2005	Hurricane Dennis	Approximately 4.4" of rainfall. Roads and homes flooded and sustained minor damage
November 10, 2009	Hurricane Ida	Approximately 3.2" of rainfall
September 4, 2011	Tropical Storm Lee	Approximately 7.2" of rainfall from September 4 - 6
June 5, 2013	Flash Flooding	Flooded roads closed several streets mainly near the University of Alabama campus
April 28, 2014	Flash Flooding	Flooding along Hargrove Road on Circle Mill Creek
January 3, 2015	River and Flash Flooding	Some roadways were washed out and many others became impassable and were temporarily closed.
April 16, 2015	Flash Flooding	Flooding in the North Hampton neighborhood

Source: NWS Birmingham, News Media



CHAPTER 4, SECTION 4.4

4.4 Future Events

- 4.4.1 Development within the Watershed
- 4.4.2 Development within the Floodplain
- 4.4.3 Climate Change



4.5 Other Natural Hazards

- Eligible for additional credit if the plan includes a discussion of other natural hazards
- Based on past Tuscaloosa County Multi-Hazard Mitigation Plan

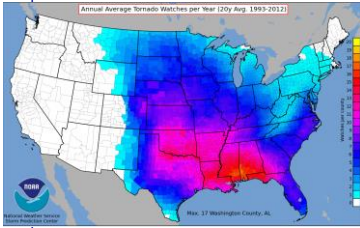
Table 4-3. Other Natural Hazards

Hazards	Associated Hazards
Tornadoes	High Winds Severe Storms Lightning Hail
Severe Storms	Thunderstorms Hail Lightning High Winds Tornadoes Floods Landslides Wildfires
Winter Storms / Freezes	Snow Storms Ice Storms Extreme Cold
Wildfires	
Hurricanes	Tropical Storms Tropical Depressions Severe Storms High Winds Floods Tornadoes
Droughts / Heat Waves	Extreme Heat Wildfires Sinkholes
Landslides	Mudslides
Earthquakes	Landslides



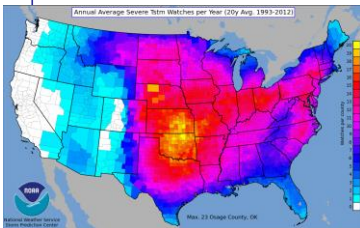
4.5.1 Tornadoes

- Tuscaloosa County averages at least 2 tornado per year
- Tuscaloosa County is placed under a Tornado Watch on average 13 times per year
- April 27, 2011 EF-4 Tornado resulted in 1,500 injuries and 65 fatalities



4.5.2 Severe Storms

- Thunderstorms, hail, lightning, high winds
- Tuscaloosa County has had 222 severe storm events between 1995 and 2014
- Tuscaloosa County is placed under a Severe Thunderstorm Watch on average 10 times per year
- High winds are less frequent and large, damaging hail is relatively rare



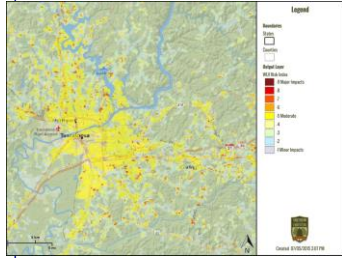
CHAPTER 4, SECTION 4.5.3

4.5.3 Winter Storms

- Associated risk include deaths, power outages, crop damage, and road hazards
- Average snowfall for Tuscaloosa County is 0.7 inches per year
- Expect almost one winter storm event per year
- Typically only pose a mild risk
- Blizzard of 1993 and Winter Storm of 2014

4.5.4 Wildfires

- Two categories of wildfires – wildland and interface fires
- Wildland fires feed on natural vegetation
- Interface fires occur at the interface of nature and human developments
- Most of the City has a WUI Risk Index of moderate impacts



CHAPTER 4, SECTION 4.5.5

4.5.5 Hurricanes

- Tuscaloosa is located more than 200 miles inland of the Gulf of Mexico; however it is still vulnerable to hurricanes and tropical storms
- NCDC lists 4 hurricane and tropical storm events that have affected Jefferson County and the City of Vestavia Hills in the last 20 years (1995-2014)
- The extent of hurricane damage in Tuscaloosa County depends primarily on wind speeds, tornado formation, and flooding.
- Tuscaloosa County can expect the remnants of frequent Gulf Coast hurricanes and occasional direct impacts of tropical depressions.

CHAPTER 4, SECTION 4.5.6

4.5.6 Droughts/Heat Waves

- Tuscaloosa County experiences occasional droughts affecting all jurisdictions with equal frequency
- Jefferson County has experienced a drought event in 4 of the last 20 years
- Most severe drought during that period spanned 2006-2008

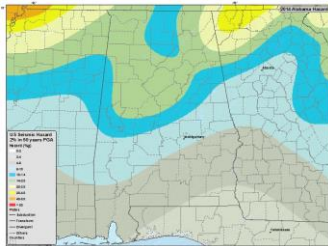
4.5.7 Landslides

- Impacts include loss of life, damage to buildings, lost productivity, disruption in utilities and transportation systems, and reduced property values
- Tuscaloosa County lies in an area of low landslide incidence, with a few areas of moderate susceptibility for landslides Explain susceptibility and incidence
- Map shown to right developed from 2011 USGS landslide susceptibility data



4.5.7 Earthquakes

- Since 1975, the GSA has recorded 11 earthquakes in Tuscaloosa County
- A small magnitude 3.0 earthquake occurred on September 11, 1992 with the epicenter located near Skyland Blvd east of Memory Hill Garden
- The USGS publishes national seismic hazard maps which show likelihood of exceeding a level of earthquake shaking in a given time period.



APPENDICES

App. B – Hazard Profile Data

- National Climatic Data Center
- Flash Flooding Events, 1995-2014 (26)
- Flooding Events, 1995-2014 (5)
- Hurricane and Tropical Storm Events, 1995-2014 (4)
- Tuscaloosa County Flood Hazard Related Events with Presidential Disaster Declarations, 1961-Present (15)



FMPC MEETING DATES AND TOPICS

Upcoming Meetings

- #3 August– Risk Assessment: Vulnerability Assessment and Impacts
- #4 September – Mitigation Strategy: Goals, Objectives, Mitigation Alternatives
- #5 November – Mitigation Strategy: Action Plan; The Planning Process



COMMUNITY MEETINGS

Schedule of Meetings

- Community meeting #1 during drafting phase, between FMPC meetings #3 and #4
- Community meeting #2 prior to adoption, after FMPC meeting #5



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