

LAWRENCE COUNTY  
MULTI-HAZARD MITIGATION PLAN  
2015



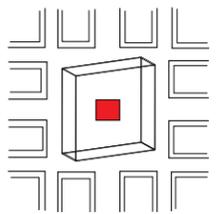
for:

Lawrence County  
Emergency Management Agency

May 19, 2016



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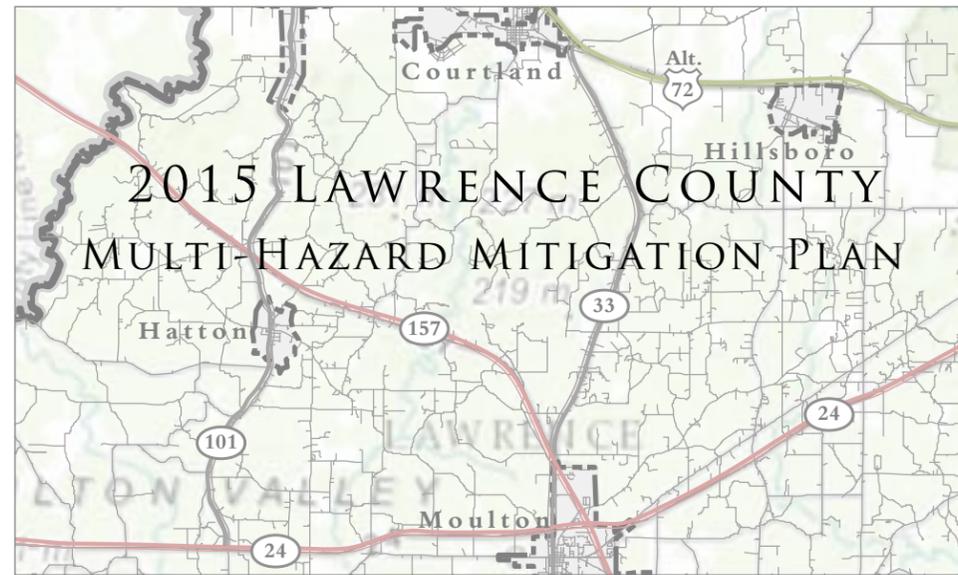


# 2015 LAWRENCE COUNTY MULTI-HAZARD MITIGATION PLAN

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Acknowledgements <sup>Section</sup> **A**





**Authority**

This document is created under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U.S. C. 5165. Hazard Mitigation Planning to mitigate natural disasters is a requirement of the Stafford Act in order for local jurisdictions to receive disaster mitigation funds. Natural Hazard Mitigation Planning is the process of reducing or eliminating the loss of life and property damage resulting from natural hazards such as floods, tornadoes, earthquakes and other events. Manmade Hazard Mitigation is the process of reducing or eliminating the loss of life and property damage resulting from manmade hazards.

**Funding**

Funding for the preparation and development of this plan was provided in part by the Federal Emergency Management Agency (FEMA) through a grant awarded by the Alabama Emergency Management Agency (AEMA) to the Lawrence County Emergency Management Agency and the Lawrence County Commission.

**Background**

Preparation and development of this document began in June 2014 with planning and document content development with the Hazard Mitigation Planning Team. The team is composed of Johnny Cantrell., Director Lawrence County EMA; Tammy Vinson, Lawrence County 911; Benjamin Farmer, Farmer | Morgan, LLC; Randall Morgan, Farmer | Morgan, LLC; Will Hargrove, Farmer | Morgan, LLC; and Jo Beth Gleason, Farmer | Morgan, LLC.

**Policy Committee**

- Clarence Logston, Mayor, Town of Courtland
- Charles Owens, Mayor, Town of Hillsboro
- Ronald Jones, Mayor, Town of North Courtland
- Mike Parker, Mayor, Town of Town Creek
- Ray Alexander, Mayor, City of Moulton
- Mose Jones Jr., Chairman, Lawrence County Commission
- Johnny Cantrell., EMA Director, Lawrence County EMA
- Tammy Vinson, Director, Lawrence County 911
- Heath Grimes, School Superintendent, Lawrence County Schools
- Kyle Buchanan, Lawrence Medical Center
- Jeffrey Pruitt, Executive Director, North Central Alabama Regional Council of Governments
- Tony Stockton, Lawrence County Industrial Recruitment and Development
- Jonas Hobbs, Lawrence County Fire Association

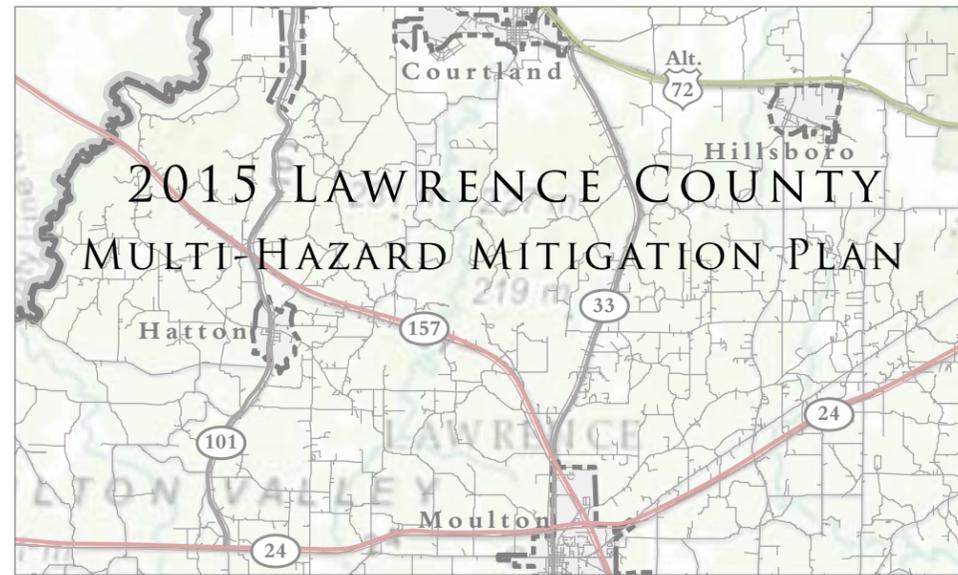
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Introduction & Executive Summary Section **B**

**INTRODUCTION & EXECUTIVE SUMMARY**

- I.1 PURPOSE OF THIS PLAN
- I.2 PLANNING PROCESS
- I.3 GRANT ASSISTANCE ELIGIBILITY
- I.4 2015 MITIGATION PLAN UPDATE
- I.5 EXECUTIVE SUMMARY
- I.6 PLANNING STUDY AREA
- I.7 MODIFICATIONS TO PLAN UPDATE 2010-2015

*Each year in this country, natural disasters result in the death of hundreds of people and injure thousands more. Taxpayers pay billions of dollars annually to assist communities, organizations, businesses, and homeowners with recovery efforts from disasters. However, this is just a fraction of the true cost of disasters as insurance companies and other private entities contribute additional monies to assist in the recovery cost. Many natural disasters are predictable and their damage costs could be lessened with adequate planning.*

*The Federal Emergency Management Agency (FEMA), developed the Hazard Mitigation Planning Process to assist and guide local and state governments in the development of a guidance document to identify, plan, and respond to natural hazards in a way that would reduce the loss of lives, injuries, and associated recovery cost. Hazard mitigation planning is defined by FEMA as “any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event.” The results of a congressional mandated 3-year study found that every \$1 spent on hazard mitigation activities saves taxpayers an average of \$4 in future disaster recovery. Therefore, the Disaster Mitigation Act 2000 was passed and requires governments to develop and implement hazard mitigation plans to be eligible for emergency funding.*

*I.1 Purpose of this Plan*

Lawrence County and its jurisdictions have prepared this update to the Lawrence County Multi-Jurisdiction Hazard Mitigation Plan to better protect the people and property of the county against any natural hazard event. The purpose of the plan is to identify potential natural disaster risks in Lawrence County and its communities and proposed mitigation strategies that will reduce their adverse impact. After identifying potential risks, communities establish policies and actions to be implemented over the long term to reduce future risk and losses. The plan serves as the community’s strategy of responding to natural disasters and strives to break the repetitive cycle of disaster loss, reconstruction, and repeated loss through inadequate planning. The goals of the plan are to:

- Reduce the vulnerability of the community to natural and man-made hazards;
- Improve and maintain coordination between jurisdictions;
- Educate the public on potential hazards;
- Improve public hazard communications and safety notifications.

*I.2 Planning Process*

The planning process for the development of this Multi-Jurisdictional Hazard Mitigation Plan followed FEMA’s guidelines and involved public involvement through community meetings and workshops that resulted in the establishment of a Lawrence County Multi-Jurisdictional Hazard Mitigation Plan Policy Committee. The Committee, along with area citizens, identified the local hazards and risks through a community profile and determined how vulnerable the community was to these risks. The stakeholders and citizens then identified goals and objectives to address the risks and feasible mitigation strategies to lessen their effects. This data was compiled into this plan to be used as a strategy to guide future disaster mitigation actions and is intended to be implemented upon adoption and updated when required.

Using FEMA’s guidelines, a four-step process was used to develop the Lawrence County Multi-Jurisdiction Hazard Mitigation Plan:

- Planning Process
  - Organize the Planning Activities
    - > Involve the Public
    - > Coordinate between Jurisdictions
- Risk Assessment
  - > Identify Hazards
  - > Assess Risks
- Mitigation Strategy
  - > Establish Goals
  - > Review Possible Actions
  - > Draft Action Plan
- Plan Maintenance
  - > Adopt the Plan
- Implement, Evaluate, and Revise the Plan

*I.3 Grant Assistance Eligibility*

Multi-Jurisdictional Hazard Mitigation Plan development and adoption is required by all local EMAs and their jurisdictions to be eligible to apply and receive grant assistance for mitigation and response actions to natural disasters. The following technical assistance and funding will be available for application after plan adoption:

- Emergency Management Performance Grants – Encourages the development of comprehensive emergency management, including for terrorism consequence management at the state and local level, and to improve emergency management planning, preparedness, mitigation, response, and recovery capabilities.
- Flood Mitigation Assistance Program – Helps states and communities plan and carry out activities designed to reduce the risk of flood damage to structures insurable under the NFIP.
- Hazard Mitigation Grant Program (HMGP) – Prevents future loss of lives and property due to disasters; implements state or local hazard mitigation plans to enable mitigation measures to be implemented during immediate recovery for a disaster; and provides funding for previously identified mitigation measures to benefit the disaster area.
- The Pre-Disaster Mitigation Grant Program (PDM) – The Pre-Disaster Mitigation (PDM) program provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these

plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.

- The Flood Mitigation Assistance Program (FMA) - The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FEMA provides FMA funds to assist states and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program.
- The Repetitive Flood Claims (RFC) Program - The Repetitive Flood Claims (RFC) grant program has \$10 million annually to assist states and communities in reducing flood damages to insured properties that have had one or more claims to the National Flood Insurance Program (NFIP).
- The Severe Repetitive Loss Program (SRL) - The Severe Repetitive Loss (SRL) grant program was authorized to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP).

#### I.4 2015 Mitigation Plan Update

The Lawrence County EMA convened the Hazard Mitigation Policy Committee met in the summer of 2014 to initiate the 2010 Lawrence County Multi-Hazard Mitigation Plan update. A Hazard Mitigation Policy Committee was formed consisting of representatives from each incorporated jurisdiction as well as community stakeholders. After receiving public feedback, the 2010 Lawrence County Multi-Jurisdictional Hazard Mitigation Plan was assessed for any needed changes and updates. All of the data was updated with the best available data at this time. A brief description of each section's modifications are below.

##### Document Prerequisites

There were minor changes to the format or sub-sections of this section. The content was updated to reflect the current planning participation public involvement schedule. The participating jurisdictions, public sector agencies, and academic institutions remained the same.

##### Jurisdictional Context

There were changes to the format and sub-sections of this section. Most of the jurisdictional narrative information remained the same as well as the transportation, geographic and topographic information. All of the population demographics and economic profile data was changed and updated. Most of the utility and communications information remained the same.

##### Planning Process

There were changes to the format and sub-sections of the section. A majority of the section's contents required updating to describe this plan's planning process, policy committee members, workshop and meeting dates. The public involvement process was expanded to include the addition of an online hazard mitigation strategies survey to increase opportunities for public input and make the process more convenient. The Planning Team did not conduct another Visual Preference Survey with this update and relied on data from the paper hazard identification surveys and the online hazard mitigation action surveys for identification

##### Risk Assessment

There were a few modifications to the format and sub-sections of this section to better illustrate the effect each identified hazard has on each jurisdiction, the probability of future occurrences, and the magnitude and severity of future occurrences. All the identified hazards remained the same. All previous occurrences data was updated along with future probability assessment data. All of the critical facilities information, repetitive loss data, vulnerability assessment data, and future growth and development data were updated to reflect current information.

##### Mitigation Planning

There were modifications to the format of this section. The sub-sections were also changed. Most of the hazard mitigation strategies proposed for each identified hazard were revised. The following mitigation actions were added to some identified risks: Safe Shelter Requirements; Flood Prone Building Proofing and Retrofitting; River/Stream Corridor Restoration and Protection; Seawalls, Retaining Walls; Neighborhood and Community Safe Rooms. The single mitigation strategy not included was Establishing Defensible Space Within the Wildland Urban Interface, which was a proposed mitigation action for wildfires and landslides. Mitigation actions were also identified by jurisdictions and based on the online mitigation surveys for each jurisdiction. The results from this survey are contained in the Appendix section of this document. Some of the identified actions from the 2010 plan were removed and some new

actions were introduced, per jurisdiction, during this update process. All of the associated information for each identified mitigation action was updated.

##### Plan Maintenance

There were changes to the format or sub-sections of this section, however and most of the content type remained the same.

### B.5 Executive Summary

#### Document Prerequisites

This section outlines the plan's adoption procedures for grant eligibility and specifies that plan adoption will occur after the draft version has been reviewed by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA). This section also identifies all of the participating jurisdictions within the planning area, which are Lawrence County, Town of Hillsboro, City of Moulton, Town of Courtland, Town of North Courtland, and the Town of Town Creek. This section also identifies non-jurisdictional entities consisting of schools and healthcare facilities.

#### Jurisdictional Context

This section contains a narrative description of the planning area, the county, and all of its participating jurisdictions. It describes geographic characteristics, weather, and topography. It also describes population characteristics, housing characteristics, transportation networks, and economic profiles. According to U.S. Census data, the Lawrence County median household income is \$38,551 in comparison to the State estimate of \$43,253. Lawrence County is served by Alabama Highway 20/Alternate 72, Alabama Highway 157, and Alabama Highway 24. Norfolk Southern serves as the major railroad line, and the Tennessee River provides a major water route for boat and barge transportation. Caucasians compose 78% of the racial demographic within the county. Total population in the county is estimated to be 33,571 in 2013 and 33,477 in 2014. There are 11.9% of the persons above the age of 25 with a bachelors degree according to Census estimates.

#### Planning Process

This section outlines the entire planning process and the involvement from local entities, adjacent communities, and EMA jurisdictions. Opportunities for public involvement occurred on 6/18/14, 7/7/14, 7/8/14, and 7/9/14. Online mitigation strategy surveys, hazard identification surveys, and worksheets were also used to receive

Bottom Right: Multi-Jurisdictional Mitigation Planning Study Area Map (Map, 2015: Multi-Hazard Mitigation Planning Team)

input. The Policy Committee continues to implement the identified mitigation strategies for reducing or preventing natural hazards.

**Risk Assessment**

This section identifies all potential jurisdictional hazards and includes a description and profile of location within the planning area. The identified hazards are: earthquakes, dam and levee failures, droughts, extreme temperatures, floods, hazardous materials, hurricanes and tropical cyclones, landslides, nuclear accidents, sinkholes, severe storms, tornados, wildfires, and winter storms. This section also identifies historical occurrences, assesses future probability, and estimates future potential loss as a result of each hazard. In addition, this section identifies critical facilities and structures within the planning area. The section includes a vulnerability assessment per individual hazard and addresses repetitive loss properties. Vulnerability assessments were done using FEMA’s HAZUS-MH analysis for building occupancy type and disaster scenarios run through storm models using HAZUS-MH. Finally, local and regional development trends were reviewed for each jurisdiction and within Lawrence County.

**Mitigation Planning**

This section identifies mitigation strategies for each identified hazard that matches the goals and objectives for the planning study area. Descriptions for each mitigation strategy are categorized within each disaster type that is mitigated. The five categories of mitigation actions are: Prevention, Property Protection, Public Education and Awareness, Natural Resource Protection, and Structural Projects. Mitigation strategies are also identified for each participating jurisdiction.

**Plan Maintenance**

This section outlines the Policy Committee’s proposed actions for plan maintenance in conjunction with the Planning Team and the participating jurisdictions. The planning process for hazard mitigation is a continuous cycle that requires regular monitoring, evaluating, and updating the multi-hazard mitigation plan. It is intended for the Policy Committee to meet four times a year to evaluate each jurisdiction’s accomplishments in mitigating natural disasters within their jurisdiction. The plan maintenance section defines a general agenda for these meetings and how to proceed with implementation over the next five years.

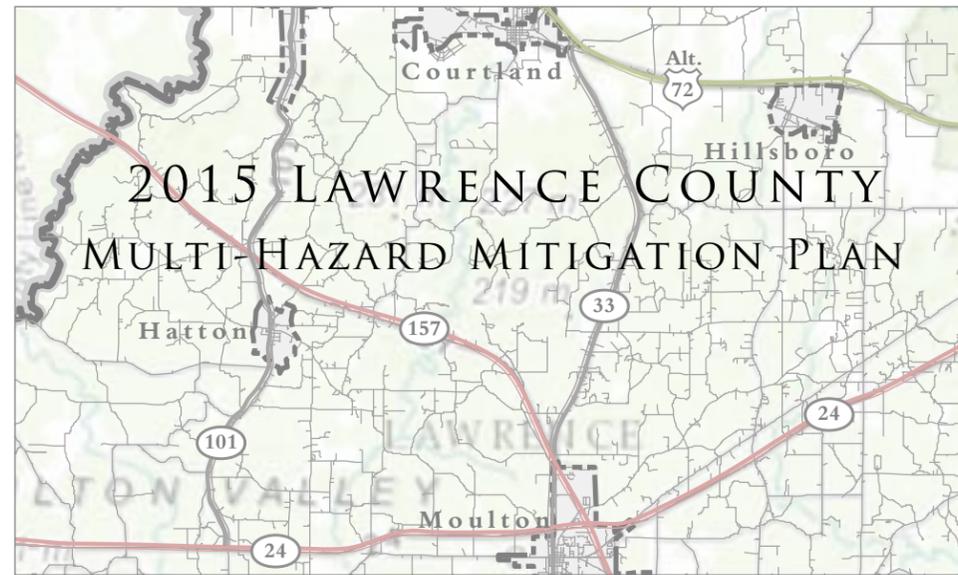
**Appendix**

The appendix contains documentation of public meetings and workshops, the results of the online hazard mitigation surveys and the paper risk identification surveys, stakeholder and public feedback forms for identified hazards and critical facility information, sign-in sheets, and policy committee presentations.

**I.6 Planning Study Area**

The planning study area is contained within Lawrence County located in Northwest Alabama. Lawrence County has five incorporated jurisdictions. According to U.S. Census data, the population is estimated at 33,477 for 2014 and the county’s land area in 2010 was 718 square miles. The Lawrence County EMA is the lead mitigation planning agency within the county and assists the entire planning study area in implementing hazard mitigation planning strategies.





Document Prerequisites **Section C**

**44 CFR § 201.6 Local Mitigation Plans:**

Federal Prerequisites

(a) Plan requirements.

- A local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants. The Administrator may, at his discretion, require a local mitigation plan for the Repetitive Flood Claims Program. A local government must have a mitigation plan approved pursuant to this section in order to apply for and receive mitigation project grants under all other mitigation grant programs.

- (4) Multi-jurisdictional plans ( e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan. State-wide plans will not be accepted as multi-jurisdictional plans.

(c) Plan content. The plan shall include the following:

- (5) Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multijurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

**DOCUMENT PREREQUISITES**

**DP.1 JURISDICTIONAL ADOPTION FOR GRANT ELIGIBILITY**

**DP.2 MULTI-JURISDICTIONAL PLANNING PARTICIPATION**

**DP.3 MULTI-JURISDICTIONAL PLAN ADOPTION**

***DP.1 Jurisdictional Adoption for Grant Eligibility***

To be eligible for grant assistance through Federal Emergency Management Agency (FEMA) programs, participating jurisdictions must approve and adopt the Lawrence County Hazard Mitigation Plan. The proposed plan must first be reviewed and approved by the Alabama Emergency Management Agency (AEMA), which represents FEMA in the State of Alabama. The AEMA implements the FEMA hazard mitigation programs and serves as the planning authority within the state. Once the plan has been approved by FEMA/AEMA, each participating jurisdiction must adopt the approved plan and send the adoption resolutions to FEMA/AEMA. Formal adoption of the FEMA/AEMA approved plan must occur within the participating jurisdictions within 12 months of receiving FEMA/AEMA approval. Without prior approval from FEMA/AEMA, any jurisdiction or academic institution cannot apply or receive grants under the FEMA hazard mitigation programs. The following types of grant assistance is available to communities through FEMA and AEMA upon adoption of the Lawrence County Hazard Mitigation Plan:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)

The Lawrence County Emergency Management Agency (LC

***DP.2 Multi-Jurisdictional Planning Participation***

EMA) is the coordinating agency for mitigation planning in Lawrence County. The Lawrence County Hazard Mitigation Policy Committee was established by the LC EMA to guide the planning team and development of the Lawrence County Hazard Mitigation Plan. The Policy Committee also directs and implements the adopted 2015 Lawrence County Hazard Mitigation Plan and measures the effectiveness of the proposed mitigation strategies through the life of the plan. Members of the Policy Committee are familiar with all six jurisdictions identified within the plan and have worked with these jurisdictions during the implementation of previously adopted hazard mitigation plans. The participating six jurisdictions are:

- **Lawrence County**  
256-974-0663
- **Town of Courtland**  
256-637-8487
- **Town of Hillsboro**  
256-637-2070
- **Town of North Courtland**  
256-637-6378
- **Town of Town Creek**  
256-685-3344
- **City of Moulton**  
256-974-5191

Located within the six jurisdictions are public sector agencies, academic institutions, and private sector business interests that participated in the planning and development of this plan. Participating entities of this type include:

- **Lawrence County School District**
- **Lawrence Medical Center**
- **North Central Alabama Regional Council of Governments**
- **Lawrence County 911**
- **Lawrence County Fire Association**
- **Lawrence County Industrial Recruitment and Development.**

Schools located within the Lawrence County School District within the planning area include:

**East Lawrence Elementary**  
256-905-2513

**Hatton Elementary**  
256-685-4000

**Hazlewood Elementary**  
256-685-4020

**Moulton Elementary**  
256-905-2450

**Mount Hope School**  
256-905-2470

**Speake School**  
256-974-9201

**East Lawrence Middle**  
256-905-2420

**Moulton Middle**  
256-905-2460

**East Lawrence High**  
256-905-2430

**Hatton High**  
256-685-4010

**Lawrence County High School**  
256-905-2440

**Lawrence County Center for Technology**  
256-974-3751

**R.A. Hubbard High School**  
256-637-3010

The Lawrence County Hazard Mitigation Policy Committee and Planning Team established a strategy for public participation and citizen feedback to develop mitigation strategies for each participating jurisdiction. This included multiple public workshops, public meetings, and an online mitigation strategy public survey that policy committee members, community stakeholders, and residents could take at their convenience. A brief description of these workshops and meetings are listed below with more detailed information provided in the Appendix.

- Lawrence County Hazard Mitigation Policy Committee meeting and workshop for plan review and development and identification of hazards and critical facilities. 6-18-14
- **Lawrence County Hazard Mitigation Plan public hearing for the plan update. mm-dd-2015**
- Lawrence County Hazard Mitigation Plan citizen and stakeholder involvement meeting at LC EMA office in Moulton. 7-7-14
- Lawrence County Hazard Mitigation Plan citizen and stakeholder involvement meeting in Town Creek. 7-8-14
- Lawrence County Hazard Mitigation Plan citizen and stakeholder involvement meeting in Hillsboro. 7-9-14
- Online Mitigation Strategy Public Survey for policy committee, stakeholders, and citizen input. 8-26-14 to 3-31-15
- Online email follow-up of mitigation strategies with participating jurisdictions. September 2014 - March 2015
- Lawrence County Hazard Mitigation Plan Draft distribution to policy committee members, stakeholders, and citizens for review and comments. **Month 2015.**

### DP.3 Multi-Jurisdictional Plan Adoption

Upon conditional approval from FEMA/AEMA, the Lawrence County Hazard Mitigation Plan must be adopted by all participating jurisdictions identified in this plan by resolution. All state required public notice and public meeting laws and requirements must be complied with prior to adoption. Each participating jurisdiction must adopt the plan within 12 months of receiving conditional approval notification of the plan from FEMA/AEMA. After local adoption, a certified final copy of the adopted plan must be submitted to FEMA/AEMA for final approval. In addition, the Lawrence County School District participated in the development of this plan and must also adopt the final plan through the same process identified above. Copies of the adopted resolution are contained in the Appendix of this document and are on file at each participating jurisdiction.



Bottom Right: Stakeholder Meeting Advertisement (Print Ad, 2014: Multi-Hazard Mitigation Planning Team)

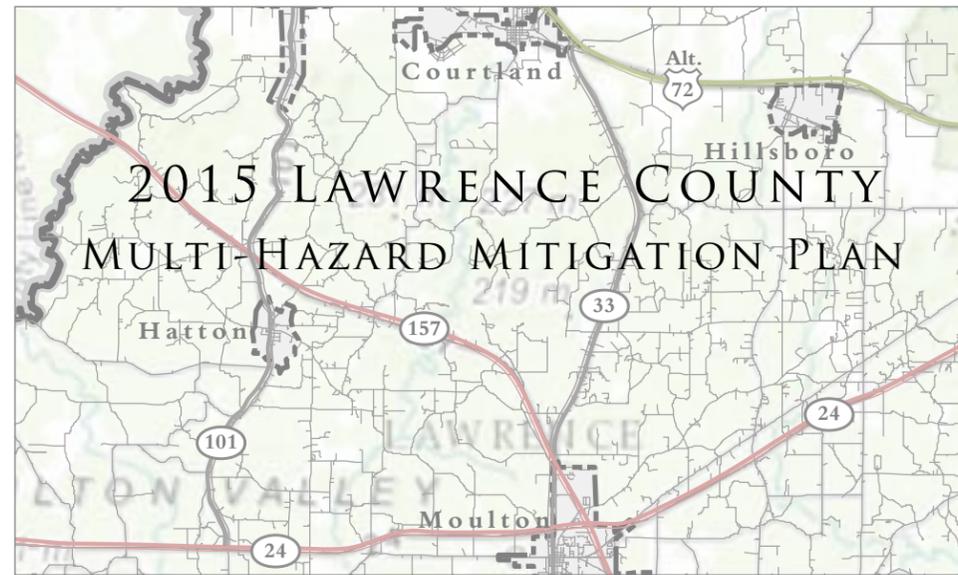
## Lawrence County Emergency Management Agency

Your attendance and participation is requested for the Lawrence County Hazard Mitigation Policy Committee meeting. This meeting is to initiate the planning and update efforts by the Lawrence County EMA to the Lawrence County Hazard Mitigation Plan. The policy committee directs and reviews the plan update and content of the adopted plan.

**Who:** Lawrence County EMA Policy Committee  
**What:** Policy Committee Planning Update Preparation  
**When:** June 18, 2014 2:00 p.m. to 3:15 p.m.  
**Where:** EMA Headquarters, Lawrence County EMA Office  
 555 Walnut Street, Moulton, Alabama 35650

 256-974-7641   
  256-974-0603   
  jcantrell@lawcoema.com





Jurisdictional Context **Section D**

**44 CFR § 201.6 Local Mitigation Plans:**

**Plan Content-Planning Process Special Considerations:**

The planning team should consider including a current description of the jurisdiction in this section or in the introduction of the plan. The general description can include a socioeconomic, historic, and geographic profile to provide a context for understanding the mitigation actions that will be implemented to reduce the jurisdiction's vulnerability (Local Multi-Hazard Mitigation Planning Guidance, July, 1, 2008, p. 27).

This section provides a profile of each jurisdiction within the planning area and discussed in this hazard mitigation plan.

**JURISDICTIONAL CONTEXT**

JC.1 NARRATIVE DESCRIPTION OF JURISDICTIONS

JC.2 CLIMATE

JC.3 ECONOMIC DATA

JC.4 TRANSPORTATION

JC.5 DEMOGRAPHIC DATA

JC.6 COMMUNICATIONS

JC.7 UTILITIES

*JC.1 Narrative Description of Jurisdictions*

**Lawrence County (2010 Population: 34,339)**

Lawrence County was established in 1818 one year before Alabama became a state. The county was created from former Chickasaw lands ceded to the United States in the Treaty of Fort Jackson in 1814 as well as the Turkey Town Treaty of 1816. It is named after Captain James Lawrence, a naval war hero from Vermont who fought in the of the War of 1812. The Lawrence County court house is located in downtown Moulton and was constructed in 1936.

Lawrence County is located in the northwestern portion of Alabama and encompasses nearly 700 square miles. It is bordered by: Colbert and Franklin Counties to the west; Lauderdale and Limestone Counties to the north; Morgan County to the east; and Winston County to the south. The City of Moulton serves as the county seat with four other incorporated towns in the county. The County contains the incorporated places of: the City of Moulton, the Town of Courtland, the Town of Hillsboro, the Town of North Courtland, and the Town of Town Creek. According to the U.S. Census Bureau, the population of Lawrence County in 2010 was 34,339.

The northern portion of the county is located in the Highland Rim and the southern portion is located within the Cumberland Plateau. The county consists of oak and pine forests, limestone valleys, uplands, and level plains. A portion of the Plateau Coal Region of the Warrior Coal Field sits in the southern part of the county. The Tennessee River and Wheeler Lake are located along the northern border of the county with their tributaries stretching throughout the planning area.

Lawrence County is the birthplace of Olympian, Jesse Owens, and the home to one of the largest prehistoric earthen mounds constructed by Native Americans. The southern portion of the county includes part of the William B. Bankhead National Forest, which has 180,000

acres of bluffs, canyons, waterfalls, and lakes. A 2,500-acre portion of the Joe Wheeler State Park sits on the northern border of the county and provides outdoor activities such as camping, hiking, boating, swimming, and picnicking.

The Lawrence County Commission is a five-member body of four (4) elected commissioners and a chairman. The chairman only votes in the event of a tie vote. The commission establishes policies and appoints a County Administrator to implement the policies and manage the operation of the county. The Commission adopts the millage rate annually and approves the budget, which determines the expenditures and revenue necessary to operate all Lawrence County Departments.

**Town of Courtland (2010 Population: 609)**

The Town of Courtland is located in north central Lawrence County and was first settled in 1818 and incorporated in 1819. It was originally called Ebenezer but chose the name Courtland when it incorporated. The town was originally subdivided into 300 lots and included a downtown square. Many of the earliest residents built the Tuscumbia, Courtland, & Decatur Railroad in 1832 which was responsible for transporting goods, such as cotton, between early southeast communities. The rail line eventually became part of the Great Southern Railroad. The earliest businesses included a grist mill, saloons, three cotton gins, and several blacksmith shops. The U.S. Army established an Army Air Force Flying School near Courtland in 1942. In 1971, Champion Paper opened a processing plant near the town and it was eventually bought by International Paper and became the largest employer in the county. Unfortunately, the paper mill closed down in 2014. Big Nance Creek runs through the town. According to the 2010 U.S. Census, the Town of Courtland had a population of 609. The town's current total area is 2.3 square miles.

The Town of Courtland has a mayor-council form of government with five council members. It is the responsibility of the Town Council to adopt policies governing the current operations of the city. The Council recently establish a planning commission in July 2015. Local places of interest include the Courtland Heritage Museum, the Joe Wheeler Plantation, Joe Wheeler Lake and Park, the Courtland Historic District, and the Valley Landing Golf Course.

**Town of Hillsboro (2010 Population: 552)**

The Town of Hillsboro is located in northeastern Lawrence County and was first settled in 1837 and incorporated in 1899. It was originally called Gilmersville after one of its earliest settlers, William Gilmer, and located one mile east of its current location. The name was changed to Hillsboro and the town's center moved closer to the newly constructed railroad in 1891. According to the 2010 U.S. Census, the Town of Hillsboro had a population of 552. The town's current total area is 1.9 square miles. The town is considered part of the Decatur Metropolitan Area.

The Town of Hillsboro has a mayor-council form of government with five council members. It is the responsibility of the Town Council to adopt policies governing the current and future development of the city. The town currently does not have a planning commission. Local places of interest include the Joe Wheeler Lake and Park, Joe Wheeler Plantation, the Thomas Holland House, the Boxwood Plantation Dependency, and the Tennessee Valley School.

**Town of North Courtland (2010 Population: 632)**

The Town of North Courtland is located in north-central Lawrence County and was initially part of the Town of Courtland for many decades and thus, shares its early history. However, during the era of racial segregation, most of the African Americans that lived in Courtland lived in a part of the town called "The Hill". Police and fire services were not readily available to these parts of the town and for many years residents depended on Lawrence County services to aid these portions of the community. The residents decided to establish themselves as their own town and incorporated in 1981. According to the 2010 U.S. Census, the Town of North Courtland had a population of 632. The town's current total area is 1.3 square miles. The town is considered part of the Decatur Metropolitan Area.

The Town of North Courtland has a mayor-council form of government with five council members. It is the responsibility of the Town Council to adopt policies governing the current operations of the city. The town also utilizes a seven member Planning Commission to plan and direct new growth and development. Local events and places of interest include the Joe Wheeler Lake and Park, the Founders Day Celebration, and the Unity Day Celebration.

**Town of Town Creek** (2010 Population: 1,100)

The Town of Town Creek is located in north central Lawrence County and was first settled in 1818. It is named for the creek, Town Creek, that runs to the west of the town. According to the 2010 U.S. Census, the Town of Town Creek had a population of 1,100. The town’s current total area is 2.7 square miles. The town is considered part of the Decatur Metropolitan Area.

The Town of Town Creek has a mayor-council form of government with five council members. It is the responsibility of the Town Council to adopt policies governing the current operation and development of the city. The town does not currently have a planning commission. The Prairie Grove Glades, a Nature Conservancy preserve, offers visitors views of rare plants on 191 acres just outside of Town Creek. Other local places of interest include the Doublehead Resort and Joe Wheeler Lake and Park.

**City of Moulton** (2010 Population: 3,471)

The City of Moulton is located in central Lawrence County and is the county seat. It was first incorporated in 1819. It is the largest incorporated place in Lawrence County and the center of county commerce with the majority of the county’s retail, commercial, and industrial developments located within its municipal limits. The city is named after Lt. Michael Moulton, who died in the Battle of Horseshoe Bend under the command of General Andrew Jackson. At the time of its incorporation following the State of Alabama entering the Union, the city began to grow from a modest inn and small farmers to a bustling center of county trade due to its central location between several other communities in northwest Alabama. It was named the county seat in 1820. The city was developed around the traditional town square and the county courthouse, constructed in 1936, is located in the square’s center. According to the 2010 U.S. Census, the City of Moulton had a population of 3,471. The town’s current total area is 5.9 square miles.

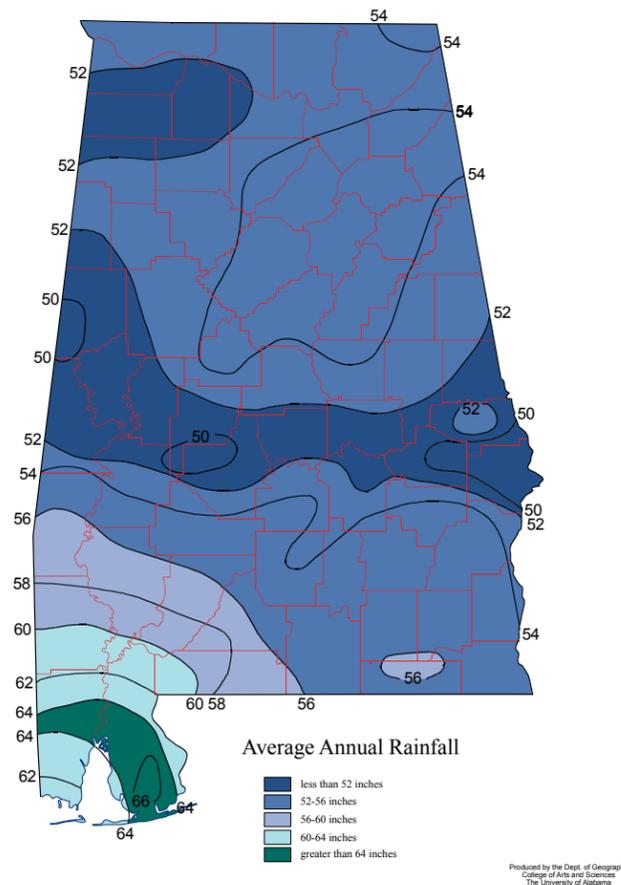
The City of Moulton has a mayor-council form of government with five council members. It is the responsibility of the Town Council to adopt policies governing the current operation and development of the city. The town also utilizes a nine member Planning Commission to plan and direct new growth and development. The City of Moulton lies just north of the William B. Bankhead National Forest which offers various outdoor activities such as hiking and camping. Other local events and places of interest include the Jesse Owens Memorial Park, Deer Run Golf Course, Fiddle Fest, the Chicken and Egg Festival, the Antique and Strawberry Festival, and the Annual Cherokee River Homecoming Indian Festival.

**JC.2 Climate**

The residents of Lawrence County enjoy temperate climate throughout the year. The average highs during the winter are approximately 50° with average lows around 31°. During the summer, the average highs are typically close to 90° with average lows around 69°. The area experiences four distinct seasons.

Climate Averages for Moulton, AL	
Average Annual Temperature	61.1° F
Average High Temperature	72.5° F
Average Low Temperature	49.7° F
Highest Recorded Temperature	106° F
Lowest Recorded Temperature	-13° F
Average Annual Precipitation	57”
Average # of Days with Precipitation	118
Average Annual Snowfall	4.2”

*Source: weatherbase.com*



**JC.3 Economic Data**

**Industry Summary**

According to 2013 U.S. Census data, the labor force in Lawrence County totaled 14,921 individuals. 7% of this labor force was estimated to be unemployed. The largest industry sector in Lawrence County was Manufacturing with 25.4% employment, followed by Educational Services, Healthcare, and Social Services with a 17.9% employment. The third largest industry sector was Retail Trade with 11.0% employment, followed by Construction with a 9.2% employment. See the Table 3.3 for the complete 2013 industry sector data for Lawrence County. *Source: 2013 U.S. Census American Community Survey 1-Year Estimate, Selected Economic Characteristics, Lawrence County, AL.*

Lawrence County 2013 Industry Sector	% Labor Force
Agriculture, forestry, fishing, hunting, and mining	3.4%
Construction	9.2%
Manufacturing	25.4%
Wholesale trade	2.4%
Retail trade	11.0%
Transportation and warehousing, and utilities	5.5%
Information	0.7%
Finance and insurance, and real estate and rental and leasing	2.7%
Professional, scientific, and management, and administrative and waste management services	6.1%
Educational services, and health care and social assistance	17.9%
Arts, entertainment, and recreation, and accommodation and food services	6.1%
Other services, except public administration	6.0%
Public administration	3.6%

*Source: 2013 U.S. Census American Community Survey 1-Year Estimates*

**Population Economics**

The 2013 U.S. Census data lists the median household income for Lawrence County as \$38,551. The State of Alabama’s 2013 estimated median household income was \$43,253, which is slightly more than what is estimated for Lawrence County. The poverty level for Lawrence County in 2013 was 17.5%. 13.8% of families in Lawrence County in 2013 were estimated by the Census Bureau to have a household income below the poverty level. *Source: 2013 U.S. Census American Community Survey 1-Year Estimate, Selected Economic Characteristics, Lawrence County, AL.*

Top Middle: Climate Averages for Moulton, AL (Table, 2015: Multi-Hazard Mitigation Planning Team)

Bottom Middle: Average Annual Rainfall in Alabama (Map, 2015: University of Alabama)

Right: Major Employer Groups. (Table 2015: Multi-Hazard Mitigation Planning Team)

Bottom Right: Wheeler Dam Navigational Lock (Photo, 2007: George Green; wikipedia.org)

According to the Alabama Department of Labor, the average weekly wage in 2012 in Lawrence County was \$804. In 2013, the average hourly wage was \$20.26 and the average weekly wage was \$811. Source: Alabama Department of Labor, *Labor Market Information, Annual and Quarterly Employment and Wages*.

According to U.S. Census data, there were 15,164 housing units in Lawrence County in 2013. 34% of the housing units were built between 1990 and 2013, while 56% were constructed between 1950 and 1989, and 10% were built before 1950. 80% of the housing units in Lawrence County in 2013 were owner occupied, while 20% were renter occupied. Of the estimated 2013 housing units sampled, 95% had at least one vehicle for transportation. Median home value in Lawrence County in 2013 was \$94,200 compared to \$122,500 for the State of Alabama. Source: 2013 U.S. Census American Community Survey 1-Year Estimate, *Selected Housing Characteristics, Lawrence County, AL*.

### JC.4 Transportation

Lawrence County’s transportation network consists of U.S. and State highways, rail lines, waterways, and air transportation. U.S. Highway Alternate 72 runs along the south side of the Tennessee River across the northern part of the county. It connects Lawrence County to the Shoals Metropolitan Area to the west and the Decatur Metropolitan Area to the east. U.S. Hwy Alternate 72 shares its corridor with State Highway 20 through Lawrence County. This corridor is also called the Joe Wheeler Highway and provides access to the Joe Wheeler State Park located in north central Lawrence County via Alabama Highway 101. The 72/20 corridor is the main highway running through the Town of Town Creek, the Town of North Courtland, and the Town of Hillsboro. The Town of Courtland is located just off Highway 72/20 to the south. The 72/20 corridor also provides the northern portions of the county access to Interstate 65 in the neighboring City of Decatur.

Alabama State Route 101 is a north-south corridor that runs through the northwest portion of Lawrence County. It’s southern terminus is at the intersection of Alabama Highway 24 and it extends north into Lawrence County and turns into State Highway 227 at the Tennessee state line. Highway 101 crosses the Tennessee River via the Joe Wheeler Dam and connects northern parts of Lawrence County with eastern parts of Lawrence County and south Tennessee.

Alabama State Route 157 is a north-south corridor that crosses

Lawrence County at an angle running from the northwest corner to the southeast corner of the county. It connects Lawrence County to the Shoals area to the northwest and the City of Cullman to the southeast. Highway 157 provides southern portions of the county access to Interstate 65 in the City of Cullman. It runs through the City of Moulton, the largest incorporated place in the county, and connects other smaller towns and communities to this government, commercial, retail, and industrial center.

Alabama State Route 24 is an east-west corridor that crosses the center of Lawrence County and connects the county to the City of Russellville to the west and the City of Decatur to the northeast. It runs through the City of Moulton and connects other smaller towns and communities to this government, commercial, retail, and industrial center. It also provides access to Interstate 65 in the City of Decatur to the east.

Alabama State Route 33 is a north-south corridor that runs through the central part of the county. Highway 33 has a northern terminus in the Town of North Courtland at the Hwy 72/20 junction and extends south to connect Lawrence County to the William B. Bankhead National Forest. Highway 33 runs through the forest and terminates in Double Springs, Alabama. Alabama State Route 36 is a east-west corridor that extends through the southeast portion of the county. Highway 36 has a western terminus in the community of Wren located in south central Lawrence County and extends east to the City of Hartselle.

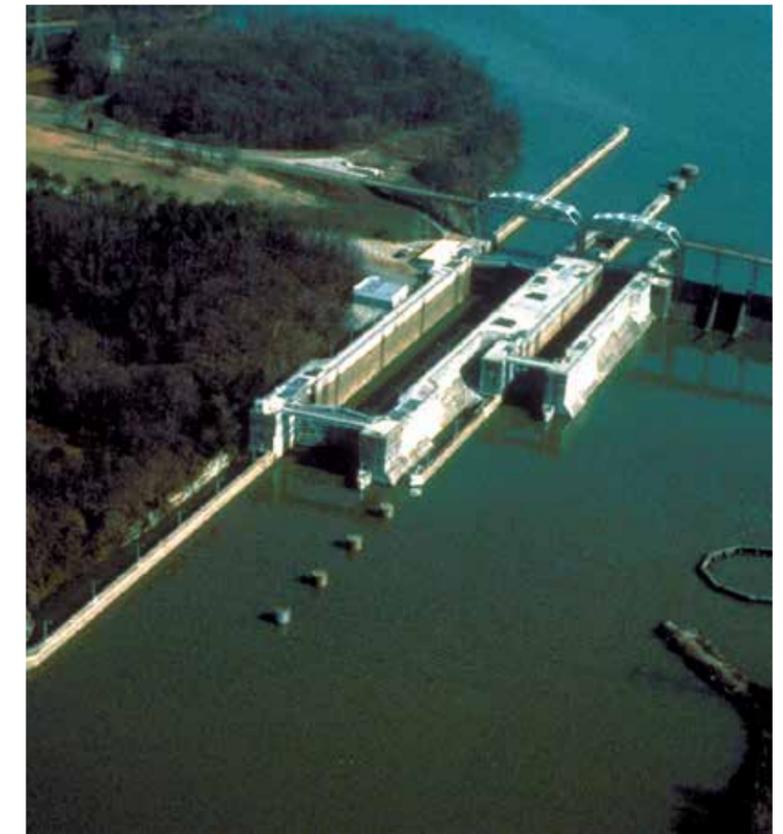
Norfolk Southern provides industrial rail service across north Lawrence County. The line parallels the Highway 72/20 corridor and provides rail transport to the Shoals and Decatur Metropolitan regions. The line runs through the Towns of Town Creek, North Courtland, and Hillsboro.

The Courtland Industrial Airport is located in Lawrence County to the southwest of the Town of Courtland. The airport is owned and operated by the county and has two 5,000-foot runways, one of which is lighted. The airport is served by the Tennessee Valley Air Center. The Huntsville International Airport (HSV), the Nashville International Airport (BNA), and the Birmingham International Airport (BHM) provide international passenger air travel worldwide and are within a 2-hours driving distance from Lawrence County. Lawrence County’s northern boundary is the Tennessee River which extends from Tennessee and Mississippi across the top of the county and the northern portion of the State Alabama. The river consists of many locks and dams and is maintained by the Tennessee

Valley Authority (TVA). Hood Harris Port is Lawrence County’s industrial port located on the Tennessee River. It is located north of North Courtland off County Road 150. The river provides access to the Tennessee-Tombigbee Waterway, connecting Lawrence County with the Port of Mobile and other major ports through the southeast, central and eastern regions of the United States. Nearby ports located on the Tennessee River include the Port of Decatur, one of the busiest ports on the Tennessee River. The Wheeler Dam Navigational Lock, located in Lawrence County along Highway 101 just north of Town Creek, is one of several navigational locks along the Tennessee River. Wheeler Dam is a hydroelectric facility and it provides electrical power to Lawrence County through the Joe Wheeler EMC. Wheeler Dam is 72 feet high and stretches 6,342 feet across the Tennessee River. Wheeler Dam has two locks, one 110 by 600 feet and the other 60 by 360 feet. They lift and lower barges as much as 52 feet between Wheeler and Wilson Lakes.

Source: Tennessee Valley Authority Webpage, *Wheeler Reservoir*.

### Population Growth



Wheeler Dam Navigational Lock

#### Major Transportation Routes:

- U.S. Highway Alternate 72
- AL State Highway 20
- AL State Route 24
- AL State Route 33
- AL State Route 36
- AL State Route 101
- AL State Route 157
- AL State Route 184

#### Industrial Rail Lines:

- Norfolk Southern

#### Air Transportation:

- Courtland Industrial Airport

#### Waterways:

- Tennessee River
- Sipsey Fork of the Black Warrior River
- Wheeler Lake
- Wilson Lake

JC.5 Demographic Data

Lawrence County has had a population decrease since 2010. According to U.S. Census data, Lawrence county had a total population of 34,339 in 2010 and an estimated population of 33,571 in 2013. This indicates a 2% population loss. According to U.S. Census data, all of the incorporated places in Lawrence County have also experienced population loss since 2010. The table below illustrates the population changes for Lawrence County and its jurisdictions. *Source: 2013 U.S. Census American Community Survey 1-Year Estimate, Comparative Social Characteristics and U.S. Census 2013 Population Estimate Program-Annual Estimates of Resident Population.*

Lawrence County Population Change				
Incorporated Place	2010 Census	2011 Estimate	2012 Estimate	2013 Estimate
Lawrence County	34,339	34,044	33,776	33,571
City of Moulton	3,471	3,446	3,420	3,404
Town of Town Creek	1,100	1,093	1,085	1,080
Town of North Courtland	632	627	622	618
Town of Courtland	609	612	607	604
Town of Hillsboro	552	542	537	534

*Source: U.S. Census 2013 Population Estimate Program-Annual Estimates of Resident Population.*

Population By Age and Race

According to 2013 U.S. Census data, 69% of Lawrence County residents are over the age of 25. 5.9% of the population is under the age of five years and 19% is school age. 15% of the population is age 65 and older. The median age of the Lawrence County population is 41.2. Children and the elderly are more dependent on the general population and are more vulnerable in emergencies requiring public assistance. 26% of the population is under the age of 15 and over the age of 75 and, therefore likely dependent on another individual for transportation in the event of an emergency. The table below illustrates the age composition of the population of Lawrence County. *Source: 2013 U.S. Census American Community Survey 1-Year Estimate, ACS Demographic and Housing Characteristics.*

2013 Lawrence County Population By Age		
Under 5 years	2,015	5.9%
5 to 9 years	2,452	7.2%
10 to 14 years	1,946	5.7%
15 to 19 years	2,185	6.4%
20 to 24 years	2,112	6.2%
25 to 34 years	3,779	11.1%
35 to 44 years	4,556	13.4%
45 to 54 years	5,292	15.6%
55 to 59 years	2,547	7.5%
60 to 64 years	2,069	6.1%
65 to 74 years	3,104	9.1%
75 to 84 years	1,515	4.5%
85 years and over	437	1.3%
Median age (years)	41.2	

*Source: 2013 U.S. Census American Community Survey 1-Year Estimate, ACS Demographic and Housing Characteristics.*

According to 2013 U.S. Census data, 77.6% of the population is Caucasian, 11% is African American, and 5.6 is American Indian. 5.3% are two or more races. *Source: 2013 U.S. Census American Community Survey 1-Year Estimate, Race-Total Population.*

Education

The 2013 U.S. Census data reported 77% of the population in Lawrence County has a high school diploma. 12% of the population has a bachelor's degree or higher. The table below illustrates the educational attainment of the population of Lawrence County. *Source: 2013 U.S. Census American Community Survey 1-Year Estimate, Selected Social Characteristics.*

2013 Lawrence County Educational Attainment of Population		
Population 25 years and over	23,299	
Less than 9th grade	2,121	9.1%
9th to 12th grade, no diploma	3,205	13.8%
High school graduate (includes equivalency)	9,063	38.9%
Some college, no degree	4,648	19.9%
Associate's degree	1,479	6.3%
Bachelor's degree	1,896	8.1%
Graduate or professional degree	887	3.8%
Percent high school graduate or higher	77.1%	
Percent bachelor's degree or higher	11.9%	

*Source: 2013 U.S. Census American Community Survey 1-Year Estimate, Selected Social Characteristics*

Disabled Population

21% of the population of Lawrence County is disabled according to U.S. 2013 Census data. 5.4% of the disabled are under the age of 18, 20% are between the ages of 18 to 64, and 50% are age 65 and older. This population can be more vulnerable to emergencies if they lack the ability to respond accordingly on their own and may need public assistance. *Source: 2013 U.S. Census American Community Survey 1-Year Estimate, Selected Social Characteristics.*

JC.6 Communications

The ability to communicate information to the population within a jurisdiction is extremely important in a time of emergency. Local governments and emergency responders use various forms of communication to achieve public notification including television, radio, internet (social media), newspapers and telephone. The Moulton Advertiser of Moulton, Alabama is the main newspaper in Lawrence County and is the oldest weekly newspaper in the state. The following provide cable or satellite T.V. service in Lawrence County: Comcast Communications, Direct T.V., Dish Network, Charter Cable, and AT&T. Comcast Communications and AT&T provide telephone service to the county. The local Lawrence County radio station is WALW 98-FM which operates 24-hours from its studio in Moulton. The format includes a unique blend of country, rock, bluegrass, blues and gospel. It is called All Southern. The station also broadcasts live local sports. It is locally owned by CEI Radio. Internet providers in Lawrence County include Comcast Communications, AT&T, Charter Cable, Direct T.V., and Century Link.

JC.7 Utilities

The City of Moulton provides water (Moulton Water Works), sewer, and gas (Wheeler Basin Natural gas) services within their municipal boundary. The Town of Town Creek provides water and sewer services to residents via Town Creek Utilities. Town Creek uses Lawrence-Colbert Gas for its gas service. West Lawrence Water -Co-op provides water to much of the western portions of the county. The towns of Courtland and North Courtland provide water service throughout their jurisdiction via the Town of Courtland Utilities. Courtland purchases water from West Morgan-East Lawrence Water Authority and the City of Moulton.

Electrical utilities are provided throughout the entire county by the Tennessee Valley Authority Joe Wheeler EMC. The Town of Courtland purchases electricity from Joe Wheeler EMC then provides its residents with service.

Left Center: Population Change 2010-2013 (Table, 2015: Multi-Hazard Mitigation Planning Team)

Middle Top: 2013 Population by Age. (Table, 2015: Multi-Hazard Mitigation Planning Team)

Middle Bottom: 2013 Educational Attainment of Population (Table, 2015: Multi-Hazard Mitigation Planning Team)

Television:

- Comcast Communications
- DirecTV
- AT&T
- DISH Network
- Charter Cable

Newspapers:

- Times Daily - , AL
- Huntsville Times - Huntsville, AL
- Birmingham News - Birmingham, AL
- East Courier Journal

Telecommunications:

- AT&T
- Comcast Communications

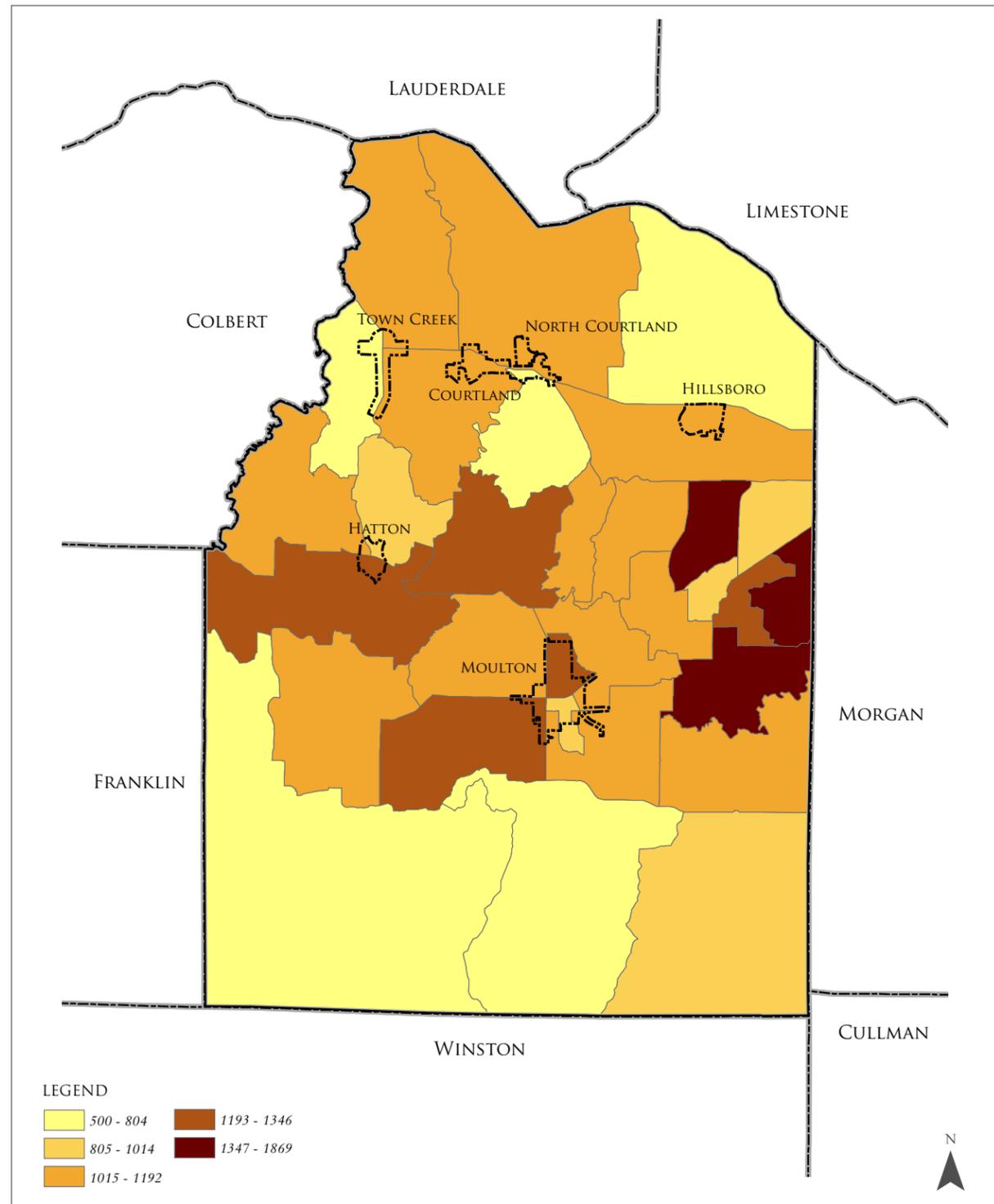
Local Radio Stations:

- WALW 98-FM

Internet:

- Comcast Communications
- AT&T
- Charter Cable
- DirecTV
- Century Link

Image: Population of 2010 Census  
 (Map, 2015: Multi-Hazard Mitigation Planning Team)



Population of 2010 Census per Block Group  
 (2010 population: 34,309)

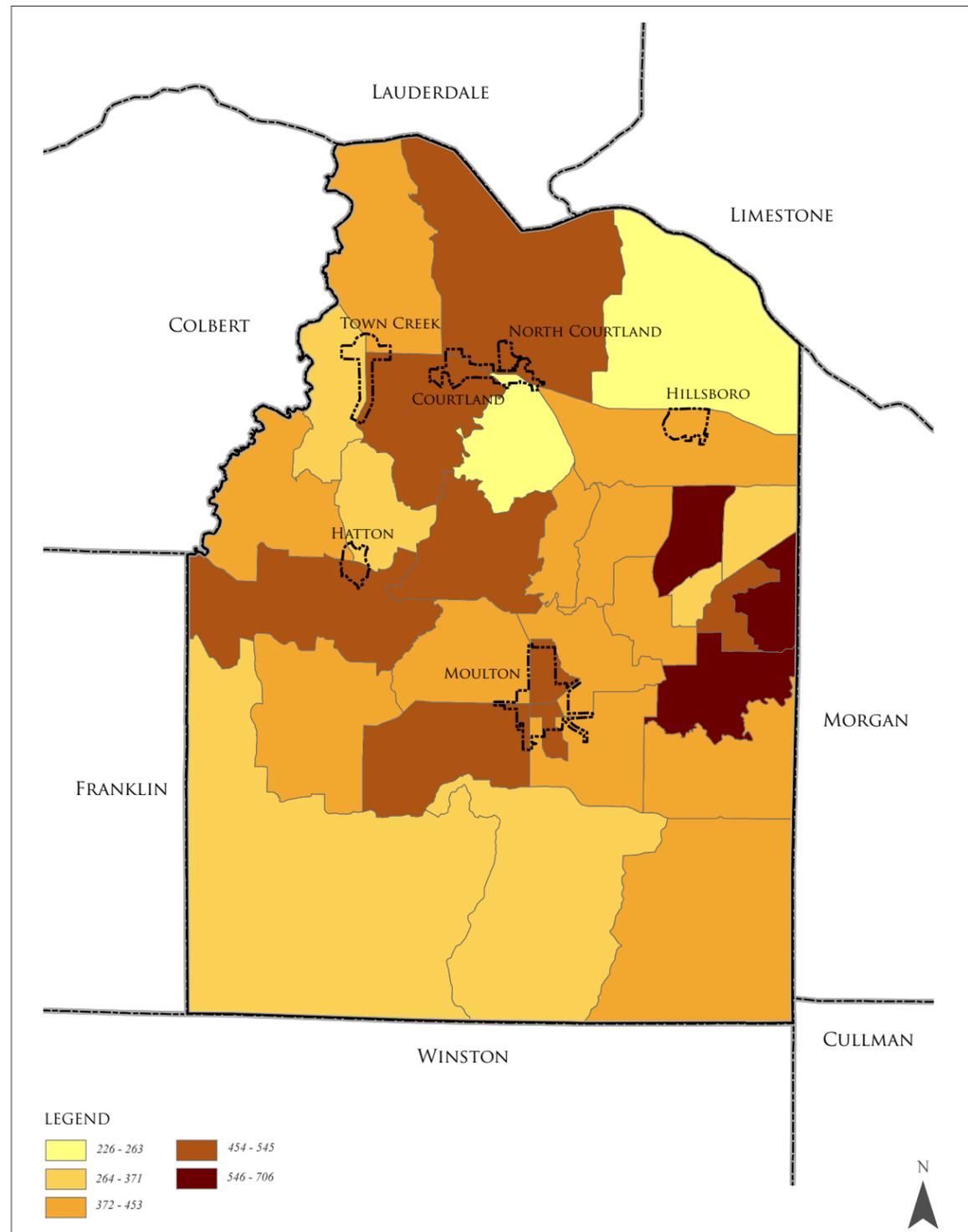
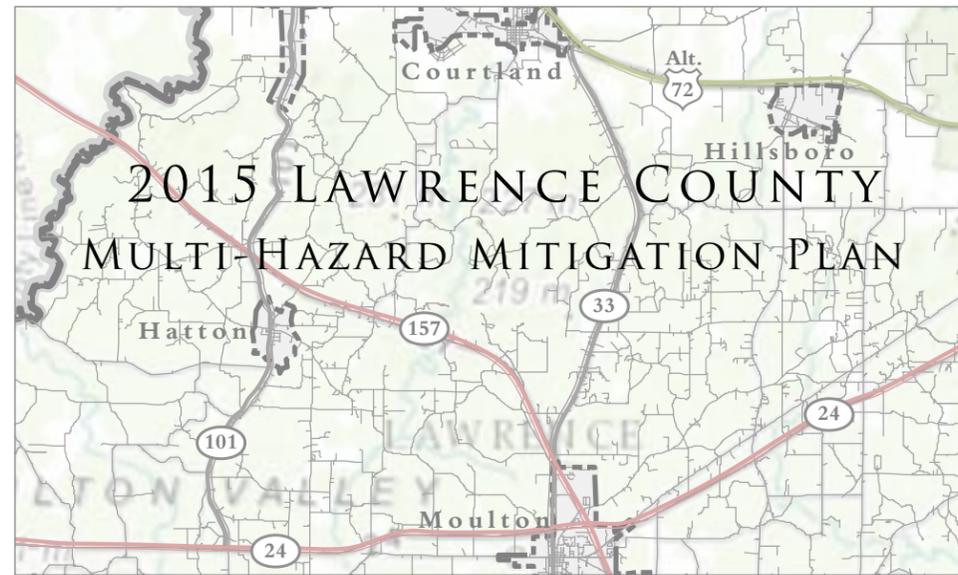


Image: Population by Blockgroup  
 (Map, 2015: Multi-Hazard Mitigation Planning Team)

*Households per Blockgroup  
 (2010 total households: 13,654)*





**Requirements §201.6(b) and §201.6(c)(1):**

An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- 1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- 2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process; and
- 3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

**PLANNING PROCESS**

- PP.1 DOCUMENTATION OF PLANNING PROCESS
- PP.2 OPPORTUNITIES FOR PUBLIC COMMENT
- PP.3 OPPORTUNITIES FOR STAKEHOLDER INVOLVEMENT
- PP.4 PUBLIC & POLICY COMMITTEE PARTICIPATION
- PP.5 PRECEDENT & PLAN STUDY INTEGRATION
- PP.6 PLAN PREPARATION
- PP.7 IMPLEMENTATION PERIOD PUBLIC INVOLVEMENT

*This section documents the planning process which details the opportunities for the public to comment on the plan at all stages of its formation, and the involvement of any neighboring communities, interested agencies, and private and non-profit organizations.*

**PP.1 Documentation of Planning Process**

A strategy for public involvement in the planning process was established by the Lawrence County Hazard Mitigation Policy Committee during the initial meeting held in June 2014. Public involvement continued throughout the development of the plan and directed the goals and objectives identified by Policy Committee members within their jurisdictions. The initial planning process resulted in the identification of four mitigation planning groups: the Lawrence County Hazard Mitigation Policy Committee, the Lawrence County Hazard Mitigation Planning Team, the Lawrence County Stakeholders and the planning jurisdiction Citizen Participants.

The Policy Committee is responsible for overseeing the implementation of the hazard mitigation strategies and is composed of elected and appointed officials such as mayors, school superintendents, hospital executives, and university policy officials. A list identifying policy committee members is located in this section. The stakeholders are first responders, police and fire department personnel, and individuals representing local, state, regional, and federal agencies. Stakeholders also include major employers, non-profit organizations, and neighboring counties. The citizen participants are interested citizens from the planning study area in

Lawrence County. Each group contributed to the identification of potential hazards within the study area and proposed mitigation strategies to lessen their adverse effects.

The first Lawrence County Hazard Mitigation Policy Committee meeting was held on June 18, 2014 and focused on educating the policy committee participants on existing conditions and potential natural disasters within their study area and informing them on possible mitigation actions for each disaster. Activities included review of the previous plan, updates of FEMA regulations and new local information, and proposal of the new plan preparation and development schedule. Subsequent meetings with policy committee members, the mitigation planning team, stakeholders, and citizens allowed for further clarification and identification of mitigation actions for each hazard potential within the study area. Communication with the Planning Team and among planning groups was readily available via, mail, phone, email, and local meetings. Policy Committee members also continued to discuss plan development within the jurisdictions they administrate.

Neighboring communities located outside of the study area were contacted for participation in the planning process by either attending meetings as stakeholders or providing valuable information considered in the development of this plan. Participating adjacent jurisdictions include EMA Offices of Colbert, Lawrence, Limestone, Morgan, Winston, and Franklin Counties of Alabama.

To foster regional involvement and input into the plan, the North Central Alabama Regional Council of Governments (NARCOG) was also contacted. NARCOG serves as the regional planning agency for three counties in north central Alabama. Lawrence County and the planning study jurisdictions participate in regional planning with the regional council.

A public hearing to receive comments on the plan was held by each jurisdiction within the study area. Each individual participating jurisdiction adopted this document by resolution and the original resolutions are kept on file at the Lawrence County Emergency Management Office.

**PP.2 Opportunities for Public Comment**

The Lawrence County Hazard Mitigation Planning Team held several meetings throughout the development of this plan within the study area to provide opportunity for public participation. In attendance at these meetings were members of the Lawrence County Hazard Mitigation Policy Committee and community stakeholders who guided interested citizen participants through the identification of hazards and possible mitigation efforts within their communities. Public involvement resources included a Hazard Identification Survey and a Mitigation Strategy Survey. Public involvement was also possible through participation in an online survey, the Lawrence County Hazard Mitigation Public Survey, which was assessable via the internet for seven months during plan development. The public had an additional comment period after the development of the plan during a draft plan review meeting in September 2015. The following community meetings were hosted by the Lawrence County Hazard Mitigation Planning Team within the study area to facilitate citizen participation and public comments during the development of this plan:

- Lawrence County Hazard Mitigation Policy Committee meeting and workshop for plan review and development and identification of hazards and critical facilities. 6-18-14
- Lawrence County Hazard Mitigation Plan public hearing for the plan update. 7-7-14
- Lawrence County Hazard Mitigation Plan citizen and stakeholder involvement meeting at LC EMA office in Moulton. 7-7-14
- Lawrence County Hazard Mitigation Plan citizen and stakeholder involvement meeting in Town Creek. 7-8-14
- Lawrence County Hazard Mitigation Plan citizen and stakeholder involvement meeting in Hillsboro. 7-9-14
- Online Mitigation Strategy Public Survey for policy committee, stakeholders, and citizen input. 8-26-14 to 3-31-15
- Online email follow-up of mitigation strategies with participating jurisdictions. September 2014 - March 2015
- Lawrence County Hazard Mitigation Plan Draft distribution to policy committee members, stakeholders, and citizens for review and comments. September 2015.



### PP.3 Opportunities for Stakeholder Involvement

The Lawrence County Mitigation Planning Team encouraged community stakeholder participation through meeting attendance, phone calls, emails, and online survey participation. The Planning Team requested participation from all applicable regional, state, and federal agencies and received input and cooperation. The agencies provided a wealth of information in regards to the hazard profiles, vulnerability assessment, potential losses, land use and development trends, existing plans, and data mapping. The following is a list of participating agencies that provided input in the development of this plan:

#### Federal Agencies

- National Weather Service-Huntsville
- United States Geological Survey, Alabama District
- Tennessee Valley Authority
- United States Army Corps of Engineers
- Federal Emergency Management Agency

#### State Agencies

- Alabama Emergency Management Agency
- Alabama Forestry Commission

#### Regional Agencies

- Lawrence County Revenue Commissioner's Office
- Lawrence County EMA
- North Central Alabama Regional Council of Governments

#### Local Agencies

- Lawrence County 911
- City of Moulton Utilities
- West Lawrence Water Co-op
- West Morgan-East Lawrence Water Authority
- Lawrence-Colbert Gas
- Town of Town Creek Utilities
- Town of Courtland Utilities
- Business, Academia, and Non-Profit Agencies
- Lawrence County Industrial Development Board
- Lawrence County School District
- Lawrence County Chamber of Commerce
- Lawrence Medical Center

### PP.4 Public & Policy Committee Participation

#### Policy Committee Composition

The Lawrence County Hazard Mitigation Policy Committee is composed of elected leaders, or their appointees, from the county or municipalities within the planning area. In addition, key personnel of agencies and/or entities involved with hazard response within the planning area also serve on the policy committee. The members of the policy committee are listed below:

- Clarence Logston, Mayor, Town of Courtland
- Charles Owens, Mayor, Town of Hillsboro
- Ronald Jones, Mayor, Town of North Courtland
- Mike Parker, Mayor, Town of Town Creek
- Ray Alexander, Mayor, City of Moulton
- Mose Jones Jr., Chairman, Lawrence County Commission
- Johnny Cantrell, EMA Director, Lawrence County EMA
- Tammy Vinson, Director, Lawrence County 911
- Heath Grimes, School Superintendent, Lawrence County Schools
- Kyle Buchanan, Lawrence Medical Center
- Jeffrey Pruitt, Executive Director, North Central Alabama Regional Council of Governments
- Tony Stockton, Lawrence County Industrial Recruitment and Development
- Jonas Hobbs, Lawrence County Fire Association

#### Hazard Mitigation Plan Update

The 2015 Lawrence County Hazard Mitigation Plan was updated under the direction of the Hazard Mitigation Planning Team which consists of the Lawrence County EMA, Lawrence County 911, and FarmerMorgan, LLC. The 2015 plan format was updated from the 2010 format to better meet new FEMA requirements for Hazard Mitigation Plan contents. Benjamin Farmer, AICP principal of FarmerMorgan, LCC has served as the planning consultant and will continue to provide planning consulting to the planning team and the Lawrence County EMA with revisions, amendments and updates to the 2015 Lawrence County Hazard Mitigation Plan.

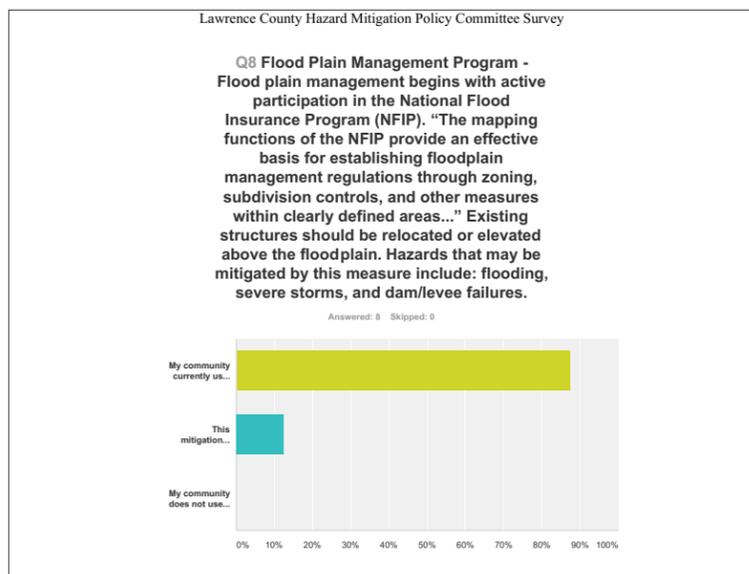
Bottom Left: Multi-Hazard Mitigation Policy Committee Survey (Screenshot, 2015: Multi-Hazard Mitigation Planning Team)

**Lawrence County Emergency Management Agency Stake Holder Meeting Dates**

Stake Holder Involvement meetings are being held throughout Lawrence County in order to involve citizens, leadership, agencies, industry and non-profits in the identification of natural, technical and human made hazards. In addition, your input is needed in determining the best method for mitigating local hazards in your community. All meetings are held at 6:00 p.m.

**Stake Holder Meeting Date & Location:**

Lawrence County EMA Office (555 Walnut Street, Moulton, AL) :	7 July 2014
Town Creek City Hall (1600 Main Street, Town Creek, AL) :	8 July 2014
Hillsboro Fire Hall (17577 AL Highway, Hillsboro, AL) :	9 July 2014



*PP.5 Precedent & Plan Study Integration*

Coordination between all participating jurisdictions and applicable local and state agencies is paramount to developing a successful hazard mitigation plan. Therefore, each jurisdiction within the planning area provided existing plans, studies, ordinances, regulations, and city/town codes from their jurisdiction. Other local and state agency documents and plans were also consulted for consistency with future hazard mitigation strategies. Integrating existing planning efforts and mitigation action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other community programs. The North Central Alabama Regional Council of Governments (NARCOG) assists many of the municipalities within the planning area with planning assistance and regulatory document developments and updates. NARCOG maintains a local resource library that serves the region and provides support and coordination between counties and local governments within their jurisdiction. The Council is an invaluable resource to the region and their document library was reviewed for hazard mitigation strategy development and updates. The following documents were reviewed and consulted during the 2015 Lawrence County Hazard Mitigation Plan update:

- Alabama Emergency Management Agency Annual Report, 2013
- Lawrence County Emergency Operations Plan
- NARCOG Human Services Coordinated Transportation Plan, 2011
- The Wildfire Prevention Plan, Alabama Forestry Commission
- The Wildfire Readiness Plan, Alabama Forestry Commission
- Flood Insurance Study of Lawrence County, Alabama
- The Tennessee Valley Authority Dam Safety Emergency Action Plan
- Tennessee Valley Authority Wheeler Watershed Plan
- Tennessee Valley Authority Dam Safety Emergency Action Plan
- Lawrence County Subdivision Regulations
- Lawrence County Flood Prevention Ordinance
- Lawrence County Solid Waste Management Plan
- Lower Town Creek Watershed Management Plan - NARCOG
- Hillsboro Comprehensive Master Plan - NARCOG
- North Courtland Comprehensive Master Plan - NARCOG

- Multi-hazard Loss Estimation Methodology-Hurricane Model User Manual
- for HAZUS - MH MR-4
- Multi-hazard Loss Estimation Methodology-Earthquake Model User Manual for HAZUS - MH MR-4
- Multi-hazard Loss Estimation Methodology-Flood Model User Manual for HAZUS - MH MR-4

*PP.6 Plan Preparation*

The planning process update officially began with a kick-off meeting on June 18, 2014 with the Lawrence County Hazard Mitigation Policy Committee for the review of the previous plan, updates of FEMA regulations and new local information, and proposal of the new plan preparation and development schedule. Since the 2010 Plan, there have been changes in elected officials within the study area as well as initiatives. After updating these changes, the Policy Committee developed the public participation process and began collecting new data and documents applicable to the update of the plan.

The Policy Committee meeting focused on educating the participants on existing conditions and potential natural disasters within their study area and informing them on possible mitigation actions for each disaster. The meeting introduced each member to mitigation planning and their role in guiding the planning, development and implementation of the hazard mitigation plan. Committee members participated in hazard mitigation workshop exercises and were divided into mitigation strategy category action groups for the development of mitigation actions per identified risks. Copies of the 2010 Plan were distributed with specific components of the document discussed. A hazard mitigation survey was distributed to identify potential hazard risks most prevalent for the planning area. Finally, critical facilities surveys were distributed for evaluation and updating from the 2010 Plan. Each jurisdiction evaluated the previous list of critical facilities and modified it according to the current needs and assessment of the jurisdiction.

The first stakeholder and citizen involvement meeting was held on July 7, 2014 in Moulton at the Lawrence County EMA office. Subsequent stakeholder and citizen involvement meetings were held on July 8, 2014 in Town Creek, and July 9, 2014 in Hillsboro. All meetings were held at 6:00 in the evening allowing for greater participation from stakeholders and citizens.

The Planning Team collected 23 Hazard Identification surveys at the meetings and workshops. Data collection from the Policy Committee, stakeholders, and citizens continued via an online Mitigation Strategy Public Survey from August 2014 to March 2015. All Planning Team members, Policy Committee members, and stakeholders were contacted via email with a link to the online survey and asked to distribute the survey throughout their jurisdiction. The intent of the survey was to increase public involvement in the process by making the survey more convenient and accessible to all citizens. There were 8 respondents to the online mitigation strategy survey. The results of the survey are contained in the Appendix.

Policy Committee members and stakeholders who were unable to attend meetings or workshops were provided with the material discussed at the meeting and given assistance, if needed, by a member of the Planning Team. The week of **October 2015**, the Planning Team and Policy Committee reviewed the draft plan with distribution being made available to the public within each planning jurisdiction. Afterwards, the planning team assembled the final draft for submission to FEMA/ALEMA.

2015 Lawrence County Hazard Identification Survey Results	
Hazard	Number of Respondents that Identified the Hazard as a Threat within the Planning Area
Avalanche	0
Dam/Levee Failure	19
Drought	22
Earthquake	21
Expansive Soils	13
Extreme Heat	23
Flood	23
Hailstorm	23
Hurricane	14
Land Subsidence	19
Severe Winter Storm Freeze	21
Tornado/Severe Storm	23
Wildfire	19
Windstorm	21

*Source: Responses from Meeting and Workshop Attendants*

2015 Lawrence County Mitigation Strategies Survey Results	
Proposed Mitigation Strategy	Number of Respondents that Identified their Jurisdiction as Using the Strategy or Would Use the Strategy in the Future
Comprehensive Planning	7
Building Codes and Construction Requirements	7
Capital Improvements Programs	6
Open Space Preservation	4
Storm Water Management	5
Land Use Development Regulations	3
Subdivision Regulations	4
Floodplain Management Programs	8
Levee and Dam Management	4
Establishing Defensible Space within the Wildland Urban Interface	2
Burn Permits	6
Safe Shelter Requirements	8
Public Right-of-Way Maintenance Regulations	6
Critical Facilities Assessments	6
Geographic Information Systems	4
Planning Studies	5
Mitigation Planning Technology Support	8
Real Estate Flooding Acquisition and Building Relocations	2
Flood Prone Building Proofing and Retrofitting	2
Critical Facilities Protection	4
Freeboard Requirements for Building Elevations	1
Emergency Power Generation	7
Separate Sewer System Collection and Protection	7
Storm Shutter Programs and Installation	2
Building Retrofit and New Construction of Shatter Resistant Glass Structures	4
Outreach Projects	6
Real Estate Disclosure Requirements	4
Hazard Information Kiosk and Centers	4
School Age Education Programs	3
Adult and Community Education Programs	6
Hazard Mitigation Plan and Pamphlet Distribution	6

Flood Map Information Distribution	6
NOAA Weather Radio Programs	8
Press and Media Mitigation Releases and Training Sessions	7
Sediment and Erosion Control	4
Stream Corridor Restoration	4
Watershed Management	4
Forest and Vegetation Management	4
Wetland Restoration and Preservation	3
Open Space Easements and Acquisition	2
River/Stream Corridor Restoration and Protection	3
Urban Forestry Planning and Development Programs	3
Press and Media Mitigation Releases and Training Sessions	7
Water Resource Conservation Programs	5
Storm Water Diversion Culverts	8
Storm Water Flood Walls	3
Seawalls	1
Retaining Walls	1
Neighborhood and Community Safe Rooms	7
Dam Modifications	2
Storm Sewer System Construction	4
Ground Stabilization	3
Reservoir Construction	2

*Source: Mitigation Strategies Online Public Survey Respondents*

Left: Hazard Identification Survey Results (Chart, 2015: Multi-Hazard Mitigation Planning Team)

Center: Mitigation Strategies Survey Results (Chart, 2015: Multi-Hazard Mitigation Planning Team)

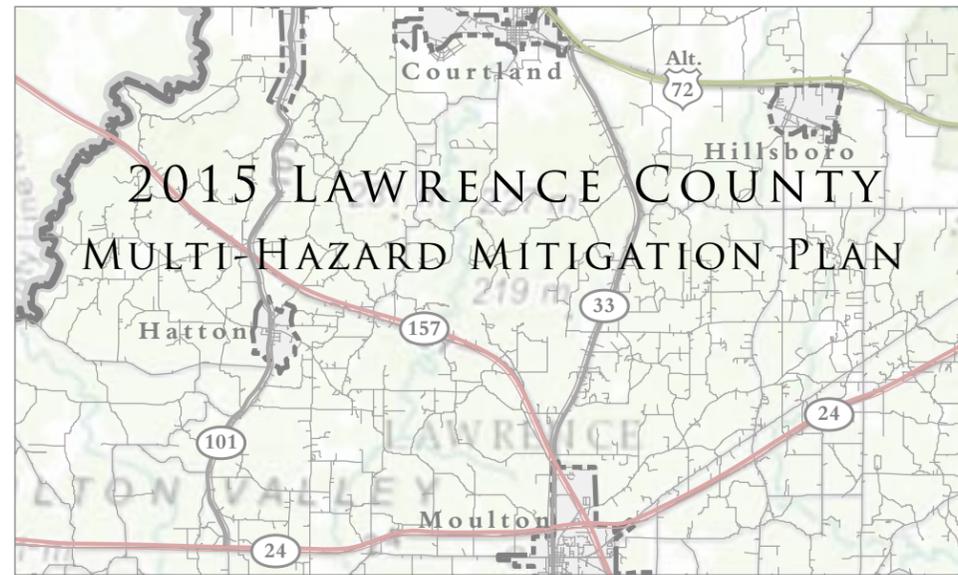
*Image: Lawrence County Emergency Management training conference on managing disasters at the local level.*  
(Photo, 2014: Lawrence County EMA)

*PP.7 Implementation Period Public Involvement*

The 2015 Lawrence County Hazard Mitigation Policy Committee will oversee the implementation and maintenance of the plan. The Lawrence County EMA will serve as the plan facilitator throughout the planning area and will host quarterly scheduled meetings to monitor the implementation of mitigation strategies throughout the jurisdictions and evaluate the effectiveness of the strategies for each identified risk. A more detailed description of plan implementation efforts is discussed in the Plan Maintenance section of this document.

The Lawrence County EMA will also maintain ongoing public education, outreach, and involvement with the plan and provide comment periods within the five year planning cycle. A hard copy of the plan will be available at appropriate entities as well as via individual request and on the web.





**44 CFR Requirement §201.6(c)(2):**  
 [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

**Requirement §201.6(c)(2)(i):**  
 [The risk assessment shall include a] description of the type...of all natural hazards that can affect the jurisdiction.

*Right: Identified Hazards in Lawrence County (Chart, 2015: Multi-Hazard Mitigation Planning Team)*

**RISK ASSESSMENT**

- RA.1 IDENTIFICATION OF JURISDICTIONAL HAZARDS
- RA.2 HAZARD DESCRIPTIONS & HAZARD PROFILES
- RA.3 ASSESSING VULNERABILITY OVERVIEW
- RA.4 ADDRESSING REPETITIVE LOSS PROPERTIES
- RA.5 IDENTIFYING STRUCTURES
- RA.6 ESTIMATING POTENTIAL LOSSES
- RA.7 ANALYZING DEVELOPMENT TRENDS

*Risk assessment identifies and profiles hazards likely to occur within an area and assesses the impact to lives, property, and infrastructure from these hazards. The goal of the risk assessment process is to estimate the potential loss in the planning area, including loss of life, personal injury, property damage, and economic loss, from a hazard event. It allows communities to better understand their potential risk to natural hazards and develop a plan for responding to the hazard to minimize loss and damage within the community.*

**RA.1 Identification of Jurisdictional Hazards**

The jurisdictional hazards listed in this plan were identified by the Lawrence County Multi-Jurisdictional Hazard Mitigation Policy Committee through online mitigation public surveys, policy committee surveys, citizen meetings and workshops, community stakeholder interviews, and local sources, such as the Lawrence County EMA. The State of Alabama 2014 Hazard Mitigation Plan Update, the National Weather Service, NOAA Storm Events Database, and local media and internet sources were also used to obtain data. The hazards were quantified by their level of probability and concern within the study area. There were eight respondents to the online Hazard Mitigation Survey and 23 paper Hazard Identification Surveys submitted at workshops and meetings. These surveys established what hazards were included in this plan and provided the planning team with an understanding of the public's perception of the types of hazards that impact the study area. The hazards identified as impacting the study area are listed in the table below.

Lawrence County Identified Hazards							
Hazard type	Associated Hazard	Lawrence County	Town Creek	Moulton	Courtland	North Courtland	Hillsboro
Earthquake	Landslides	Yes	Yes	Yes	Yes	Yes	Yes
Extreme Temperatures	Wildfires	Yes	Yes	Yes	Yes	Yes	Yes
Dam/Levee Failure	Floods	Yes	Yes	No	Yes	Yes	Yes
Hazardous Materials		Yes	Yes	Yes	Yes	Yes	Yes
Hurricanes/ Coastal Storms	Tropical storms severe storms high winds floods	Yes	Yes	Yes	Yes	Yes	Yes
Landslides		No	No	No	No	No	No
Nuclear Accidents							
Sinkholes		Yes	Yes	Yes	Yes	Yes	Yes
Severe Storms Hail High Wind	Thunder Storms Hail high winds lightning tornadoes floods	Yes	Yes	Yes	Yes	Yes	Yes
Tornado	Severe storms high winds	Yes	Yes	Yes	Yes	Yes	Yes
Wildfires		Yes	Yes	Yes	Yes	Yes	Yes
Winter Storm Freezes	Snow Storms hail extreme cold	Yes	Yes	Yes	Yes	Yes	Yes
Expansive Soils		Yes	Yes	Yes	Yes	Yes	Yes

*Source: Hazard Mitigation Planning Team Surveys*

## RA.2 Hazard Descriptions & Hazard Profiles

The following information is specified for each hazard identified in this plan: the hazard description, locations impacted by hazard, previous occurrences of the hazard, an estimated probability of future occurrence, magnitude or severity of the hazard, and estimated annual damage expectations. The following formulas were used to calculate annual estimates:

### Location:

The extent of jurisdictional effect and the percentage of study area susceptible to the hazard is categorized as follows:

- Extensive- 50-100% of planning area affected
- Significant - 10-50% of planning area affected
- Limited - Less than 10% of planning area affected

### Probability of Future Occurrence:

The likelihood of future occurrences is evaluated by engaging the frequency of past events. Therefore, the number of historical events in a time period divided by the number of years from first and last incidents occurred will equal the percent probability of the hazard occurring in any given year.

- Highly Likely - Near 100% chance of occurring in a year
- Likely - 10-100% chance of occurrence in a year or 1 chance in every 10 years
- Occasional - 1-10% chance of occurring in a year or 1 chance in every 100 years
- Unlikely - Less than 1% chance of occurrence in a year or less than 1% chance every 100 years

### Magnitude/Severity of Hazard:

- Catastrophic - Multiple, widespread deaths and severe injuries; widespread, severe property destruction and damage; widespread interruption of essential facilities and services for over a week.
- Critical - Isolated deaths and severe injuries; isolated property destruction and damage; isolated interruption of essential facilities and services for over 3 days.
- Limited - Moderate to minor injuries and illness; moderate to minimal property damage; interruption of essential facilities and services for over 24 hour.
- Negligible - Few or no injuries or illness; little or no property damage; brief interruption of essential facilities and services for less than 24 hours.

### Annual Damage Expectations Formula:

The average annual damages of the hazard event per year is equal to the total dollar amount of damages for each event divided by the number of damage-producing events within that time period.

### Earthquake

#### Description and Profile

An earthquake is the sudden and often violent shaking of the ground as a result of movements in the earth's crust, particularly along fault lines. They can range from mild tremors to severe vibrations caused by the abrupt rupture and rebound of rocks due to release of elastic stress and strain that has been slowly accumulating over long periods of time. Earthquakes can affect thousands of square miles and cause billions of dollars in damage. Earthquakes are common along the west coast but can also be fairly common in the eastern United States and do occur in North Alabama. The North Alabama region is susceptible to earthquakes due to its proximity to two seismic zones: the Southern Appalachian Seismic Zone (SASZ) and the New Madrid Seismic Zone (NMSZ). The Richter Magnitude Scale is the most common and widely used method to measure earthquake strength or the amount of energy released. One Richter value is calculated for each earthquake and is measured at the event's epicenter, represented as a whole number and decimals. The lower the number, the weaker the earthquake and amount of energy released.

### Location

Earthquakes are fairly common in the eastern half of the United States. Four zones of frequent earthquake activity affecting Alabama are the New Madrid Seismic Zone, the Southern Appalachian Seismic Zone, the South Carolina Seismic Zone, and the Bahamas Fracture Seismic Zone. According to USGS, most of the earthquakes we experience in Alabama are associated with the Southern Appalachian Seismic Zone (an extension of the East Tennessee Seismic Zone) that runs along the Appalachian Mountains from the northeastern corner into the central part of the state and the Bahamas Fracture Seismic Zone in southern Alabama.

Lawrence County is located within close proximity to two earthquake seismic zones with the ability to produce a hazardous earthquake event. The Southern Appalachian Seismic Zone (SASZ) is located to the northeast of the study area and has a low level of activity. The New Madrid Seismic Zone (NMSZ) is located to the northwest of the study area and is moderately active. Both seismic zones have the capability of affecting the entire planning area, therefore the percentage of the study area susceptible to this hazard is defined as extensive.

Richter Magnitude Scale		
-1		
0	Negligible	Usually not felt by people but recorded by seismograph; no damage.
1		
2		
3	Minor	Felt by some; hanging objects may sway; dishes may rattle; rarely cause damage
4		Felt by most in the affected area; indoor items shake, sway, and rattle; possible minor damage
5	Moderate	Felt by most and some may seek shelter; some may have trouble standing; minor to moderate damage possible at epicenter a few miles out; walls and door facings may crack; furniture may fall over; damage to poorly constructed buildings; little to no injuries/deaths
6		Difficult to stand; furniture falls over, walls crack; windows break; doors jam closed; moderate damage to buildings at epicenter and beyond; can be destructive up to 100 miles away in populated areas; minor to moderate injuries/deaths
7	Severe	Impossible to move; furniture thrown about; walls and roofs collapse; utilities are damaged and interrupted; roads and bridges damaged; ground distorts; moderate to major damage to most buildings with damage being more severe closer to the epicenter and extending out for miles; moderate to significant injuries /deaths
8+		Widespread death and severe injuries; major destruction for miles; structures destroyed; infrastructures and utilities destroyed; roads and bridges destroyed; ground severely distorted; severe destruction to entire communities

Source: USGS Earthquake Hazards Program

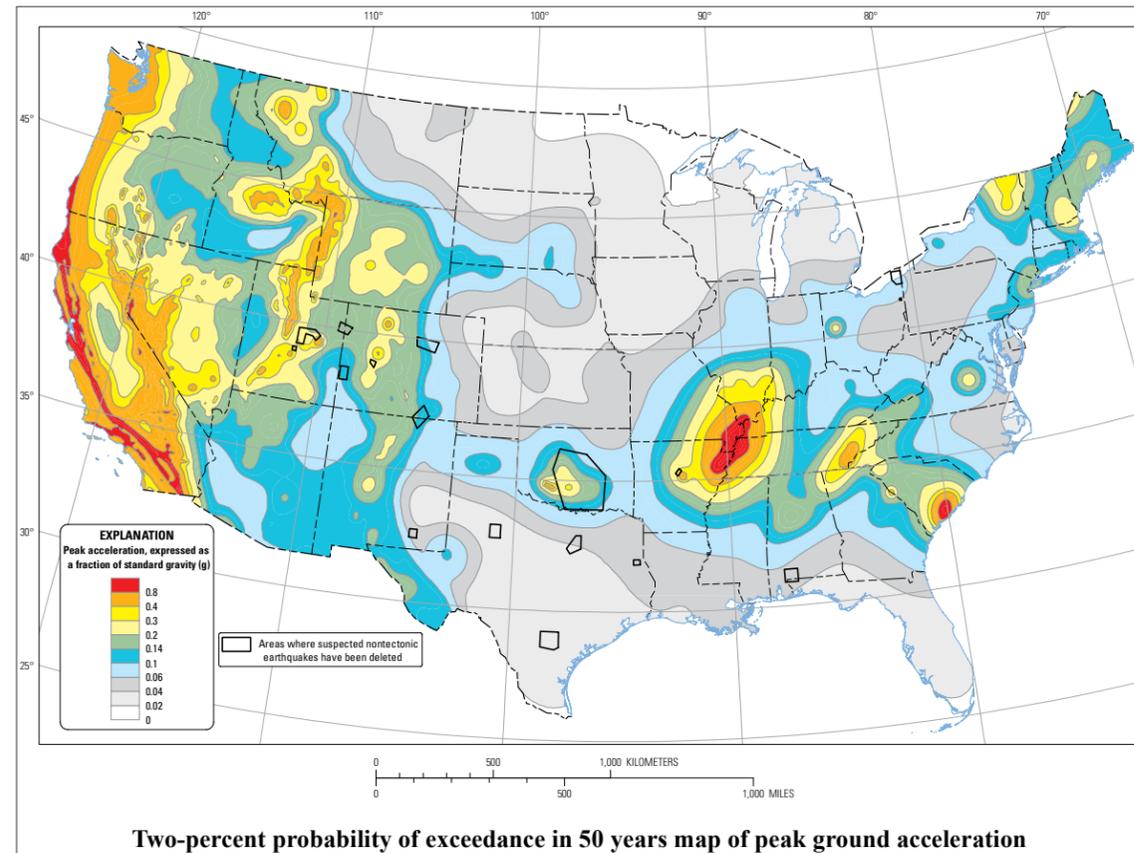
**Requirement §201.6(c)(2)(i):**  
 [The risk assessment shall include a] description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Right: Richter Magnitude Scale  
 (Chart, 2015: USGS Earthquake Hazards Program)

## RISK ASSESSMENT

Left: 2014 United States National Seismic Peak Acceleration Map  
(Map, 2014: U.S. Geological Survey)

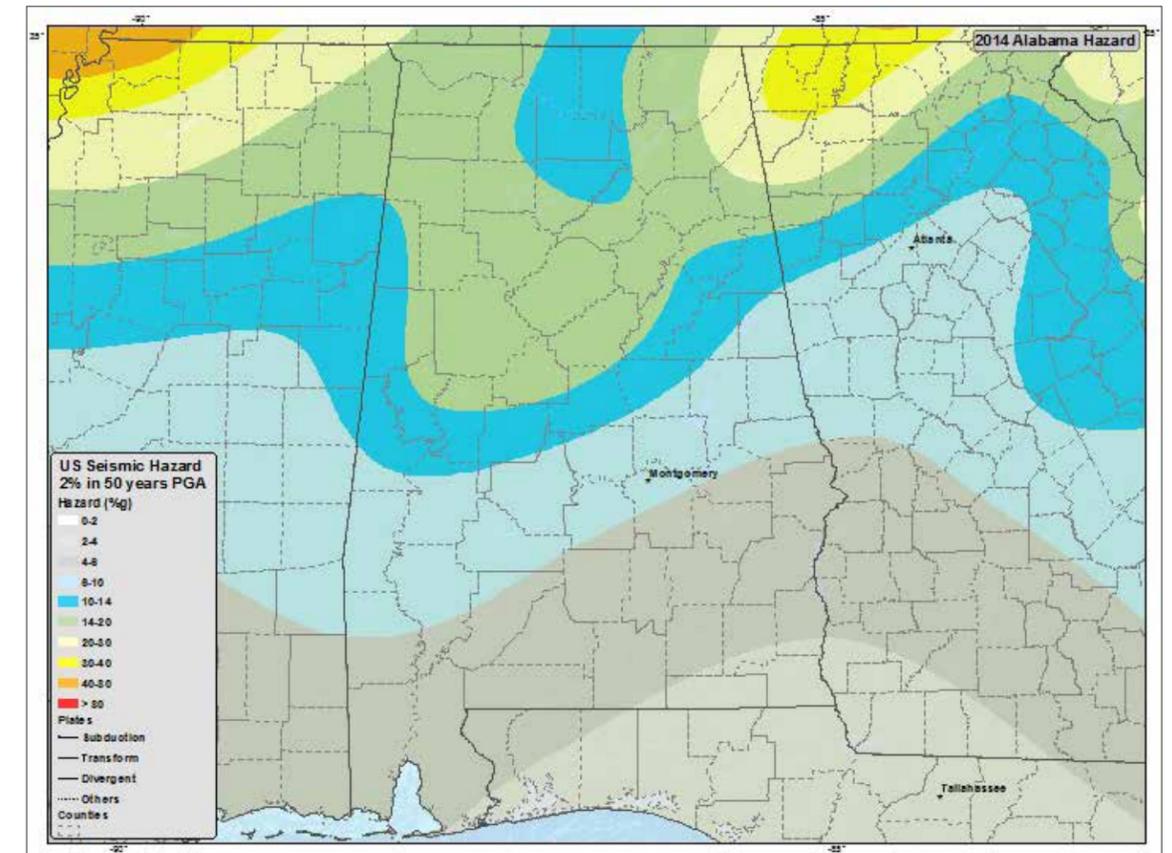
Right: 2014 Alabama Seismic Hazard Map  
(Map, 2014: U.S. Geological Survey)



### 2014 United States National Seismic Peak Acceleration Map

Source: U.S. Geological Survey

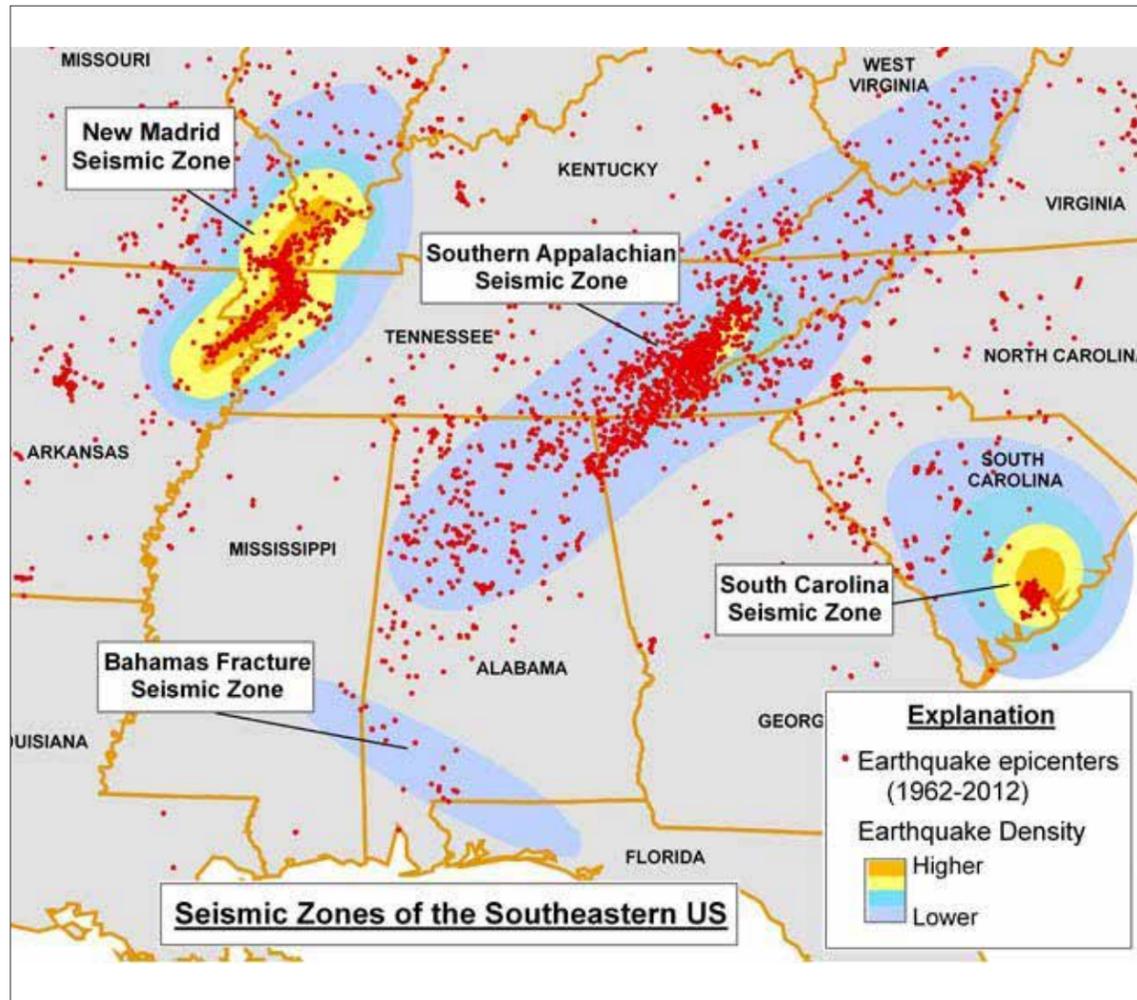
The 2014 U.S. Geological Survey National Seismic Peak Acceleration Map above demonstrates earthquake ground motions for various probability levels across the United States. Seismic provisions for building codes, insurance rate structures, risk assessments, and other public policy regulations are determined according to these probability levels. The map identifies the majority of Lawrence County as being located in an area with 0.14g of hazard probability, and a portion of the county in an area with 0.1g of hazard probability. This necessitates a profile and mitigation plan for this natural hazard.



### 2014 Alabama Seismic Hazard Map

Source: U.S. Geological Survey

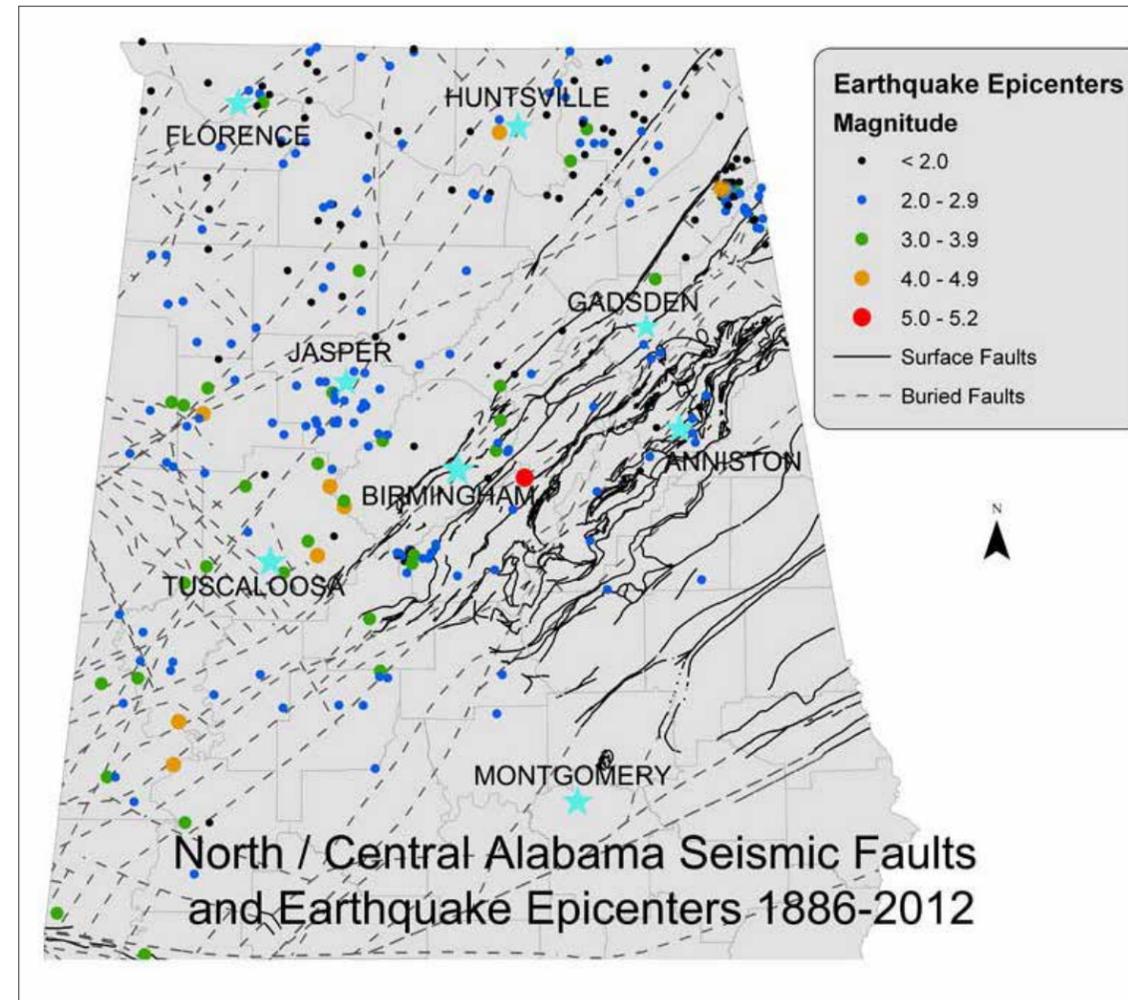
The map above represents the 2014 U.S. Geological Survey shaking-hazard map for Alabama and is based on the rate at which earthquakes occur and the distance shaking extends from the quake source. The various colors show the levels of horizontal shaking that have a 1-in-10 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of g (g is the gravitational acceleration of a falling object). The geographic extent and probability of earthquakes occurring in Lawrence County was assessed as a threat by the policy committee for the entire planning jurisdiction. This threat is based on a 10% to 20% g.



**Seismic Zones of the Southeastern U.S.**

Source: U.S. Geological Survey

Seismic zones in the southeastern U.S. are illustrated in the image above identifying earthquake epicenters occurring throughout the south. The Southern Appalachian Seismic Zone and the New Madrid Seismic Zone are clearly defined and a pattern of earthquake activity is visible in the areas surrounding these zones. Activity decreases the greater the distance away from the seismic zone's center. According to this resource, Lawrence County has experienced considerable seismic activity between 1962 and 2012.



**Historical Earthquakes of North/Central Alabama 1886-2012**

Source: U.S. Geological Survey

The illustration above depicts epicenters of historical Alabama earthquakes from 1886 to 2012 and their associated magnitude. According to the U.S. Geological Survey (USGS), the Southern Appalachian Seismic Zone (SASZ) is capable of a 7.5 magnitude event, although the likelihood of this is very low. A 5-6 magnitude event is estimated to occur at once every 200-300 years. The 1811- 1812 earthquakes (also known as the new Madrid earthquakes) was a sequence of very large earthquakes that devastated areas stretching across Ohio, Kentucky, Missouri, Arkansas, Tennessee, and areas within the Mississippi River Valley. With magnitudes reaching as high as 7.5 and felt over two million square miles, as well as the widespread area of damage estimated at more than 200,000 square miles, the New Madrid earthquakes rank as some of the largest in U.S. history. (USGS). The New Madrid Seismic Zone (NMSZ) is more active and according to USGS, the probability of a repeat of the 1811-1812 earthquakes over the next 50 years is 7-10%. USGS also estimates that the probability of a magnitude 6 or greater event over the next 50 years is 24-40%.

Left: Seismic Zones of the Southeastern United States Map (Map, 2012: U.S. Geological Survey)

Right: Historical Earthquakes of North/Central Alabama Map 1886-2012 (Map, 2012: U.S. Geological Survey)

## RISK ASSESSMENT

Left: Earthquakes in Lawrence County 1886-2012  
(Chart, 2015: Geological Survey of Alabama, Planning Team)

Top Right: Earthquake Probability Assessment Based on Historic Data from 1982-2012  
(Chart, 2015: Multi-Hazard Mitigation Planning Team)

Bottom Center: Historical Earthquakes of Alabama (1886-2012)  
(Photos, 2012: Geological Survey of Alabama)

Bottom Right: Earthquake Photos  
(Photos 2015, istockphoto.com)

### Previous Occurrences

Some magnitude earthquakes have been reported in north Alabama that have been felt in Lawrence County by sources other than the U.S. Geological Survey or the Geological Survey of Alabama. Local news reports and newspapers have all reported increased seismic activity felt in the planning area since the 2010 plan update. 2015 has been unusually active, and the U.S. Geological Survey has detected 13 tremblors in Alabama since January (al.com). However, to maintain source consistency, only U.S Geological Survey and Geological Survey of Alabama data will be used in this study. According to data from USGS in the chart below, there have been six earthquake events of a magnitude of 1 or greater with the epicenter occurring within the planning jurisdiction since 1988. None of the six earthquake events have exceeded a 2.8 in magnitude. According to the USGS, the Richter earthquake magnitude scale defines earthquakes of 2.9 magnitude or less as generally not felt by people and having no damage. Damage occurs with earthquakes of a 4.0 magnitude or higher.

Earthquakes in Lawrence County 1886-2012			
Date	Time	Community	Magnitude
1886	N/A	N/A	N/A
5-27-88	11:08	Moulton	1.4
7-15-89	18:58	Moulton	2.8
4-05-92	11:57	Muscle Shoals (affecting Lawrence County)	2.0
7-31-99	9:47	Moulton	2.6
8-15-00	5:42	Town Creek	1.3
8-29-01	10:17	Moulton	2.2

### Future Probability and Magnitude/ Severity

Although the Lawrence County planning jurisdiction has not experienced an earthquake event higher than 2.8 in the past 26 years, USGS has identified the area as having a probability of a magnitude of 6 or greater event in the next 50 years and therefore mitigation strategies to this risk should be developed. Based on this determination, the future probability of an earthquake event higher than 2.8 is categorized as occasional. The magnitude/severity of the event would depend on the strength of the earthquake and could range between negligible to critical.

Earthquake Future probability assessment based on historic data from 1988-2012			
Extent of jurisdictional affect:	Previous Occurrences:	Percent probability of future annual occurrences	Magnitude/severity of event:
Extensive	6	Occasional-likely	
Lawrence County	6	25%	<3.0 Magnitude= Negligible - Critical
Town of Hillsboro	0	0	<3.0 Magnitude= Negligible - Critical
Town of Courtland	0	0	<3.0 Magnitude= Negligible - Critical
City of Moulton	5	21%	<3.0 Magnitude= Negligible - Critical
Town Creek	1	4.2%	<3.0 Magnitude= Negligible - Critical



Dam/Levee Failure

**Description and Profile**

A dam or levee failure is defined as an uncontrolled release of the water reservoir and can be caused by dam overtopping, excessive seepage, and structural failure of a component. Dam or levee failure can result from excessive rainfall and other natural hazards, such as flooding, earthquakes, and landslides. Dam or levee failure can be catastrophic to surrounding communities and can result in significant loss of life. Any natural event or situation that has the potential to affect the integrity of a dam or levee is considered a dam safety emergency.

**Location**

In 2011, there were over 80,000 dams in the United States according to the U.S. Department of Energy. There are an estimated 2,000 dams of sufficient size in Alabama that can pose a significant threat to property and life. Approximately 32 of these dams are federally regulated with no state legislation in place to regulate dam inspection. Lawrence County has six dams or levees of significant size in the county, including Wheeler Dam and five smaller dams located throughout the county. Wheeler Dam is a hydroelectric power generating facilities and is operated by the Tennessee Valley Authority (TVA). Wheeler Dam is located on the Tennessee River between Lawrence County and Lawrence County in the northwestern portion of the Lawrence County. All dams located within Lawrence County have the capability of affecting the entire planning area; however the City of Moulton is located further south of the Wheeler Dam system and would likely not be directly impacted. The worst case scenario for Lawrence County in the event of a dams/levees failure, such as the Wheeler Dam, would be the potential to create an emergency situation for the northern portions of the county along the Tennessee River including Town Creek, Courtland, North Courtland, and

Hillsboro. These portions of Lawrence County have the potential to experience loss of life in the thousands and the destruction or damage to hundreds of structures. Moulton would not be directly affected because of its distance from a dam or levee. While no dam/levee failures have occurred in Lawrence County based on the best available data, the potential impact and threat of a major dam/levee failure necessitates the need for a profile and mitigation plan for this event. The percentage of the study area susceptible to this hazard is categorized as extensive because 10-50% of the planning area would be affected by this hazard.

**Previous Occurrences**

There have been no occurrences of dam failures within the planning jurisdiction.

**Future Probability and Magnitude/ Severity**

The Tennessee Valley Authority implements a Dam Safety Emergency Action Plan for emergency preparedness in the event of failure at the dams. The Lawrence County EMA has a copy of this plan and is prepared to coordinate efforts if the need arises. Probability of future occurrence of dam failure is categorized as unlikely. Wheeler Dam has the potential to create emergency situations in Lawrence County in the event of dam failure, which necessitates the need for a profile and mitigation for this event. The extent of the potential hazard event for the participating jurisdictions would be severe and cause wide spread damage. Therefore, the magnitude/severity of dam failure within the planning jurisdiction is categorize as critical to catastrophic.

**Dam failure probability assessment and extent of disaster 1940-2013**

Extent of jurisdictional affect:	Previous Occurrences:	Percent probability of future annual occurrence:	Magnitude/ severity of event: Critical-catastrophic
Extensive	0	Unlikely	
Lawrence County	0	0	0
Town of Hillsboro	0	0	0
Town of Courtland	0	0	0
City of Moulton	0	0	0
Town Creek	0	0	0

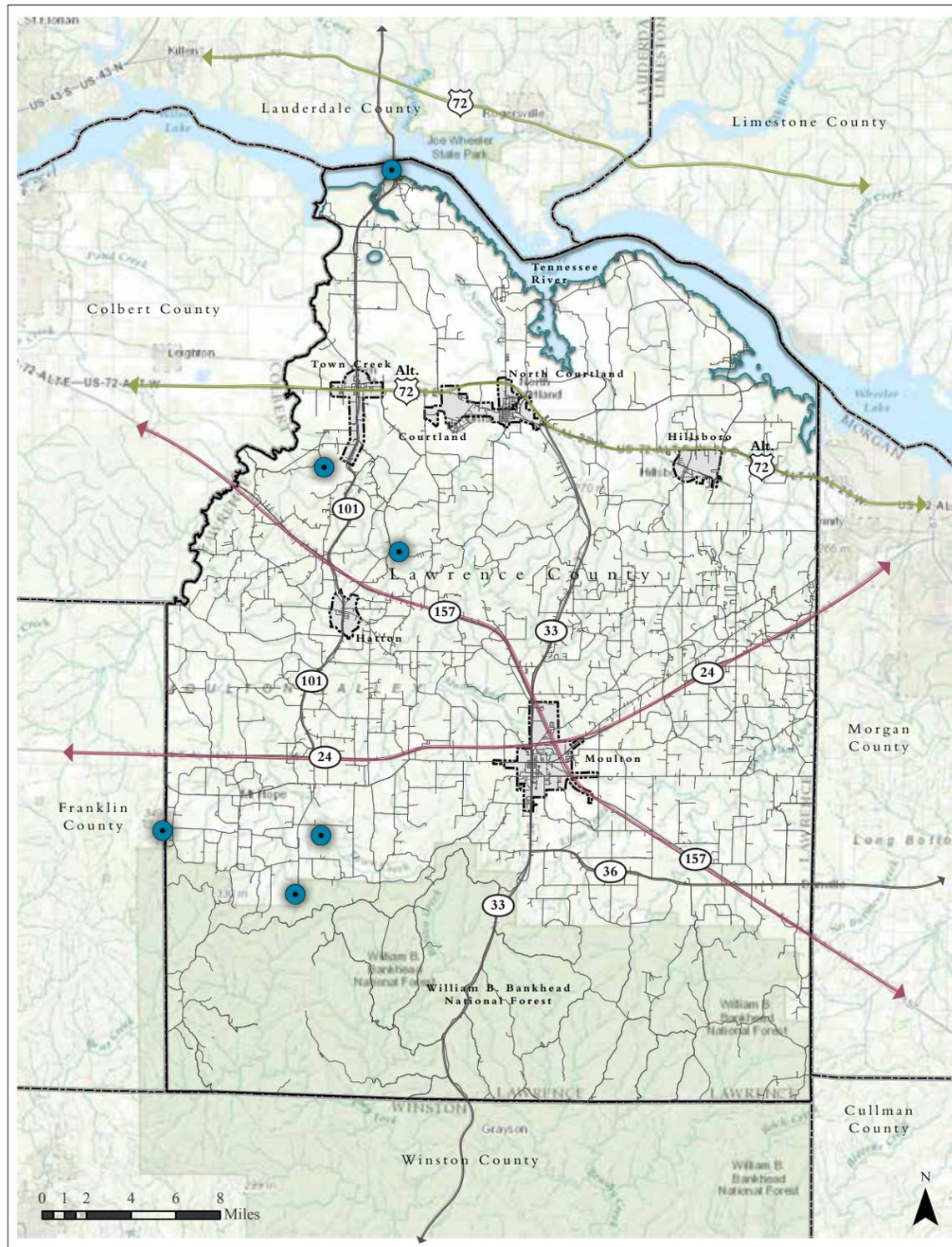
Source: Hazard Mitigation Planning Team



- Left: Dam Inspection (Photo, 2015: istockphoto.com)
- Center: Dam Failure Probability Assessment & Extent of Disaster 1940-2013 (Chart, 2015: Hazard Mitigation Planning Team)
- Top Right: Wheeler Dam (Photo, 2015: tva.com via wikipedia.org)
- Top Middle: Dam Spillway (Photo, 2015: istockphoto.com)
- Bottom Right: Dam Inspection (Photo, 2015: istockphoto.com)

Map: Lawrence County Dam Locations  
(Map, 2015: Multi-Hazard Mitigation Planning Team)

Bottom Right: Palmer-Z Index September 2014  
(Image, 2015: NOAA website)



Dam Locations

**Drought**

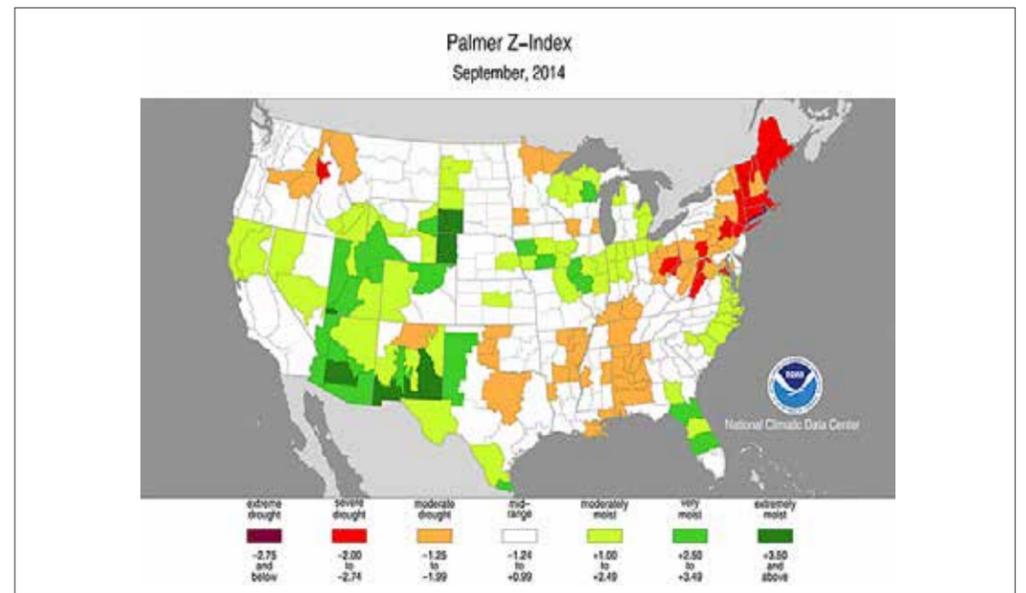
**Description and Profile**

Drought is a prolonged period of low precipitation severe enough to reduce soil moisture and water levels below the minimum necessary for sustaining plant, animal, and economic systems. Droughts are a natural part of the climate cycle and can reduce water supply, threaten crops that rely on natural precipitation, and increase the threat of wildfires. Droughts can have a widespread impact on the environment and the economy. It is difficult to predict when they will occur or when they will end.

**Location**

Lawrence County occasionally experiences short droughts and extreme heat events in the summer season. According to FEMA’s Declaration of Disaster Archives, only one drought event has been significant enough to result in a declaration of emergency in Lawrence County, which occurred in the summer of 1977. The drought caused crop and property damage and a disaster declaration was made on July 20, 1977 for many counties in the state, including Lawrence County. The Tennessee River and its watersheds provides water to irrigate crops and farmland throughout the county and has likely prevented more frequent widespread damage from drought events in the planning jurisdiction.

According to NOAA, Lawrence County typically receives between 54–58 inches of rainfall a year. The National Weather Service’s 2014 Total Yearly Rainfall map for Alabama indicates that Lawrence County received average annual rainfall amounts in 2014. However, during the growing season, NOAA’s 2014 June–August Precipitation data indicates Lawrence County was below average in rainfall, receiving 50–60 inches of rainfall in 2014. 52.37 inches was collected at the Moulton weather station. According to NOAA, Lawrence County received between 4–8 inches of rainfall in June; between 4–8 inches in July; and in August, Lawrence County received 3–4” of rainfall (NOAA). NOAA’s 2014 Palmer–Z Index Map for September also indicates moderate drought for the planning area. All participating jurisdictions identified drought as a significant hazard with the capability of affecting the



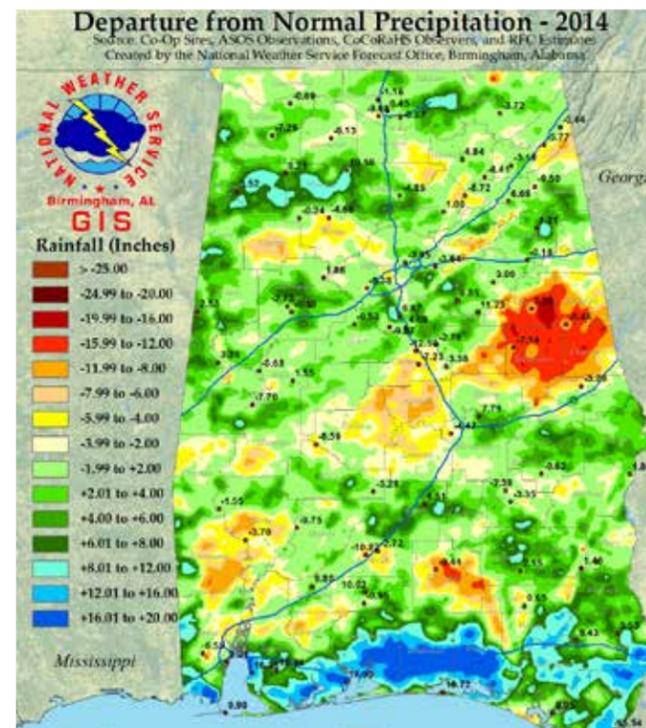
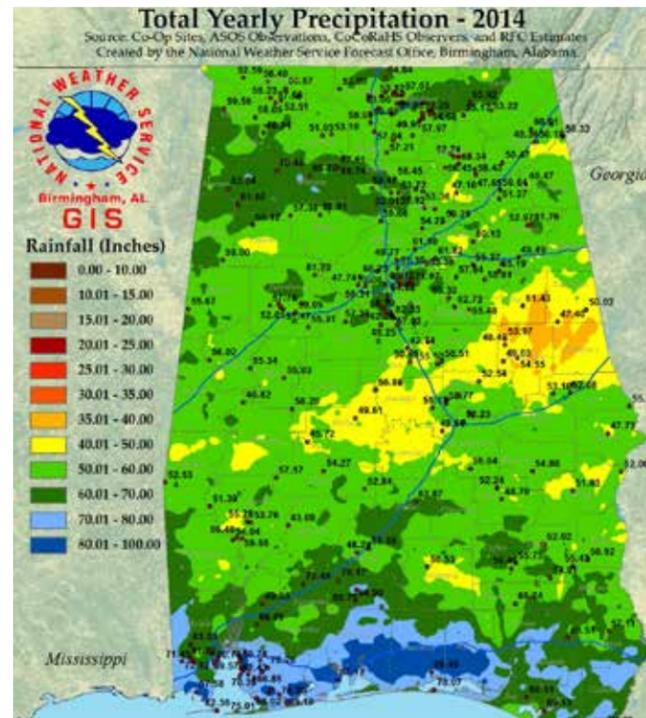
entire planning area; therefore the percentage of the study area susceptible to this hazard is categorized as extensive.

**Previous Occurrences**

According to NOAA's Storm Events Database for Lawrence County, there have been 19 significant drought events within the planning area between January 1950 and February 2015. However, none of these drought events had any reported deaths, injuries, or property damage according to NOAA.

The worst case scenarios for Lawrence County from a severe drought would involve massive crop and livestock death resulting in huge financial losses for farmers; water shortages for residents, businesses, and industries; and loss of human life from heat strokes and dehydration. Drought could cause widespread wildfires devastating the Bankhead National Forest and Sipsey Wilderness Area in the southern half of the county. Therefore, the potential impacts of severe droughts on life and livelihood is significant, which necessitates a profile and mitigation plan for this natural hazard.

Based on current NOAA data and past trends, the future probability of a drought event occurring in Lawrence County is categorized as likely. The magnitude/severity of the event would be determined by the duration of the event but the possible affect is categorized as limited to critical.



Individual incidents of drought within Lawrence County, AL between January 1950 and August 2014				
Date	Deaths	Injuries	Total property damage	Total crop damage
03/27/2007	0	0	\$0.00	\$0.00
04/01/2007	0	0	\$0.00	\$0.00
05/01/2007	0	0	\$0.00	\$0.00
06/01/2007	0	0	\$0.00	\$0.00
07/01/2007	0	0	\$0.00	\$0.00
08/01/2007	0	0	\$0.00	\$0.00
09/01/2007	0	0	\$0.00	\$0.00
10/01/2007	0	0	\$0.00	\$0.00
11/01/2007	0	0	\$0.00	\$0.00
12/01/2007	0	0	\$0.00	\$0.00
01/01/2008	0	0	\$0.00	\$0.00
02/01/2008	0	0	\$0.00	\$0.00
03/01/2008	0	0	\$0.00	\$0.00
04/01/2008	0	0	\$0.00	\$0.00
05/01/2008	0	0	\$0.00	\$0.00
06/01/2008	0	0	\$0.00	\$0.00
07/01/2008	0	0	\$0.00	\$0.00
08/01/2008	0	0	\$0.00	\$0.00
07/03/2012	0	0	\$0.00	\$0.00

Source: 2014 NOAA storm events database

Drought Probability Assessment and Extent of Disaster Based on Historical Data from 1950-2014			
Extent of Jurisdictional Affect:	Historical Occurrences:	% Probability of Future Annual Occurrence:	Damage Expectations of Event:
Extensive	19	Likely	Limited to Critical (Damage from a drought event would depend on the longevity of the event).
Lawrence County	19	30%	0
Town of Hillsboro	19	30%	0
Town of Courtland	19	30%	0
City of Moulton	19	30%	0
Town of Town Creek	19	30%	0

Source: Hazard Mitigation Planning Team

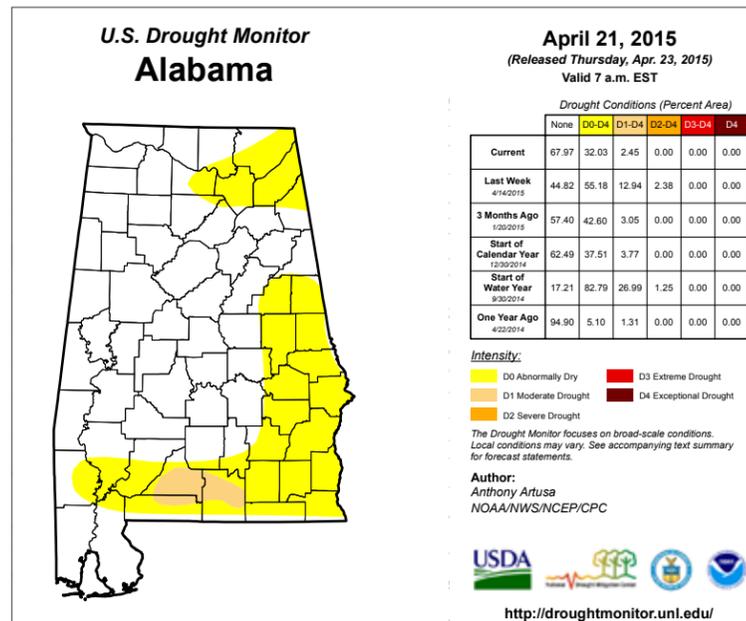
Bottom Left: U.S. Drought Monitor Alabama, April 21, 2015 (Map, 2015: droughtmonitor.unl.edu)

Bottom Right: Drought Probability Assessment & Extent of Disaster Base on Historical Data 1950-2014 (Chart, 2014: Hazard Mitigation Planning Team)

Top Right: Individual Instances of Drought Within Lawrence County, AL Between January 1950 - August 2014 (Chart, 2014: NOAA Storm Events Database)

Middle Top: Total Yearly Precipitation - 2014 (Map Image, National Weather Service, NOAA website)

Middle Bottom: Departure from Normal Precipitation - 2014 (Map Image, National Weather Service, NOAA website)



Top Right: Monthly Temperature Normals & Extremes for the Shoals Area  
(Chart, 2015: NOAA National Weather Service, Multi-Hazard Mitigation Planning Team)

Bottom Right: Extreme Temperature Events in Lawrence County between 1950-2014  
(Chart, 2014: NOAA National Climatic Data Center, Multi-Hazard Mitigation Planning Team)

**Extreme Temperatures**

**Description and Profile**

The Lawrence County planning area experiences extremes in temperatures that consist of hot summers and cold winters. Alabama summers are one of the hottest in the nation, with daily highs averaging over 90 F. Heat is the number one weather-related killer in the U.S. Extreme temperatures over 90 F can cause health issues such as severe sunburns, heat stroke, and death. Winters within the planning area are usually mild but can sustain periods of extreme cold with temperatures plunging below freezing. Exposure to extreme cold temperatures can result in hypothermia, cold stress and frostbite, freezing of extremities, death, and property damage.

Extreme heat is defined as temperatures which hover 10 degrees or more above the average high temperature for a region and last for several weeks, have the potential to cause injury to people and animals, and damage crops. The National Weather Service (NWS) created a Heat Index chart to demonstrate how air temperature increases with relative humidity and the adverse effect prolonged heat exposure has on the population.

Extreme cold weather events are defined as days where the mean daily temperature (average of the high and low recorded temperatures over a 24-hour period) falls below 32° F. As the temperature drops and wind speed increases, heat can leave the body more rapidly. This is known as the wind-chill effect and it can exacerbate an extreme cold event. The NWS created a wind chill chart that measures apparent temperature felt on exposed skin due to the combination of air temperature and wind speed and the minimum exposure time at which frostbite begins to occur.

**Location**

NOAA’s National Weather Service Climatology Station at Northwest Shoals Regional Airport, located in adjacent Colbert County, 18 miles west of Town Creek in Lawrence County reports monthly normal and extreme temperature events for the Shoals area and the historical data is illustrated below. The hottest temperature recorded for the Shoals was 108 F and occurred four times: June 1914, September 1925, July and August 1930. The coldest temperature recorded was -13 F and occurred in February 1905. All participating jurisdictions identified extreme temperatures as a significant hazard with the capability of affecting the entire planning area, therefore the percentage of the study area susceptible to this hazard is categorized as extensive.

Monthly Temperature Normals and Extremes for the Shoals Area												
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Normal high	50.7	55.4	64.4	73.3	80.9	87.8	90.8	90.9	84.7	74.3	63.3	52.8
Normal low	31.3	35.0	42.0	49.5	58.7	66.3	70.0	68.8	61.6	49.8	40.9	33.8
Normal average	41.0	45.2	53.2	61.4	69.8	77.0	80.4	79.8	73.2	62.1	52.1	43.3
Record high temp and year	84 1936	83 1962	92 1929	96 1925	99 1941	108 1914	108 1930	108 1930	108 1925	99 1925	86 1915	81 1956
Record low temp and year	-11 1985	-13 1905	7 1899	24 1940	32 1909	42 1894	49 1937	47 1917	35 1901	23 1917	2 1950	-5 1989

Source: NOAA National Weather Service

**Previous Occurrences**

There are four weather stations within Lawrence County as identified on the NOAA website (<http://www.ncdc.noaa.gov/cdo-web/datatools/findstation>). The stations are located in the following areas: Moulton Two; Moulton 3.1 ENE; Courtland Two WSW (at Courtland Airport); Muscle Shoals 9.7 NNE. These weather stations are operable year round and record events of extreme weather that are reported to NOAA and stored in their Storm Events Database. The Storm Events Database stores data geographically categorized by state and county and historical data is available from January 1, 1950 through December 30, 2014.

According to NOAA’s Storm Events Database for Lawrence County, there have been two extreme heat events between 1950 and December 30, 2014. However, no injuries were reported. There have been no extreme cold events reported between 1950 and December 30, 2014 for the Lawrence County planning area.

According to USA.com, the average temperature of Lawrence County is 60.58°F, which is lower than the Alabama average temperature of 62.68°F and is much higher than the national average temperature of 54.45°F (<http://www.usa.com/lawrence-county-al-weather.htm>).

Extreme Temperature Events in Lawrence County between 1950-December 30, 2014					
Event type	Date	Deaths	Injuries	Property Damage	Crop Damage
Extreme cold	N/A	N/A	N/A	N/A	N/A
Extreme heat	6/28/2009	0	0	\$0.00	\$0.00
Extreme heat	8/15/2010	0	0	\$0.00	\$0.00
Total number of extreme temperature events					
2	0	0	0	\$0.00	\$0.00

Source: 2014 NOAA National Climatic Data Center -Storm Events Database at <http://www.ncdc.noaa.gov>

**Future Probability and Magnitude/Severity**

Based on historical weather data, Lawrence County and its municipalities are susceptible to extreme heat and cold weather events and due to the probability of it occurring every year, hazard mitigation planning is required. The future probability of an extreme heat event occurring within the planning area is categorized as likely. The magnitude/severity of the potential hazard event is categorized between limited to critical and could cause millions of dollars in damages to the agriculture industry.

Extreme temperature probability assessment and extent of disaster based on historical data between 2009-December 30, 2014			
Extent of jurisdictional affect:	Historical Occurrences:	% probability of future annual occurrence:	Magnitude/severity of event:
extensive	2	Likely	Limited to critical
Lawrence County	2	40%	X
Town of Hillsboro	2	40%	X
Town of Courtland	2	40%	X
City of Moulton	2	40%	X
Town of Town Creek	2	40%	X

Source: Hazard Mitigation Planning Team



Left: Extreme Temperature Probability Assessment & Extent of Disaster Based on Historical Data between 1996-2014 (Chart, 2015: Hazard Mitigation Planning Team)

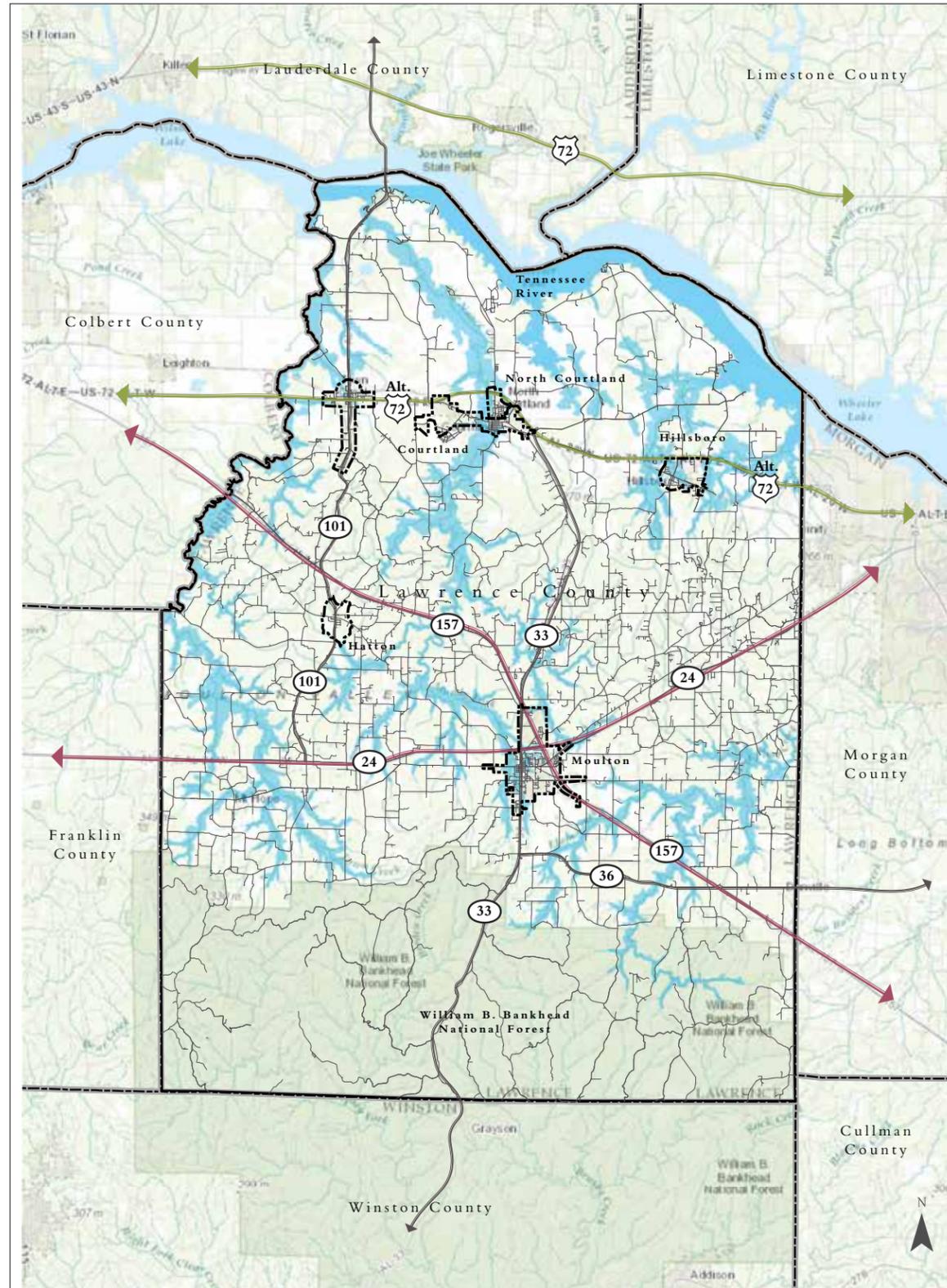
Top Left: Fighting Fire in Freezing Weather (Photo, 2009: istockphoto.com)

Top Right: Extreme Heat (Photo, 2015: istockphoto.com)

Bottom Center: Extreme Heat (Photo, 2015: cnn.com)

Bottom Right: Frozen Window in Extreme Cold (Photo, 2015: istockphoto.com)

Map: Lawrence County Flood Zone Map  
(Map, 2015: Multi-Hazard Mitigation Planning Team)



Flood Zones

LEGEND

100 Year Floodplain

Flood

**Description and Profile**

Floods are the most common and widespread of all natural disasters and can be the most costly in terms of human hardship and economic loss. A flood, as defined by the National Flood Insurance Program, is: “A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from: overflow of inland or tidal waters, unusual and rapid accumulation or runoff of surface waters from any source, or a mudflow.”

There are several different types of flood events likely to occur in Lawrence County including flash, riverine, and urban storm water. Flooding is most always attributed to excessive rainfall, either in the flood area or upstream reach. Flash floods are localized flood events of great volume and short duration. A riverine flood event happens when a watercourse exceeds its bank capacity due to prolonged rainfall and typically effects large areas. As land loses its ability to absorb rainfall as it is converted from fields or woodlands to roads, buildings, and parking lots, an urban storm water flood event can result. Lawrence County, and all its incorporated places, are located within the Tennessee River drainage basin and therefore are very susceptible to flood events of all types.

The immediate danger from flooding is the destruction it can have on personal property, such as structures and vehicles, due to the sheer strength of the water. Flooding can cause houses to detach from their foundation and can push debris miles from its origin causing injury or death to people and animals. Long-term adverse effects include power outages, damage to infrastructure, contaminated water supply, and outbreak of disease.

**Location**

The National Flood Insurance Program (NFIP) was authorized by Congress with the enactment of the National Flood Insurance Act of 1968. Under the NFIP, flood insurance is made available at rates that are intended to be affordable for communities that adopt ordinances to regulate development in mapped flood hazard areas. Lawrence County has all five jurisdictions within the planning area participating in the NFIP Program.

Lawrence County and all of its cities and towns are located within the Tennessee River drainage basin and are susceptible to flood events every year. Therefore, the entire planning area is susceptible to flood events and the planning area affected is categorized as extensive.

**Previous Occurrences**

According to data from NOAA’s National Climatic Data Center, the planning area has experienced 47 previous flood events in the past 18 years. There were no deaths or injuries, however, there was reported a total of \$5K in crop damage and \$193.5K in property damage within the Lawrence County planning area. The worst of these events happened on July 4, 2013 when a nearly stationary band of heavy rain developed across portions of northwest and north central Alabama. The hardest hit counties were Lawrence, eastern Limestone, western Madison and Morgan Counties where 5 to 10 inches of rain were measured. Widespread areal flooding occurred and numerous roads were closed or became impassible in some areas through the evening of July 6th. Numerous roads, between Main Street and Court Street, were closed in Moulton due to heavy rain and high water. Tankersly Avenue and Sparkman Road were covered with high water and barricaded. In addition, several homes along Main Street, Katherine Avenue and Littrell Circle, sustained water damage from high water. This flood event caused \$50K in property damage. 5 to 10 inches of rain is considered to be the worst extent expected in the planning area.

Historical Flood Events for Lawrence County between 1996-December 2014						
Location	Date	Event type	Deaths	Injuries	Property Damage	Crop Damage
TERRYTOWN	03/06/1996	Flash Flood	0	0	25.00K	0.00K
MOULTON	06/21/1997	Flash Flood	0	0	15.00K	0.00K
COUNTYWIDE	01/07/1998	Flash Flood	0	0	25.00K	5.00K
MOULTON	01/22/1999	Flash Flood	0	0	25.00K	0.00K
COUNTYWIDE	01/22/1999	Flash Flood	0	0	18.00K	0.00K
MOULTON	04/03/2000	Flash Flood	0	0	15.00K	0.00K
COUNTYWIDE	01/24/2002	Flash Flood	0	0	10.00K	0.00K
COURTLAND	02/15/2003	Flash Flood	0	0	0.00K	0.00K
COURTLAND	02/22/2003	Flash Flood	0	0	0.00K	0.00K
HILLSBORO	02/22/2003	Flash Flood	0	0	0.00K	0.00K
COUNTYWIDE	02/22/2003	Flash Flood	0	0	0.00K	0.00K
COUNTYWIDE	02/22/2003	Flash Flood	0	0	0.00K	0.00K
MOULTON	05/06/2003	Flash Flood	0	0	0.00K	0.00K
MOULTON	05/16/2003	Flash Flood	0	0	0.00K	0.00K
LAWRENCE (ZONE)	02/05/2004	Flood	0	0	0.00K	0.00K
LAWRENCE (ZONE)	02/05/2004	Flood	0	0	0.00K	0.00K
LAWRENCE (ZONE)	02/06/2004	Flood	0	0	0.00K	0.00K
COUNTYWIDE	09/16/2004	Flash Flood	0	0	0.00K	0.00K
MOULTON	12/06/2004	Flash Flood	0	0	0.00K	0.00K
COUNTYWIDE	12/09/2004	Flash Flood	0	0	0.00K	0.00K
SPEAKE	04/06/2005	Flash Flood	0	0	0.00K	0.00K
MT MORIAH	05/27/2008	Flash Flood	0	0	0.00K	0.00K
FLOWER HILL	05/27/2008	Flash Flood	0	0	0.00K	0.00K
FLOWER HILL	12/09/2008	Flash Flood	0	0	0.00K	0.00K
SPEAKE	04/02/2009	Flood	0	0	0.00K	0.00K
NORTHEAST SMITH	05/01/2009	Flash Flood	0	0	0.00K	0.00K
MT MORIAH	05/27/2009	Flash Flood	0	0	0.00K	0.00K
MT MORIAH	05/27/2009	Flash Flood	0	0	0.50K	0.00K
MT MORIAH	05/27/2009	Flash Flood	0	0	0.00K	0.00K
WREN	09/16/2009	Flash Flood	0	0	0.00K	0.00K
HATTON	09/23/2009	Flash Flood	0	0	0.00K	0.00K
WREN	09/23/2009	Flash Flood	0	0	0.00K	0.00K
COURTLAND	09/25/2009	Flash Flood	0	0	0.00K	0.00K
WHEELER DAM VILLAGE	12/08/2009	Flash Flood	0	0	0.00K	0.00K
SPEAKE	11/30/2010	Flash Flood	0	0	0.00K	0.00K
OAK GROVE	11/30/2010	Flash Flood	0	0	0.00K	0.00K

MOULTON	01/01/2011	Flash Flood	0	0	0.00K	0.00K
NORTHEAST SMITH	03/09/2011	Flash Flood	0	0	0.00K	0.00K
LANDERSVILLE	04/04/2011	Flash Flood	0	0	0.00K	0.00K
WHEELER DAM VILLAGE	04/06/2011	Flood	0	0	0.00K	0.00K
MOULTON	04/05/2012	Flash Flood	0	0	0.00K	0.00K
MOULTON	07/04/2013	Flash Flood	0	0	50.00K	0.00K
MOULTON	07/04/2013	Flash Flood	0	0	0.00K	0.00K
MOULTON	07/04/2013	Flash Flood	0	0	10.00K	0.00K
TRINITY	07/04/2013	Flood	0	0	0.00K	0.00K
MOUNTAIN HOME	08/07/2013	Flash Flood	0	0	0.00K	0.00K
TOWN CREEK	04/28/2014	Flash Flood	0	0	0.00K	0.00K
<b>TOTAL EVENTS: 47</b>			<b>0</b>	<b>0</b>	<b>193.50 K</b>	<b>5.00K</b>

Source: 2014 NOAA National Climatic Data Center -Storm Events Database at <http://www.ncdc.noaa.gov>

Chart: Historical Flood Events for Lawrence County between 1996-2014  
(Chart, 2014: NOAA Climatic Data Center, Multi-Hazard Mitigation Planning Team)

Image: Flood Event (Photo 2015: istockphoto.com)



Chart: Flood future probability assessment and extent of disaster based on historical Data between 2009-2014  
(Chart, 2015: Multi-Hazard Mitigation Planning Team)

Image Bottom Left: Flood Event (Photo 2015: istockphoto.com)

Image Top Right: Flood Event (Photo 2015: istockphoto.com)

Image Bottom Right: Flood Event (Photo 2015: istockphoto.com)

**Future Probability and Magnitude/Severity**

The percent probability of a flood event occurring in Lawrence County is highly likely with a future probability percentage of 261% that a flood event will occur in the next year. The assessed magnitude and severity is categorized as limited to critical and depends on the duration of rainfall and the areas affected. The extent of the potential hazard could cause millions in economic loss to property and agriculture.

Flood Future Probability Assessment and Extent of Disaster Based on Historical Data between 2009 - December 30, 2014			
Extent of Jurisdictional Affect:	Historical Occurrences:	% Probability of Future Annual Occurrence:	Magnitude/ Severity of Event:
Extensive	47	Likely-Highly Likely	Limited- Critical
Lawrence County	10	55%	\$131,000
Town of Hillsboro	1	5.5%	\$0
Town of Courtland	3	17%	\$0
City of Moulton	11	61%	\$115,000
Town of Town Creek	1	5.5%	\$0
TOTAL	47	261%	\$246,000

Source: Hazard Mitigation Planning Team



Hazardous Materials

**Description and Profile**

Hazardous materials (HAZMAT) are characterized as part of the technological hazards that originate from human activities. Hazardous materials (HAZMAT) are chemical substances that can pose a threat to the environment or health of people and animals if released and exposure occurs. Hazardous chemicals are found throughout Lawrence County in areas of industry, agriculture, commercial development, and medical facilities. HAZMAT can come in the form of explosives, flammable and combustible substances, corrosives, gases, poisons and radioactive materials. Exposure can damage buildings, homes, and entire sections of communities including rivers, streams, and drinking water supplies. HAZMAT exposure to humans and animals can cause mild to severe health problems including long lasting health effects and death. Facilities containing HAZMAT are required to register and receive permits through state and federal agencies for the monitoring of proper storage, transport, and care of HAZMAT material due to the potential public hazard. Under normal conditions, these substances are controlled and pose no threat to human life and the environment. However, disastrous results can ensue if a release occurs. Releases can originate from a mobile transportation source, such as a truck, railcar, or boat, or from fixed sources, such as a manufacturing or storage facility. Accidental releases can occur due to equipment failure, human error, or a natural or manmade hazard event.

**Location**

HAZMAT can be associated with a fixed facility or with a transportation corridor such as a highway or railway. With fixed facility HAZMAT, the substances are identified and permitted by the Environmental Protection Agency (EPA) and Alabama Department of Environmental Management (ADEM). The facility is required to store and handle the substances according to established regulations for public and environmental safety. These facilities are required to develop emergency plans and spill plans in the event of a HAZMAT release.

According to the Environmental Protection Agency (EPA) EnviroFacts online community information database, there were 137 EPA regulated facilities in Lawrence County in 2014. The table below specifies what regulation/permit category these facilities are associated with and how many facilities are permitted for each category within the county.

The Environmental Protection Agency (EPA) Enforcement Compliance History Online (ECHO) Report lists EPA-regulated

facilities within incorporated places and their associated regulation/permit categories, as well as any violations these facilities may have. The table below illustrates 2014 EPA regulated facilities within the incorporated places in Lawrence County and identifies if any of these facilities have violations. There were no facilities in Lawrence County in 2014 with an EPA violation.

2014 Environmental Protection Agency (EPA) Regulated/Permitted facilities in Lawrence County	
Regulated/permited category	Number of facilities
AFS - Facilities that are permitted for air emissions	2
BR - Facilities that are permitted to generate hazardous waste	1
RCRA - Facilities that are permitted to handle hazardous waste	9
PCS/ICIS - Facilities permitted to discharge waste water into waterbodies	125
TRI - Facilities permitted to have toxic releases	0

*Source: EPA-Envirofacts: <http://www.epa.gov/enviro/facts/topicsearch.html>*



*Image: Hazardous Materials (Photo 2015: istockphoto.com)*

*Top Center: 2014 EPA Regulated/Permitted Facilities in Lawrence County (Chart, 2014: EPA Envirofacts, Multi-Hazard Mitigation Planning Team)*

*Bottom Chart: 2014 EPA Enforcement & Compliance History Online (ECHO) Report for Facilities located in Lawrence County Incorporated Places (Chart, 2014: EPA Envirofacts, Multi-Hazard Mitigation Planning Team)*

2014 EPA Enforcement and Compliance History Online (ECHO) Report for Facilities Located in Lawrence County Incorporated Places							
Town/City	Facility with current violation	Facility with violation in last 3 years	Facility with formal enforcement actions in 5 years	Facilities with CAA source-air emissions	Facilities with CWA permits-wastewater discharge	Facilities with RCRA IDs-waste handlers	Facilities with TR I releases-toxic releases
City of Moulton	0	27	0	0	15	5	0
Town of Town Creek	0	10	0	1	3	2	0
Town of Courtland	0	14	2	0	2	4	0
Town of North Courtland	0	0	0	0	0	0	0
Town of Hillsboro	0	7	1	0	0	0	0

*Source: Hazard Mitigation Planning Team*

Top: ERNS Reported Incident Types from 1982-2014 for Places in Lawrence County (Chart, 2014: National Response Center, Multi-Hazard Mitigation Planning Team)

Middle: ERNS Reported Incidents from 1982-2014 for Places in Lawrence County (Chart, 2014: National Response Center, Multi-Hazard Mitigation Planning Team)

Bottom: Hazardous Material Incident Future Probability Assessment and Extent of Disaster Based on Historical Data between 1982 - 2014 (Chart, 2014: Multi-Hazard Mitigation Planning Team)

Transportation HAZMAT incidents can also occur when hazardous substances are being transported along roadways, railways, or waterways from one facility to the next. The U.S. Department of Transportation, U.S. Environmental Protection Agency, and the Alabama Department of Environmental Management are the regulatory state and federal agencies that monitor and regulate the transportation of hazardous material. All hazardous substances being transported through Alabama must be properly stored, contained, and labeled and transported between permitted facilities.

There are three main highways in Lawrence County that serve as freight truck routes: U.S. Highway 72 Alternate/AL Highway 20; AL Highway 24; and AL Highway 157. According to the North Alabama Industrial Development Association, north Alabama is served by more than 65 commercial trucking companies. Norfolk Southern Railroad provides industrial rail service through the county. The tracks run east to west paralleling the U.S. Highway 72 alternate/AL Highway 20 corridor into Mississippi. The Tennessee River runs east to west along the northern boundary of Lawrence County. According to the Tennessee Valley Authority, over 50 million tons of freight move up and down the Tennessee River including various types of petroleum products and industrial chemicals and materials.

**Previous Occurrences**

The EPA's Emergency Response Notification System (ERNS) requires that all accidents or spills of HAZMAT material from all types of facilities be reported, whether fixed or in transit. The National Response Center is operated by the U.S. Coast Guard and the database of incidents is also managed by the Coast Guard at <http://www.nrc.uscg.mil/>. The table below lists all hazardous material related incidents that have occurred in Lawrence County from 1982 through 2014 that were reported to the ERNS. There have been 98 incidents in the past 32 years resulting in two fatalities, 12 injuries, 30 people evacuated, and \$150,000 in property damage in the planning area, according to the Emergency Response Notification System (ERNS).

The Emergency Response Notification System database also records the type of facility the incident occurred from including fixed facilities and mobile vehicles such as trucks, rail, ships, or planes. Of the 98 incidents that occurred in Lawrence County between 1982 and 2014, 40 of the incidents originated from mobile vehicles, 27 originated from fixed sites, and five were discovered as an unknown sheen on the surface of water.

Type of Facility Incident	Number of Incidents
Fixed Site	27
Storage tank, pipeline, drilling platform	6
Mobile vehicle (truck, rail, ship, plane)	40
Unknown sheen on water	5
Continuous release	13
Other	7

Source: National Response Center U.S. Coast Guard, <http://www.nrc.uscg.mil/>

**Future Probability and Magnitude/Severity**

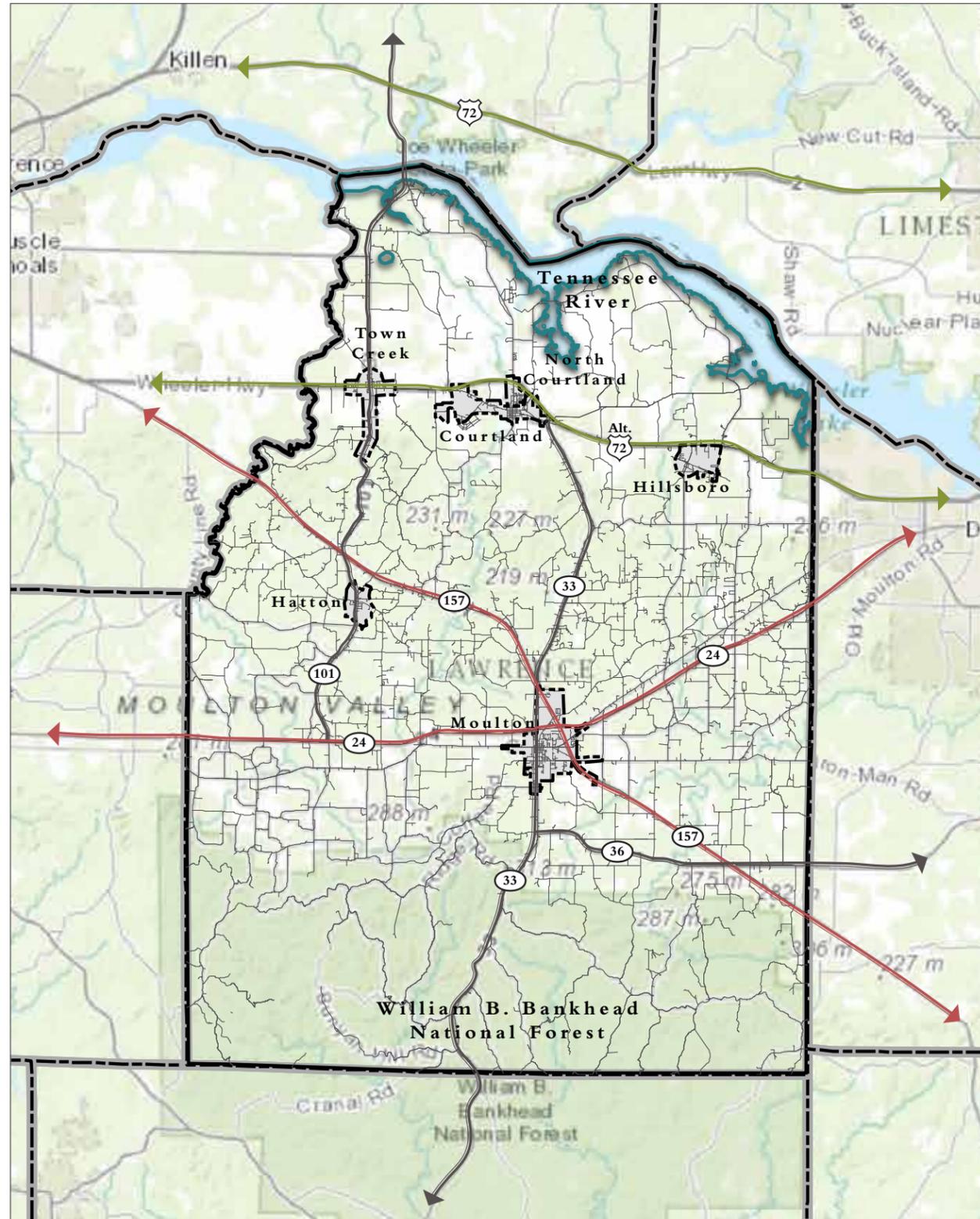
The percent probability of a hazardous material incident occurring in Lawrence County is occasional to highly likely with a future probability percentage of 306% that a hazardous material incident will occur in the next year. The assessed magnitude and severity is categorized as negligible to limited and depends on the type of hazardous material released, the size of the release, and the exposure to the release. The extent of the potential hazard could cause thousands of dollars in property damage.

Location	Total# Incidents	Fatalities	Hospitalizations	Injuries	Total #People Evacuated	Total Property Damage
Lawrence County	17	0	0	0	0	0
City of Moulton	6	0	0	0	0	0
Town of Town Creek	17	0	2	3	0	\$150,000
Town of Courtland	55	1	0	9	30	0
Town of Hillsboro	3	1	0	0	0	0
<b>Total</b>	<b>98</b>	<b>2</b>	<b>2</b>	<b>12</b>	<b>30</b>	<b>\$150,000</b>

Source: National Response Center U.S. Coast Guard, <http://www.nrc.uscg.mil/> (actual source: <http://www.rtknet.org/db/erns/search>)

Extent of Jurisdictional Affect:	Historical Occurrences:	% Probability of Future Annual Occurrence:	Magnitude/ Severity of Event:
Extensive	98	Occasional-Highly Likely	Negligible - Limited
Lawrence County	17	53%	0
Town of Hillsboro	3	9%	0
Town of Courtland	55	172%	0
City of Moulton	6	19%	0
Town of Town Creek	17	53%	\$150,000
<b>TOTAL</b>	<b>98</b>	<b>306%</b>	<b>\$150,000</b>

Source: Hazard Mitigation Planning Team



Map: Lawrence County Hazardous Materials  
Map  
(Map, 2015: Multi-Hazard Mitigation Planning  
Team)

LEGEND

● Hazardous Materials

Hazardous Materials

## RISK ASSESSMENT

Chart: Saffir/ Stimpson Hurricane Scale  
(Chart, 2015: NOAA National Weather Service, National Hurricane Center)

Chart: Lawrence County Historical Hurricane Tracks from 1891 to Present (Chart, 2014: NOAA Historical Hurricane Tracker Interactive Online Mapper)

### Hurricanes and Tropical Cyclones

#### Description and Profile

Tropical depressions, tropical storms, and hurricanes are collectively called tropical cyclones. A tropical cyclone is an organized, rotating system of clouds and thunderstorms that originates over tropical and subtropical waters and forms a circular rotation around an eye. Tropical cyclones are the most devastating natural hazards in the U.S. and an average of five hurricanes occur per year in the Atlantic Region.

A tropical depression is a cyclone with maximum sustained winds of 38 mph or less. A tropical storm is a cyclone with maximum sustained winds of 39 to 73 mph. A hurricane is a cyclone with maximum sustained winds of 74 mph or higher. Once a cyclone reaches hurricane strength, the Saffir/Stimpson Hurricane Scale is used to classify the storms strength and damage potential. A number scale from 1 to 5 is used to categorize hurricanes. The higher the number, the stronger the hurricane. Hurricane categories are defined by a storm's central pressure, wind speed, storm surge height, and damage potential.

Associated hazards with hurricanes include: severe winds, storm surge flooding, high waves, coastal erosion, extreme rainfall, thunderstorms, lightning and possibly tornadoes.

#### Location

The Gulf of Mexico has an extremely active hurricane season and many hurricanes make landfall from New Orleans to Pensacola and have the potential to impact north Alabama as they track north. Hurricanes do not directly impact Lawrence County due to its distance from the coast however, tropical storms and tropical depressions are capable of impacting the county as they move inward from the Gulf. Although no hurricane force cyclone storm events have hit Lawrence County, their associated downgraded tropical storms have. Downgraded tropical storms have caused property damage and have impacted all parts of the county. Therefore, the potential impact of the planning area is classified as extensive.

#### Previous Occurrences

According to NOAA's Historical Hurricane Tracker Interactive Online Mapper, six tropical cyclones have tracked through Lawrence County. Of these six tropical storms and depressions whose storm center passed directly through the county, the damage reported was negligible to none as they dissipated and weakened moving inward.

Saffir/ Stimpson Hurricane Scale		
Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	<b>Very dangerous winds will produce some damage:</b> Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	<b>Extremely dangerous winds will cause extensive damage:</b> Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	<b>Devastating damage will occur:</b> Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	<b>Catastrophic damage will occur:</b> Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	<b>Catastrophic damage will occur:</b> A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: NOAA National Weather Service, National Hurricane Center

Lawrence County Historical Hurricane Tracks from 1891 to Present			
Hurricane/Cyclone Name	Date (Storm Life)	Deaths/Injuries	Property Damage
Not Named 1891	July 3-8, 1891	0	0
Not Named 1916	October 9-19, 1916	0	0
Ethel	September 14-17, 1960	0	0
Frederic	August 29 - September 14, 1979	0	0
Danny	August 12-20, 1985	0	0
Arlene	June 8-14, 2005	0	0

Source: 2014 NOAA Historical Hurricane Tracker Interactive Online Mapper , [http://coast.noaa.gov/hurricanes/NOAA's National Climatic Data Center Storm Event Database](http://coast.noaa.gov/hurricanes/NOAA's%20National%20Climatic%20Data%20Center%20Storm%20Event%20Database) lists three cyclone storm events occurring in Lawrence County since 1950.

**Future Probability and Magnitude/Severity**

The percent probability of a hurricane or tropical storm event occurring in Lawrence County is categorized as occasional with a future probability percentage of 7% that a cyclone storm event will occur in the next year. The assessed magnitude and severity is categorized as negligible to limited and depends on the intensity of the storm. The extent of the potential hazard could cause millions in economic loss to property and agriculture.

Hurricane and Tropical Storm Events Reported in Lawrence County between 1950 - 2014				
Hurricane/Tropical storm	Date	Death/injuries	Property damage	Crop damage
Opal	10 - 4 - 95	2 Deaths	\$100 million	\$10 million
Tropical storm	7 - 10 - 05	0	0	0
Tropical storm	8 - 29 - 05	0	0	0

Source: 2014 NOAA National Climatic Data Center -Storm Events Database at <http://www.ncdc.noaa.gov/>

Bottom Left: State of Alabama Hurricane History Map (Map, 2009: NOAA Coastal Service Center)

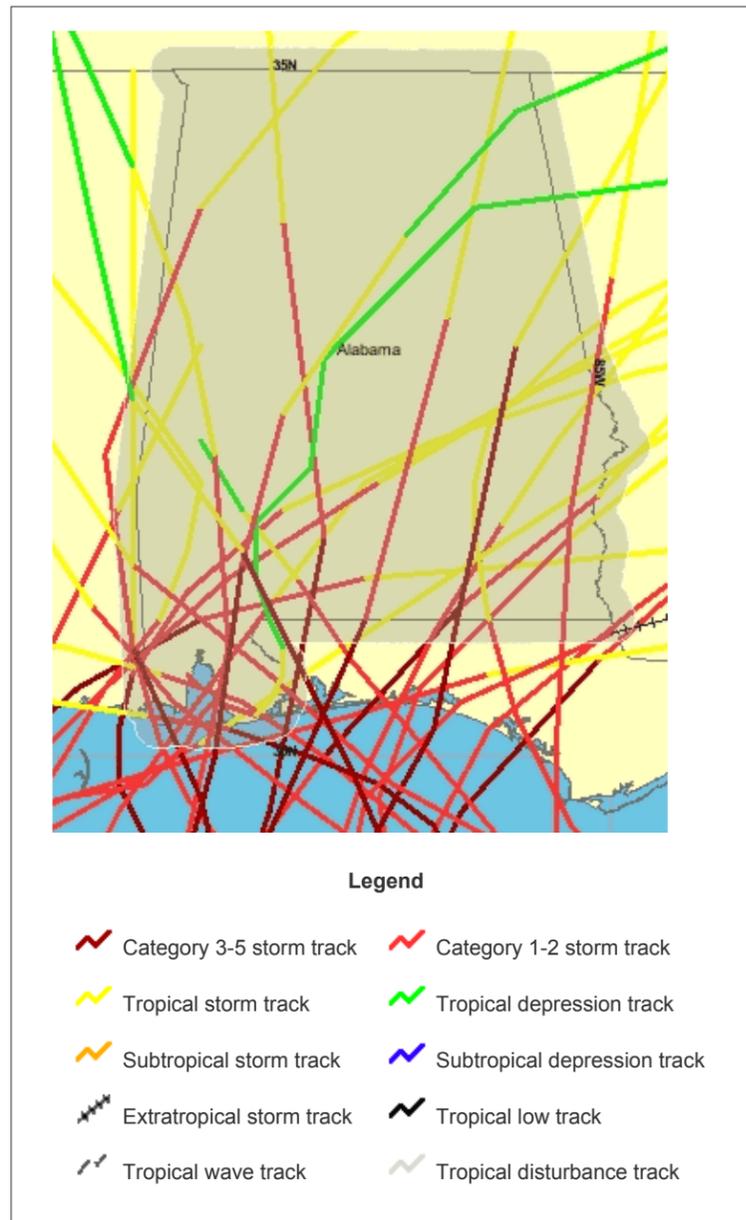
Top Right: Hurricane & Tropical Storm Events Reported in Lawrence County between 1950-2014 (Map, 2014: NOAA National Climatic Data Center, Multi-Hazard Mitigation Planning Team)

Middle Right: Hurricane/Tropical Storm Event Future Probability Assessment & Extent of Disaster based on Historical Data between 1891-2014 (Map, 2014: Multi-Hazard Mitigation Planning Team)

Bottom Center: Hurricane Photo (Photo, 2009: istockphoto.com)

Hurricane/Tropical Storm Event Future Probability Assessment and Extent of Disaster Based on Historical Data between 1891-2014			
Extent of Jurisdictional Affect:	Historical Occurrences:	% Probability of Future Annual Occurrence:	Magnitude/ Severity of Event:
Extensive	9	Occasional	Negligible-limited
Lawrence County	9	7%	110 million
Town of Hillsboro	9	7%	110 million
Town of Courtland	9	7%	110 million
City of Moulton	9	7%	110 million
Town of Town Creek	9	7%	110 million
TOTAL	9	7%	110 million

Source: Hazard Mitigation Planning Team



Middle Center: Landslide Hazard Event Future Probability Assessment & Extent of Disaster Based on Previous Occurrences (Chart, 2014: Multi-Hazard Mitigation Planning Team)

Middle Bottom: Landslide Photo (Photo, 2014: istockphoto.com)

Top Right: Alabama Landslide Incidence Map (Map, 2009: U.S. Geological Survey)

Bottom Right: Alabama Landslide Susceptibility Map (Map, 2013: Alabama State Hazard Mitigation Plan Update 2013)

**Landslides**

**Description and Profile**

A landslide is a downward and outward movement of slope-forming soil, rock, and vegetation under the influence of gravity. Landslides are triggered by natural and human-induced changes in the environment. Landslides include soil creeps, surface slides, and rock falls. These changes may be contributed to the following activities:

- Weaknesses in composition or structure of the rock or soil
- High precipitation
- Changes in ground-water level
- Seismic activity
- Construction or mining activity
- Construction or mining activity
- Over-steepening of slopes
- Changes in surface water runoff
- Heavy loads on slopes

Landslides are a major geologic hazard because they are widespread and occur in all U.S. states. Damage in the U.S. equals over \$1-2 billion in damages and includes more than 25 fatalities on average each year. In Alabama, damages are over a million dollars every year. Landslides pose serious threats to highways and to structures that support community infrastructure and function, community economy, and general transportation. Landslides commonly happen concurrently with other major natural disasters such as earthquakes and floods, which exacerbate relief and reconstruction efforts. The increased development of urban and recreational areas within steep slopes has led to increased threats, deaths and property damage by landslides. This development trend must be taken into account in Lawrence County as growth within the planning study area continues.

**Location**

The State of Alabama reports 50 out of the 66 counties are vulnerable to landslides. However, in Lawrence County, there are no records of significant landslide events, and Lawrence County is ranked with moderate susceptibility with a low incidence by the Alabama Geologic Survey. With changes in development patterns and densities occurring, there is a greater chance of future landslide activity associated with future construction of buildings, highways, railroads and/or mining activities. Monitoring and land use planning activities must continue during the planning implementation period to ensure a low occurrence of significant landslides. The extent of a landslide hazard event is possible countywide, however it is more likely within the participating jurisdictions located on the southwest end of Lawrence County due to the geologic nature of the area

with the Bankhead National Forest. Therefore, the potential impact of the planning area is classified as limited to significant.

**Previous Occurrences**

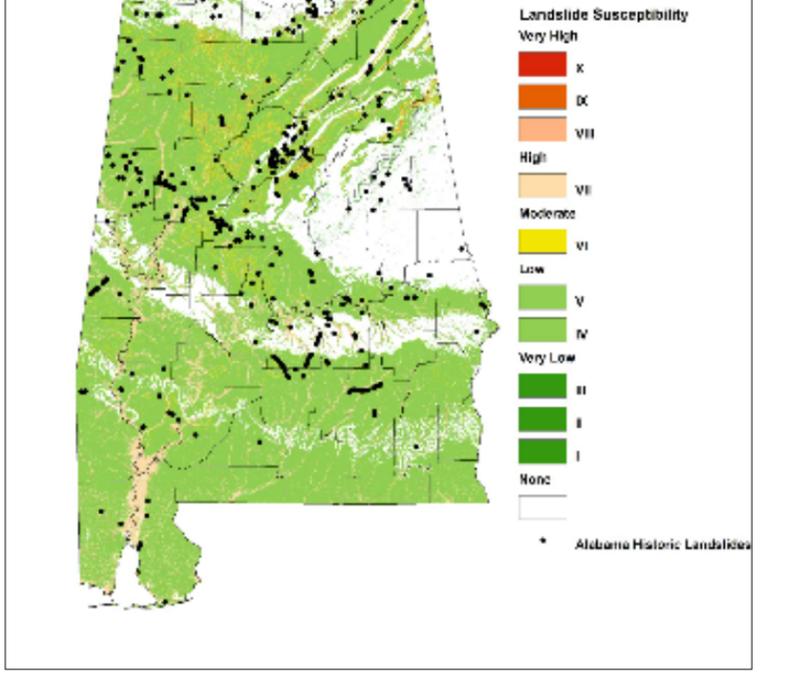
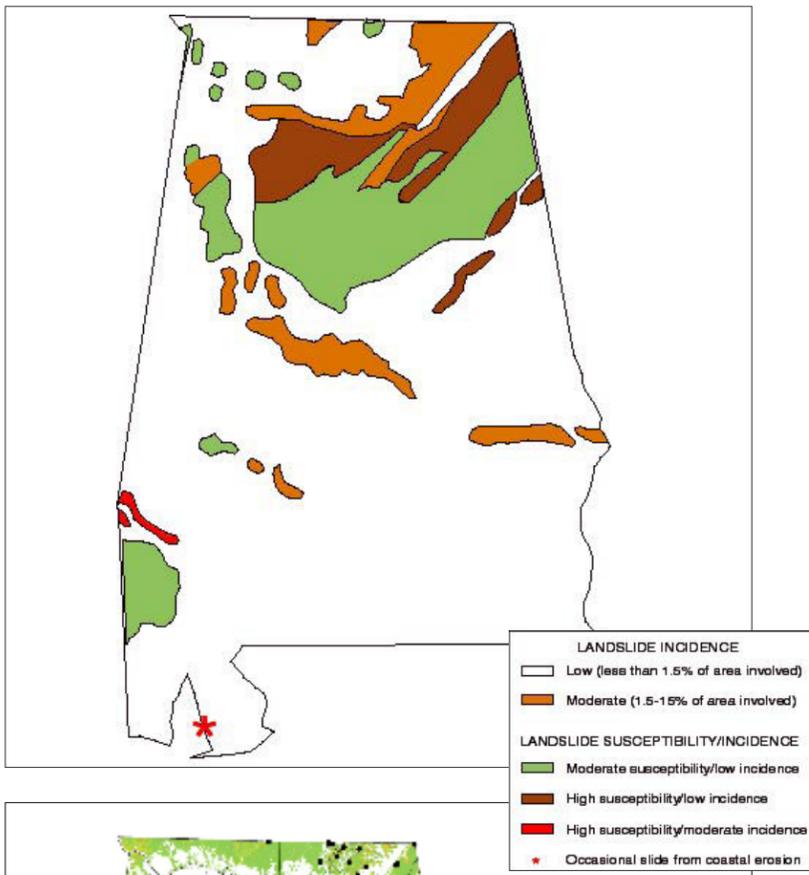
There have been no recent or historical landslide events in Lawrence County according to the U.S. Geological Survey data. However, there is a small chance that the southern portion of the county could experience a landslide event due to geologic conditions therefore, the planning team included this potential hazard in this assessment and has identified it as a possible threat.

**Future Probability and Magnitude/Severity**

The percent probability of a landslide hazard event occurring in Lawrence County is categorized as occasional with a future probability percentage of 0-10% that a landslide event will occur in the next year. The assessed magnitude and severity is categorized as negligible to limited and depends on the severity of the landslide event. Property damage and economic loss from landslides is estimated to be low to moderate.

Landslide Hazard Event Future Probability Assessment and Extent of Disaster Based on Previous Occurrences			
Extent of jurisdictional affect	Historical occurrences	Percent probability of future occurrence	Magnitude/severity of event
Limited to significant	0	Occasional	Negligible-limited

Source: Hazard Mitigation Planning Team



Nuclear Accidents

**Description and Profile**

According to FEMA, a nuclear accident involves an actual or potential release of radioactive material at a commercial nuclear power plant or other nuclear facility, in sufficient quantity to constitute a threat to the health and safety of the off-site population. Even though nuclear facilities are designed to withstand aircraft attacks and incidents of natural disasters, emergency response plans must be in place for communities living in close proximity to these facilities in the event there is structural failure resulting in a release.

**Location**

There are no nuclear facilities in Lawrence County, however there is one in neighboring Limestone County to the east. The Tennessee Valley Authority Brown's Ferry Nuclear Power Plant is located just across the Tennessee River from the Lawrence County boundary. The facility sits on 840 acres beside Wheeler Reservoir near Athens, Alabama, and is within the 10 mile Emergency Planning Zone (EPZ). Though the construction and operation of nuclear power plants are closely monitored and regulated by the Nuclear Regulatory Commission (NRC), accidents at these plants are considered a possibility and appropriate on-site and off-site emergency planning is conducted. FEMA, TVA and local jurisdictions have developed Federal Radiological Emergency Response Plans (FRERP). The potential impact of a nuclear release on the planning area is classified as extensive due to the close proximity of the plant to the county and its location on the Tennessee River. The towns of Hillsboro and Courtland/North Courtland are located within the 5 mile and 10 mile radius plume of the Browns ferry nuclear plant respectively. However, the entire County and all its municipalities would be adversely affected.

**Previous Occurrences**

According to the Tennessee Valley Authority, there have been no incidents of nuclear release from the Brown's Ferry Nuclear Power Plant. However, in 1975, a fire started at one of the reactors that could have potentially resulted in a catastrophic event. This later resulted in the Nuclear Regulatory Commission making significant additions to the standards for fire protection. According to the Nuclear Information and Resource Service, the newly restarted Unit One does not comply with these standards. Unit Three was not affected by the accident. This event was pivotal not just for firestopping in the nuclear field, but also in commercial and industrial construction. While the nuclear field went to installations of silicone foam, a wider array of firestops became prevalent in non-nuclear construction. In a 2005 analysis of significant nuclear safety occurrences in the US,

the NRC concluded that the fire at Browns Ferry was the most likely (excluding the actual Three Mile Island accident) precursor incident to have led to a nuclear accident in the event of a subsequent failure.

**Future Probability and Magnitude/Severity**

The percent probability of a nuclear release incident occurring in Lawrence County is categorized as occasional with a future probability percentage of 0-10% that a nuclear release will occur in the next year. The assessed magnitude and severity of a nuclear release is categorized as catastrophic. Property damage and economic loss would be devastating and is estimated to be in the billions. Human and animal mortality would be high as would severe injury and illness.



*Brown's Ferry Nuclear Plant*

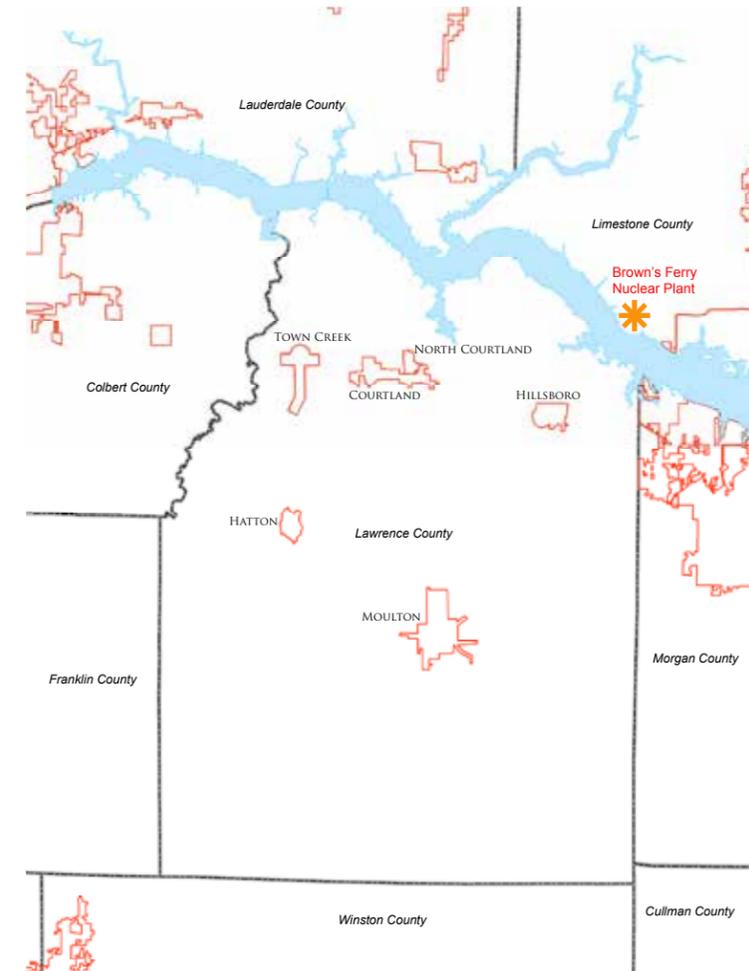
Nuclear Accident Hazard Event Future Probability Assessment and Extent of Disaster Based on Previous Occurrences			
Extent of jurisdictional affect	Historical occurrences	Percent probability of future occurrence	Magnitude/ severity of event
Extensive	0	Occasional	Catastrophic

Source: Hazard Mitigation Planning Team

Top Right: Nuclear Accident Hazard Event Future Probability & Extent of Disaster Based on Previous Occurrences (Chart, 2014: Hazard Mitigation Planning Team)

Middle: Brown's Ferry Nuclear Power Plant (Image, 2015: United States Nuclear Regulatory Commission)

Bottom Right: Brown's Ferry Nuclear Power Plant Location Map (Image, 2015: Multi-Hazard Mitigation Planning Team)



\* Browns Ferry Nuclear Plant

Bottom Center: Identified Sinkholes in Lawrence County in 2010 by the Geological Survey of Alabama Online Interactive Map (Chart, 2010: Geological Survey of Alabama)

Bottom Right: Sinkhole Hazard Event Future Probability Assessment & Extent of Disaster based on Previous Occurrences (Chart, 2014: Multi-Hazard Mitigation Planning Team)

Top Right: Sinkhole & Sinkhole Density Across Alabama (Map, 2014: Geological Survey of Alabama)

**Sinkholes and Land Subsidence**

**Description and Profile**

Sinkholes are a naturally occurring geologic feature resulting in the ground above a natural or manmade void to collapse. Areas that have sinkholes are known as karst terrain. The bedrock under areas where sinkholes form is usually made of limestone. The acid content in rainwater dissolves the limestone bedrock and begins an underground erosion process called dioxide cascade. Over time, this process forms cracks, crevices, tunnels and caves. When the roof of the cave can no longer support the weight of the ground above, it collapses forming the sinkhole. The process is also known as land subsidence. Sinkholes can also be caused by a drop in the water table due to drought, excessive rainfall/flood, drainage problems or heavy construction.

Sinkholes pose hazards to property and the environment and can result in millions of dollars of damage. They can cause substantial property damage, threaten water and environmental resources by draining streams, lakes, and wetlands, and creating pathways for transmitting surface waters directly into underlying aquifers. Where these new pathways form, movement of surface contaminants into the underlying aquifer systems can degrade ground-water resources. Conversely, when sinkholes become plugged, they can cause flooding by capturing surface-water flow and can create new wetlands, ponds, and lakes.

**Location**

According to the geological survey of Alabama, Alabama is just second behind Florida with the most sinkholes, and possibly possessing the largest sinkholes. They are primarily located in the northern and southern portions of the state. Northern Alabama has an abundance of soft limestone, which is responsible for the majority of sinkhole formation. Most of Alabama's sinkholes are located in the northern portion of the state, along the Tennessee River. Furthermore, Alabama has more miles of underground rivers than any other state. Those rivers, known as groundwater, are responsible for most sinkholes. An extremely large concentration of sinkholes is located just south of the Tennessee River in the western portion of the state forming a band that stretches east to west from Colbert County to Marshall County. This area includes the Lawrence County planning area. Lawrence County and Colbert County have the greatest number of sinkholes in the state. All participating jurisdictions within the county are susceptible to sinkholes as a potential hazard, therefore the percentage of the study area susceptible to this hazard is categorized as extensive.

**Previous Occurrences**

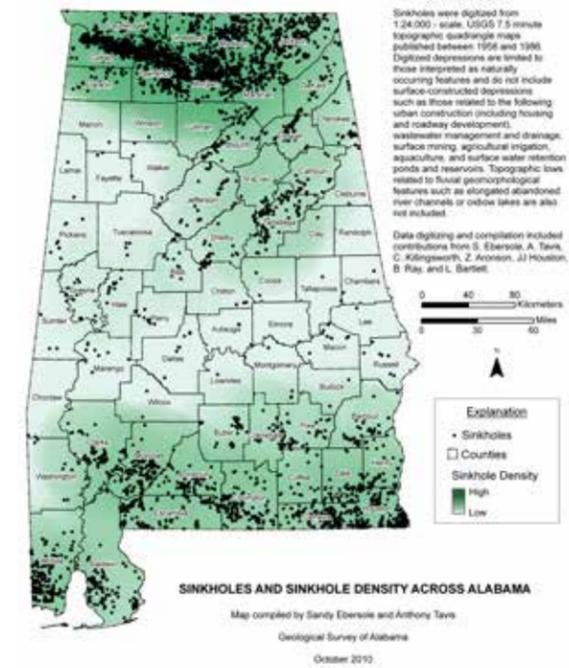
The Geological Survey of Alabama website has an interactive map of the state of Alabama that allows users to zoom into specific locations and view sinkholes. The map was created in 2010 using data obtained from topographic maps of Lawrence County. According to this map, the greatest concentration of sinkholes in Lawrence County is located along the railroad/Highway 72 Alternate corridor. There are between 300-400 identified sinkholes in this area. This area consists of the towns of Town Creek, Courtland and North Courtland, and Hillsboro.

**Future Probability and Magnitude/Severity**

According to county and city engineers, sinkholes occurring in municipal limits do not happen very often but when they do, they are typically associated with failed storm water drainage infrastructure and damage is minor to moderate. Sinkholes located in populated areas that present a danger are filled to prevent any hazard. Due to the karst terrain of areas of Lawrence County, it is possible that a sinkhole of significant size could occur in a populated area of the county and present a serious hazard. Based on the Geological Survey of Alabama's 2010 sinkhole data, the percent probability of a new sinkhole forming in Lawrence County is categorized as highly likely. Its location within the county would determine if it is a hazard requiring further action. The assessed magnitude and severity of a sinkhole is categorized as negligible to critical depending on its location and size.

Identified Sinkholes in Lawrence County in 2010 by the Geological Survey of Alabama Online Interactive Map		
County Region	Municipalities in Region	Identified Sinkholes
Northern	Town of Hillsboro Town of Courtland; Town of North Courtland, and Town Creek	(please see above right map)
Middle to Southern	City of Moulton	(please see above right map)
Eastern		(please see above right map)
Western		(please see above right map)
Lawrence County total		(please see above right map)

Source: Geological Survey of AL, [http://gsa.state.al.us/gsa/geologichazards/Sinkholes\\_AL.htm](http://gsa.state.al.us/gsa/geologichazards/Sinkholes_AL.htm)



Sinkhole Hazard Event Future Probability Assessment and Extent of Disaster Based on Previous Occurrences				
County region	Municipalities in region	Identified sinkholes	Probability of future occurrence	Magnitude/severity of event
Northern	Town of Hillsboro Town of Courtland; Town of North Courtland, and Town Creek	N/A	Likely-Highly Likely	Contingent on size and location
Middle to Southern	City of Moulton	N/A	Likely	
Eastern		N/A	Likely-Highly Likely	
Western		N/A	Occasional	
Lawrence County total		N/A	Likely-Highly Likely	

Source: Multi-Hazard Mitigation Planning Team)

Severe Storms

**Description and Profile**

For the purpose of this document, severe storm events include thunderstorms, high winds, lightning, and hail. The combination of these events or as individual occurrences can be deadly. Thunderstorms are heavy rainstorm accompanied by thunder, lightning, strong winds, and sometimes hail. Thunderstorms can produce strong winds known as a down-burst or straight-line winds which may exceed 120 mph. These storms can tear off roofs, topple trees, and overturn mobile homes. Some thunderstorms can be accompanied by tornadoes. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes.

According to the National Oceanic and Atmospheric Administration, approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is classified as severe when it contains one or more of the following phenomena:

- Hail measuring three quarters of an inch or larger in diameter; and/or
- Winds equal or exceed 58 mph

The National Weather Service will issue the following public safety announcements associated with thunderstorms:

- A severe thunderstorm watch is issued when the weather conditions are such that a severe thunderstorm is likely to develop. They are issued well in advance of the actual occurrence of severe weather. During the watch, people should review severe thunderstorm safety rules and be prepared to move to a place of safety if threatening weather approaches.
- A severe thunderstorm warning is issued when a severe thunderstorm has been sighted or indicated by weather radar. At this point, the danger is very serious and it is time to go to a safe place, turn on a battery-operated radio or television, and wait for the “all clear” from authorities.

High winds associated with a severe storm are capable of damaging property and structures and include straight-line winds, down-bursts, and micro-bursts. Straight-line winds are high winds across a wide area that can reach 140 mph. Down-burst are localized currents of air blasting down from a thunderstorm to the ground resulting in outward bursts of damaging winds. Micro-bursts are small down-burst covering an area less than 2.5 miles across and include a strong wind shear.

Lightning is the visible electric discharge associated with a thunderstorm. Lightning can occur within a cloud, from cloud to

cloud, cloud to air, or cloud to ground. In the U.S., lightning causes an average of 60 fatalities and 300 injuries a year.

Hail occurs when strong rising air currents associated with a thunderstorm, called updrafts, carry water droplets to a height where freezing can occur. When the ice particles fall to the ground, they are called hail. Severe thunderstorms have been known to produce hail three quarters of an inch or more in diameter and fall at speeds close to 100 mph. In the U.S., hail storms cost more than \$1 billion in damages to property and crops every year.

**Location**

Severe storms impact the entire Lawrence County planning area and typically occur from mid-March through September. However, they can occur anytime in the year when conditions are warm and favorable. According to National Weather Service data Lawrence County and all of its municipalities have experienced severe storm events that have resulted in deaths, injuries, property damage, and crop damage. The entire planning area will continue to experience severe storms and be impacted by their hazardous conditions, therefore the percentage of the study area susceptible to this hazard is categorized as extensive.

**Previous Occurrences**

According to data from NOAA’s Storm Event Database, there have been 237 thunderstorm and high wind events in Lawrence County between 2/11/65 and 12/31/14. These hazardous events resulted in no deaths and 4 injuries. Property damage from these events totaled \$3.626 M and crop damage totaled \$21K. The worst of these events occurred on July 5, 2012 when scattered strong to severe thunderstorms developed across northwest Alabama and moved east into northeast Alabama. There were several reports of wind damage and large hail along with a strong macroburst that occurred in Moulton. The overall damage stretched approximately 4 miles from west to east and 3.3 miles from north to south, covering the city. Trees and power lines were down on homes and businesses across Moulton and water damage was reported. The final maximum wind rating of the macroburst was based on a combination of the damage to power poles and damage to free standing structures in three separate locations across the city. A macroburst that can sustain this severity of damage is the worst extent expected in the planning area.

Thunderstorm and High Wind Events in Lawrence County between 2/11/65 -12/31/14				
Thunderstorm and high wind events	Deaths	Injuries	Property damage	Crop damage
237	0	4	\$3.626 M	\$21.00 K
Source: 2014 NOAA National Climatic Data Center -Storm Events Database at <a href="http://www.ncdc.noaa.gov/">http://www.ncdc.noaa.gov/</a>				

The NOAA Storm Event Database reports nine lightning events in Lawrence County between 6/28/97 and 12/31/14. These events resulted in 2 injuries and \$211.5 K in property damage. The most severe event occurred March 12, 2010, when lightning struck the Courtland Airfield area, starting a fire and destroying an apartment building, displacing eight families. No specifics on the lightning was reported. The worst extent expected in the planning area is lightning that would cause fire damage.

Lightning Events in Lawrence County between 6/28/97 - 12/31/14				
Lightning events	Deaths	Injuries	Property damage	Crop damage
9	0	2	\$211.5 K	\$0.00
Source: 2014 NOAA National Climatic Data Center -Storm Events Database at <a href="http://www.ncdc.noaa.gov/">http://www.ncdc.noaa.gov/</a>				

The NOAA Storm Event Database reports that there have been 151 hail events in Lawrence County between 2/18/1976 and 12/31/14. These events resulted in \$191K in property damage and \$16K in crop damage. The worst of these events occurred on March 12, 2010 in the Hillsboro area of Lawrence County, causing \$50K worth of property damage. Golfball size hail (up to 2 inches in diameter) was reported five miles west of Trinity. The worst extent expected in the planning area is hail measuring up to 2 inches in diameter.

Hail Events in Lawrence County between 6/28/97 -12/31/14				
Hail events	Deaths	Injuries	Property damage	Crop damage
151	0	0	\$1 91.00 K	\$16.00 K
Source: 2014 NOAA National Climatic Data Center -Storm Events Database at <a href="http://www.ncdc.noaa.gov/">http://www.ncdc.noaa.gov/</a>				

**Future Probability and Magnitude/Severity**

There were 397 severe storm events that included thunderstorms, high winds, lightning, and hail in the planning area in the past 49 years. The percent probability of a severe storm event occurring in Lawrence County is categorized as highly likely with a future probability percentage of 810% that one or a combination of these severe storm hazards will occur in the next year. The assessed magnitude and severity is categorized as limited to critical and depends on the intensity and size of the storm. The extent of the potential hazard could cause millions in economic loss to property and agriculture as well as injuries and death.

Bottom Middle: Thunderstorm & High Wind Events in Lawrence County 1961-2014 (Chart, 2014: NOAA National Climatic Data Center, Multi-Hazard Mitigation Planning Team)

Top Right: Lightning Events in Lawrence County between 1996-2014 (Chart, 2014: NOAA National Climatic Data Center, Multi-Hazard Mitigation Planning Team)

Middle Right: Hail Events in Lawrence County between 1969--2014 (Chart, 2014: NOAA National Climatic Data Center, Multi-Hazard Mitigation Planning Team)

Left: Lightning Photo  
(Photo, 2015: istockphoto.com)

Top: Severe Storm Event Future Probability Assessment & Extent of Disaster Based on Historical data between 1961-2014  
(Chart, 2014: Hazard Mitigation Planning Team)

Bottom Center: Severe Storm Damage  
(Photo, 2015: istockphoto.com)



Severe storm event future probability assessment and extent of disaster based on historical data between 2/11/1965-12/31/2014			
Extent of Jurisdictional Affect:	Historical Occurrences:	% Probability of Future Annual Occurrence:	Magnitude/ Severity of Event:
Extensive	397	Likely-highly likely	Limited- critical
Lawrence County	227	463%	
Town of Hillsboro	6	12%	
Town of Courtland	29	59%	
City of Moulton	106	216%	
Town of Town Creek	29	59%	
TOTAL	397	810%	

Source: Hazard Mitigation Planning Team



Tornados

**Description and Profile**

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud and is formed from a horizontal change in wind speed and direction that is then uplifted into a vertical formation. The vertical mass can be greater than six miles wide in rotation. Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction with wind speeds that can exceed 250 mph. Damage paths can be more than one mile wide and 50 miles long. Tornado season is generally March–August and again in November–December, although tornadoes can occur at any time of year. Over 80 percent of all tornadoes strike between noon and midnight.

The Fujita Scale was developed in 1971 and is used to measure tornado strength using sets of wind measurements based on damage that results from wind speed. It was enhanced in 2007 and now includes 28 damage indicators and associated degrees of damage allowing for more detailed analysis and better correlation between damage and wind speed. Tornadoes are classified by the damaging pattern, which is categorized by EF0 through EF5.

Enhanced Fujita Scale		
EF-Scale:	Id F-Scale:	Typical Damage:
EF-0 (65–85 mph)	F0 (65–73 mph)	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF-1 (86–110 mph)	F1 (73–112 mph)	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF-2 (111–135 mph)	F2 (113–157 mph)	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF-3 (136–165 mph)	F3 (158–206 mph)	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF-4 (166–200 mph)	F4 (207–260 mph)	Devastating damage. Whole frame houses Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF-5 (>200 mph)	F5 (261–318 mph)	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd); high-rise buildings have significant structural deformation; incredible phenomena will occur.
EF No rating	F6–F12 (319 mph to speed of sound)	Inconceivable damage. Should a tornado with the maximum wind speed in excess of EF-5 occur, the extent and types of damage may not be conceived. A number of missiles such as iceboxes, water heaters, storage tanks, automobiles, etc. will create serious secondary damage on structures.

Source: NOAA Storm Prediction Center

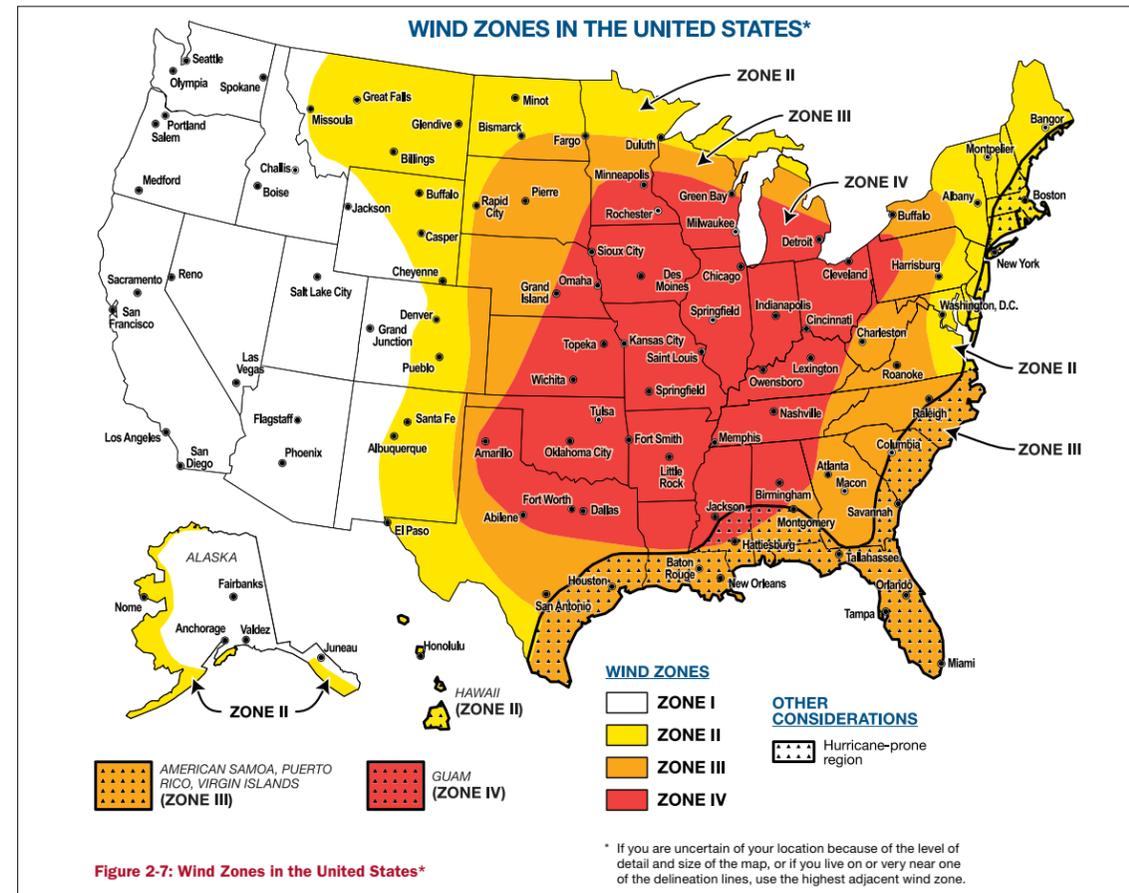


Figure 2-7: Wind Zones in the United States\*

Top Right: Wind Zones in the United States (Map, 2014: fema.gov)

Bottom Left: Enhanced Fujita Scale (Chart, 2010: NOAA Storm Prediction Center)

**Location**

Tornadoes are most prevalent in the United States and occur in the Midwest, Southwest, and Southeast. Alabama ranks fourth in the nation in the number of killer tornadoes and fifth in the number of fatalities. The entire state is vulnerable to the threat of tornadoes, however Lawrence County and the entire planning area is extremely susceptible. The planning study area is located in a Zone IV Wind Zone, according to the FEMA U.S. Wind Zone Map. This map shows frequency and strength of extreme windstorms in the U.S. Lawrence County is at the highest risk of damage from these events.

Based on the NOAA Storm Prediction Center map of historic tornado data from 1950 thru 1998, Lawrence County and all its municipalities are located in the highest tornado zone (>25) of previously recorded tornadoes of F3 category and higher occurring per 3,700 square miles. Therefore, tornadoes were assessed as a significant threat to the entire planning area and every jurisdiction of Lawrence County and categorized as extensive with the capability of affecting 50-100% of the planning area.

**Previous Occurrences**

According to NOAA’s 2014 National Climatic Data Center Storm Events Database, there have been a total of 33 tornado events in Lawrence County between 1957 and 2014. These tornado events resulted in 32 deaths, 92 injuries, and \$42.138 M in property damage.

# RISK ASSESSMENT

Left: Tornado Events Reported in Lawrence County 1957-2014  
(Chart, 2014: NOAA National Climatic Data Center, Multi-Hazard Mitigation Planning Team)

Top Right: Tornado Event Future Probability Assessment & Extent of Disaster based on Historical Data between 1957-2014  
(Chart, 2014: Multi-Hazard Mitigation Planning Team)

Bottom Right: Tornado Activity in the United States  
(Map, 2014: fema.gov)

Tornado Events Reported in Lawrence County Between 1957 -2014					
Location	Date	Magnitude	Death/Injuries	Property Damages	Crop Damages
LAWRENCE CO.	11/18/1957	F1	0/0	2.50K	0.00K
LAWRENCE CO.	04/05/1958	F2	0/0	250.00K	0.00K
LAWRENCE CO.	04/05/1958	F2	0/0	25.00K	0.00K
LAWRENCE CO.	10/24/1967	F3	0/3	250.00K	0.00K
LAWRENCE CO.	05/29/1968	F2	0/0	250.00K	0.00K
LAWRENCE CO.	04/03/1974	F5	14/60	0.00K	0.00K
LAWRENCE CO.	04/03/1974	F5	0/0	0.00K	0.00K
LAWRENCE CO.	04/18/1978	F2	0/0	250.00K	0.00K
LAWRENCE CO.	04/17/1982	F1	0/0	0.03K	0.00K
LAWRENCE CO.	08/16/1985	F1	0/0	2.50K	0.00K
LAWRENCE CO.	11/04/1988	F3	0/0	250.00K	0.00K
LAWRENCE CO.	04/14/1991	F1	0/4	0.00K	0.00K
MOULTON	01/24/1997	F1	0/0	40.00K	8.00K
COURTLAND	12/16/2000	F0	0/0	0.00K	0.00K
FIVE PTS	11/24/2001	F2	0/2	250.00K	0.00K
HATTON	04/07/2006	F0	0/0	0.00K	0.00K
MT HOPE	04/07/2006	F0	0/0	0.00K	0.00K
CADDO	04/07/2006	F0	0/0	5.00K	0.00K
SPEAKE	04/07/2006	F1	0/0	25.00K	0.00K
MT HOPE	10/18/2007	EF1	0/0	0.00K	0.00K
LEOLA	02/06/2008	EF4	4/23	0.00K	0.00K
LEMON HILL	05/08/2008	EF2	0/0	250.00K	0.00K
MT HOPE	04/19/2009	EF0	0/0	18.00K	0.00K
WREN	04/19/2009	EF1	0/0	30.00K	0.00K
CADDO	05/06/2009	EF1	0/0	200.00K	0.00K
MASTERSON MILL	06/14/2009	EF1	0/0	0.00K	0.00K
LANDERSVILLE	10/07/2009	EF0	0/0	30.00K	0.00K
HILLSBORO	10/26/2010	EF1	0/0	10.00K	0.00K
LEOLA	04/20/2011	EF1	0/0	0.00K	0.00K
MT HOPE	04/27/2011	EF5	14/0	40.000M	0.00K
WOLF SPGS	05/25/2011	EF0	0/0	0.00K	0.00K
POINTER QUARTERS	02/20/2014	EF1	0/0	0.00K	0.00K
WOLF SPGS	06/09/2014	EF0	0/0	0.00K	0.00K
Total 33			32/92	42.138M	8.00K

Source: 2014 NOAA National Climatic Data Center -Storm Events Database at <http://www.ncdc.noaa.gov/>

## Future Probability and Magnitude/Severity

There were 33 tornado events in the planning area in the past 57 years. The percent probability of a severe storm event occurring in Lawrence County is categorized as occasional to likely with a future probability percentage of 58% that a tornado will occur somewhere in Lawrence County in the next year. The assessed magnitude and severity is categorized as limited to critical and depends on the intensity and size of the storm. The extent of the potential hazard could cause millions in economic loss to property as well as injuries and death.

Tornado event future probability assessment and extent of disaster based on historical data between 11/18/57-12/31/2014			
Extent of Jurisdictional Affect:	Historical Occurrences:	% Probability of Future Annual Occurrence:	Magnitude/ Severity of Event:
Extensive	33	Occasional -likely	Limited- critical
Lawrence County	30	53%	\$2,128,030
Town of Hillsboro	1	2%	\$10,000
Town of Courtland	1	2%	\$0
Town of North Courtland			\$0
City of Moulton	1	2%	\$40,000
Town of Town Creek	0	0%	\$0
TOTAL	33	58%	\$2,178,030

Source: Hazard Mitigation Planning Team

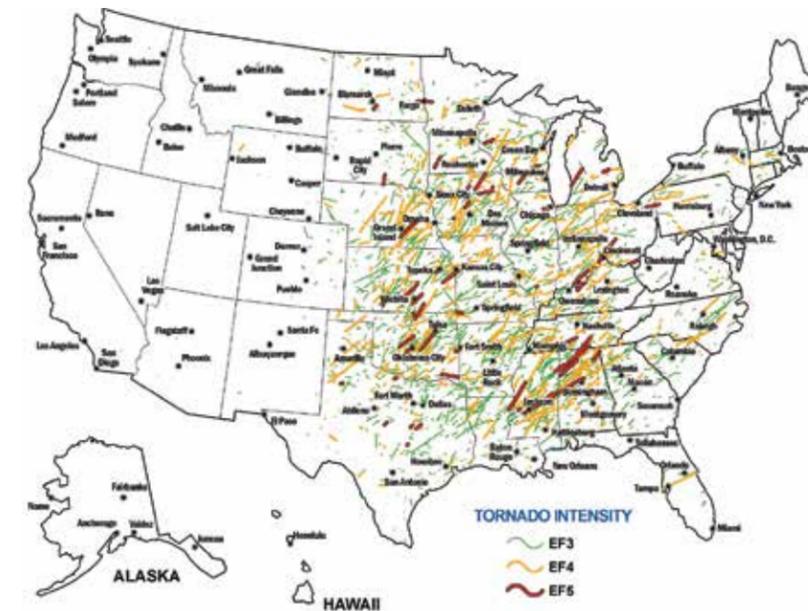


Figure 2-2: Recorded EF3, EF4, and EF5 tornadoes in the United States from 1950 to 2013  
SOURCE: NOAA NATIONAL WEATHER SERVICE, STORM PREDICTION CENTER

Wildfires

**Description and Profile**

A wildfire is an uncontrollable fire spreading through vegetation that poses a threat to structures, wildlife, crops and lives. As with most natural disasters, wildfires are strongly influenced by weather phenomena and often begin unnoticed and spread quickly through dry vegetation. There are three factors that contribute to wildfire behavior and an area's potential to burn: fuel, topography, and weather. Fuel is the material that feeds the fire and can consist of dead tree needles, twigs, brush, branches of dead trees, cured grass, and other associated natural combustibles. An area's topography affects a wildfire's ability to spread and become larger. Slopes contribute to increased fire activity due to a fire's tendency to rise via convection. A fire's intensity and rate of spread increases as slope increases. Weather factors such as temperature, humidity, wind and lightning also affect the potential for wildfires. Drought conditions increase an area's chance for wildfires.

The Wildland-Urban Interface (WUI) is the area where houses meet or intermingle with undeveloped wildland vegetation. This makes the WUI a focal area for human-environment conflicts such as wildland fires, habitat fragmentation, invasive species, and biodiversity decline. Below is the Wildland Urban Interface map of Alabama illustrating areas of WUI areas of intermix and interface across the state.

**Location**

According to the Alabama Forestry Commission, an average wildland fire year in Alabama produces 4,000 wildland fires that burn over 40,000 acres. Nearly all wildfires in Alabama are human-caused with only 3 percent being caused by lightning. Debris burning and arson are major causes of wildland fire. On average, annual Alabama wildfires damage or destroy 46 homes, 114 structures, and 1,100 vehicles. Rapid population growth has resulted in extensive areas of wildland/urban interface across the State. An initial estimate found over 1,350 wildland/urban interface communities with potential wildland fire damage risk. Approximately 94 percent of Alabama's forestlands are privately owned, therefore the vast majority of wildland fires occur on privately owned lands.

Wildfires are identified as a threat to Lawrence County and the entire planning area, especially areas where the interface and rural development patterns meet. The Lawrence County Wildfire Risk Map below identifies areas within the planning area that are at high and extreme risk for wildfires. The maps to the right assess the risk of wildfire on a given acre in Lawrence County. Based on these maps

and the abundance of forested areas in Lawrence County, wildfires were assessed as a significant threat to the entire planning area and every jurisdiction of Lawrence County and categorized as extensive with the capability of affecting 50-100% of the planning area.

**Previous Occurrences**

According to NOAA's 2014 National Climatic Data Center Storm Events Database, there have been no wildfires in Lawrence County between 1950 and 2015. However, we know this to not be accurate due to reports from county and municipal officials and recognize that there is a lack of data for this hazard with this resource. However, the 2013 State of Alabama Hazard Mitigation Plan Update documents 531 wildfires in Lawrence County between 1997 and 2012 resulting in 6,104 acres burned.

Wildfire events in Lawrence County between 1997 in 2012			
Total number of wildfires	Total acres burned	Number of deaths	Number of injuries
531	6104	0	0

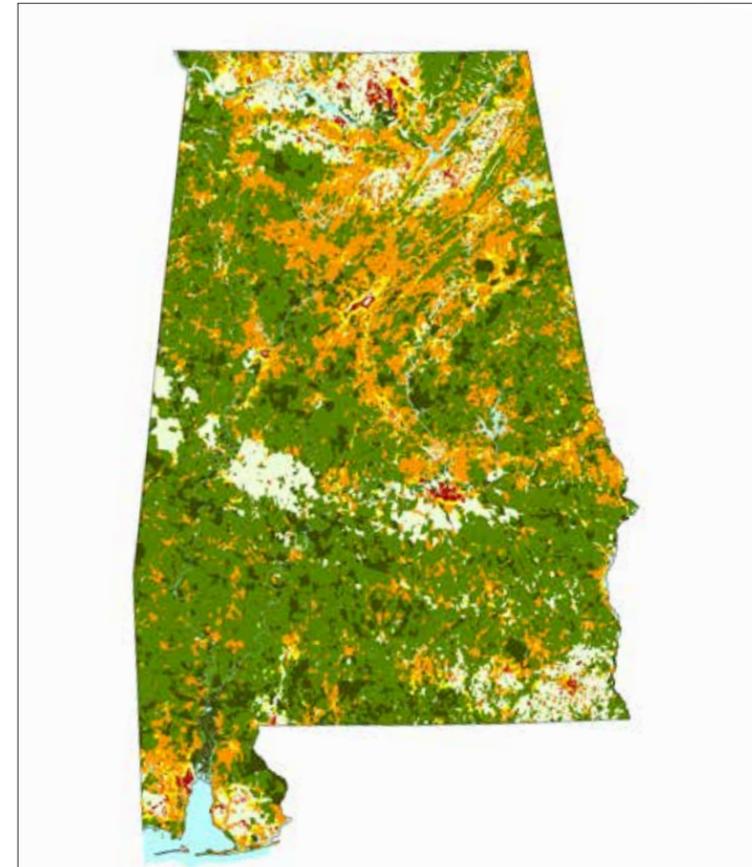
*Source: 2013 State of Alabama hazard mitigation plan update*

**Future Probability and Magnitude/Severity**

There were 531 wildfire events in the planning area in the past 15 years. The percent probability of a wildfire event occurring in Lawrence County is categorized as highly likely with a future probability percentage of greater than 1000% that a wildfire will occur somewhere in Lawrence County in the next year. The assessed magnitude and severity is categorized as negligible to limited and depends on the size and location of the wildfire. The extent of the potential hazard could cause millions in economic loss to property, crops, as well as injuries and death if the fire is spreads into the wildland urban interface and into developed areas of the county.

Wildfire event future probability assessment and extent of disaster for Lawrence County based on historical data between 1997 and 2012			
Extent of jurisdictional affect:	Historical occurrences:	Percent probability of future occurrence:	Magnitude/severity of event:
Extensive	531	Highly likely (greater than 1000%)	Negligible-limited

*Source: 2013 State of Alabama hazard mitigation plan update*



*Middle Center: Wildfire Events in Lauderdale County between 1997-2012 (Chart, 2014: State of Alabama Hazard Mitigation Plan Update 2013)*  
*Top Right: Alabama Wildland Urban Interface 2000 (Chart, 2003: University of Wisconsin, Madison)*  
*Middle Bottom: Wildfire Event Future Probability Assessment & Extent of Disaster for Lauderdale County based on Historical Data between 1997-2012 (Chart, 2014: Hazard Mitigation Planning Team)*

**LEGEND**

**WUI**

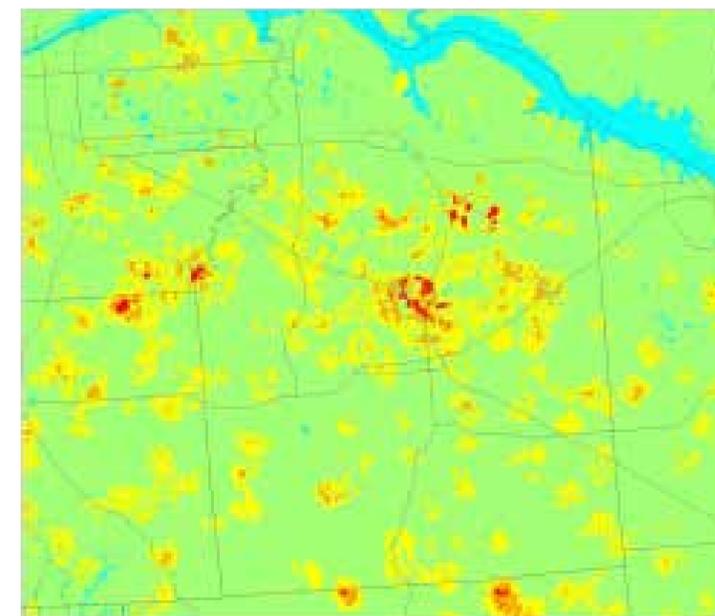
- Intermix
- Interface

**Non-WUI Vegetated**

- Very Low Density Housing
- No Housing

**Non-Vegetated or Agriculture**

- Medium and High Density Housing
- Low and Very Low Density Housing
- Water



*Bottom Right: Wildfire Risk on a Given Acre in Lawrence County (Map, 2010: Alabama Forstry Commission, Lawrence County Complete Plan 2010)*

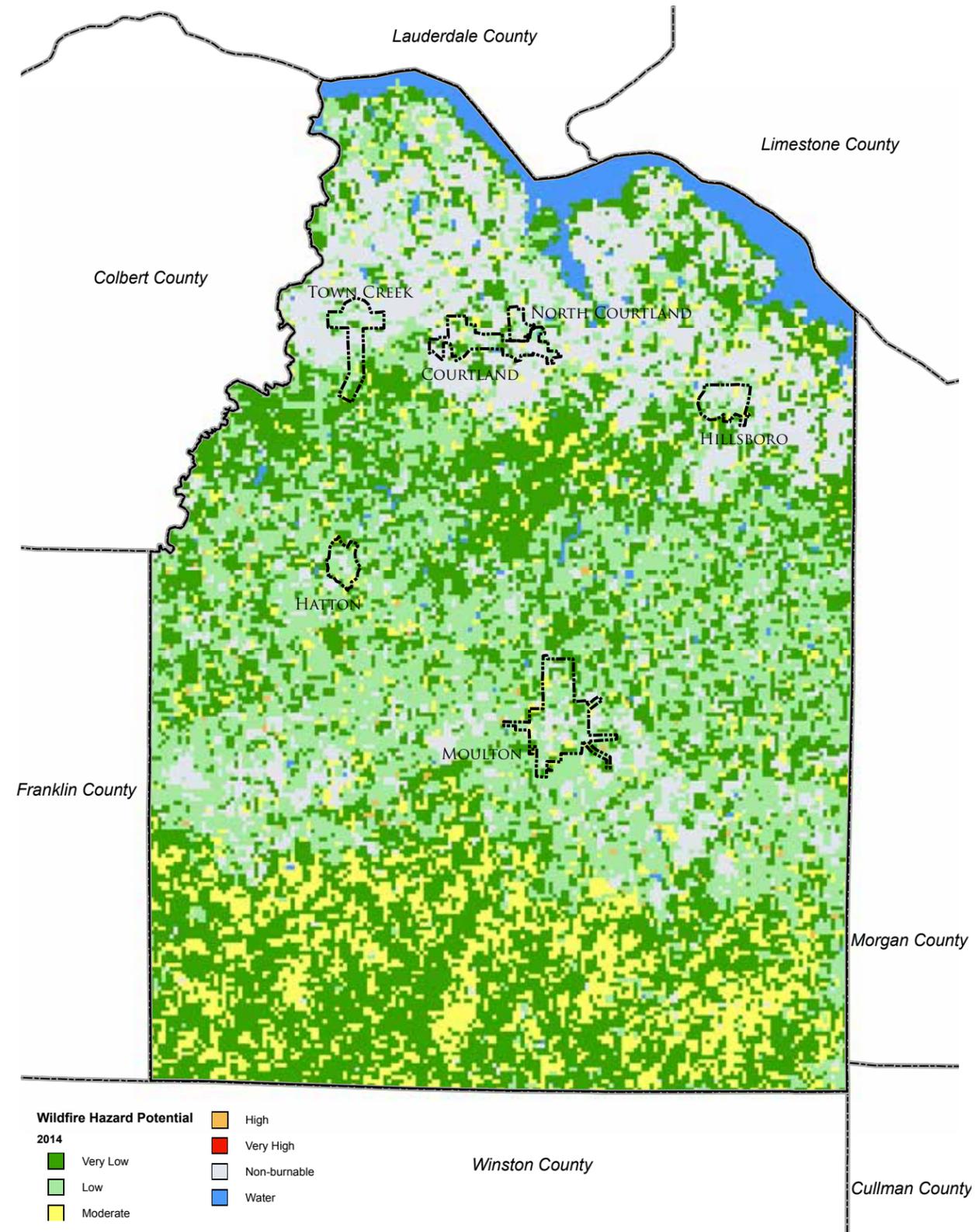
**LEGEND**

- 1 - Low Risk
- 2 - Medium Risk
- 3 - High Risk
- 4 - Extreme Risk

# RISK ASSESSMENT

Left: Lawrence County Wildfire Risk per Acre  
(Map, 2015: Multi-Hazard Mitigation Planning Team)

Right: Wildfire Photos  
(Photos, 2015: istockphoto.com)



Winter Storms

**Description and Profile**

Winter storms in the south involve snow and freezing rain and pose a threat to public safety, damage personal property and utilities, disrupt transportation, commerce, and public services. Large storms can isolate portions of communities and shut down services and access for days. Heavy snow and ice can collapse roofs and down trees and power lines. They can cause power outages, freeze water lines, and result in people being trapped in their homes for days without power, heat, or supplies. Icy roadways result in many traffic accidents. Death from exposure to cold temperatures can also occur.

**Location**

Winter storms in Alabama are not as severe or common as they are in northern states. A winter storm in Alabama usually consists of freezing rain, sleet, and a few inches of snow that may or may not accumulate. Most counties in Alabama do not experience a winter storm every year. Lawrence County's location in the northern portion of the state results in its increased chance of a winter storm in comparison to other counties in Alabama. According to FEMA's Frequency of Winter Storm Events By County : 1996-2013 map below, Lawrence County is categorized as having 1-4 winter storm events per year based on historic data recording in this 17 year period. Due to the size and weather pattern of winter storms in north Alabama, winter storms were assessed as a significant threat to the entire planning area and every jurisdiction of Lawrence County and categorized as extensive with the capability of affecting 50-100% of the planning area.

**Previous Occurrences**

According to NOAA's 2014 National Climatic Data Center Storm Events Database, there have been a total of 28 winter storm events in Lawrence County between 1950 and 2014. These winter storm events included winter weather, winter storm, heavy snow, ice storms, and sleet. They resulted in no deaths, no injuries, and \$1.312M in property damage and \$1.00K in crop damage. The worst of these storms occurred on December 23, 1998 lasting 3 days, and causing \$1.2M in property damage. This winter storm brought a mixture of freezing rain, sleet, and rain to the northern half of Alabama, with the northwestern quarter of the state especially hit hard. Temperatures were at or below freezing for the majority of the event and liquid equivalent precipitation ranged from 1 to 3 inches. Significant ice accumulations of one half to 1 inch were common across the area. Numerous trees were down and significant power outages were encountered in all counties. Numerous roads were closed and numerous automobile accidents occurred due to icy road conditions. This storm represents the worst extent expected in the planning area.

Winter storm events reported in Lawrence County between 1950-2014					
Location	Date	Event type	Death/injuries	Property damage\$	Crop damage\$
Lawrence County	01/06/1996	Winter Storm	0/0	10.00K	1.00K
Lawrence County	02/01/1996	Winter Storm	0/0	65.00K	0.00K
Lawrence County	02/16/1996	Winter Storm	0/0	15.00K	0.00K
Lawrence County	01/10/1997	Winter Storm	0/0	6.00K	0.00K
Lawrence County	12/29/1997	Winter Storm	0/0	0.00K	0.00K
Lawrence County	12/23/1998	Ice Storm	0/0	1.200M	0.00K
Lawrence County	01/06/1999	Winter Storm	0/0	0.00K	0.00K
Lawrence County	12/21/1999	Ice Storm	0/0	0.00K	0.00K
Lawrence County	01/27/2000	Winter Storm	0/0	15.00K	0.00K
Lawrence County	02/06/2002	Winter Storm	0/0	1.00K	0.00K
Lawrence County	02/11/2006	Heavy Snow	0/0	0.00K	0.00K
Lawrence County	02/02/2007	Heavy Snow	0/0	0.00K	0.00K
Lawrence County	12/23/2008	Winter Weather	0/0	0.00K	0.00K
Lawrence County	01/29/2010	Winter Weather	0/0	0.00K	0.00K
Lawrence County	02/08/2010	Winter Weather	0/0	0.00K	0.00K
Lawrence County	02/15/2010	Winter Weather	0/0	0.00K	0.00K
Lawrence County	03/02/2010	Winter Weather	0/0	0.00K	0.00K
Lawrence County	12/15/2010	Winter Weather	0/0	0.00K	0.00K
Lawrence County	12/25/2010	Heavy Snow	0/0	0.00K	0.00K
Lawrence County	12/26/2010	Winter Weather	0/0	0.00K	0.00K
Lawrence County	01/09/2011	Heavy Snow	0/0	0.10K	0.00K
Lawrence County	01/20/2011	Winter Weather	0/0	0.00K	0.00K
Lawrence County	02/03/2011	Winter Weather	0/0	0.00K	0.00K
Lawrence County	02/09/2011	Heavy Snow	0/0	0.00K	0.00K
Lawrence County	01/12/2012	Winter Weather	0/0	0.00K	0.00K
Lawrence County	01/14/2013	Winter Weather	0/0	0.00K	0.00K
Lawrence County	02/11/2014	Winter Weather	0/0	0.00K	0.00K
Lawrence County	02/12/2014	Heavy Snow	0/0	0.00K	0.00K
TOTAL			0/0	1.312 M	1.00 K

Source: 2014 NOAA National Climatic Data Center -Storm Events Database at <http://www.ncdc.noaa.gov/>

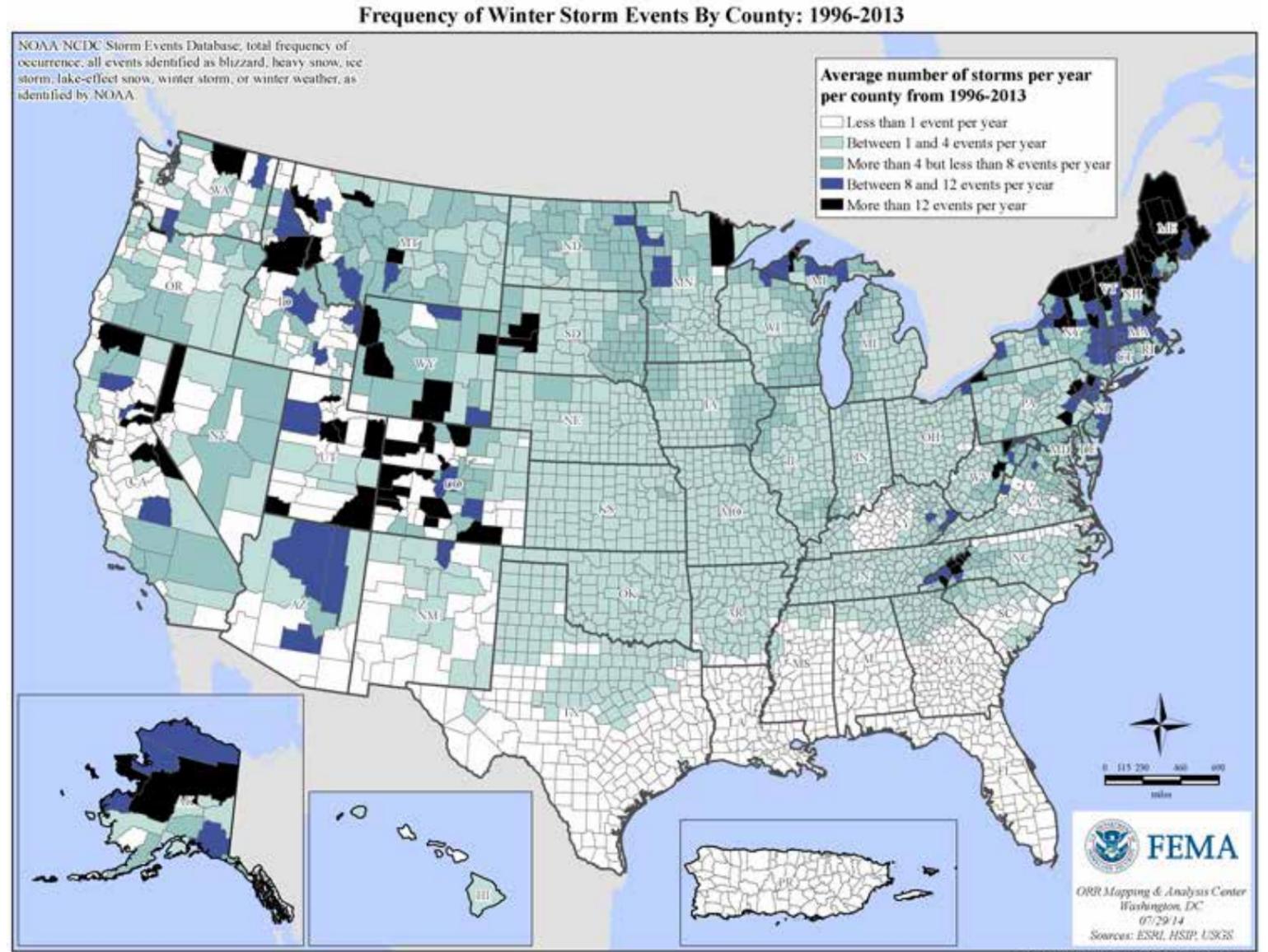
Right: Winter Storm Events Reported in Lawrence County 1950-2014 (Chart, 2014: NOAA National Climatic Data Center, Multi-Hazard Mitigation Planning Team)

Right: Extreme Winter Storm  
(Photo, 2015: istockphoto.com)

Top Right: Frequency of Winter Storm Events  
by County: 1996-2013  
(Map, 2014: fema.gov)

Bottom Right: Winter Storm Future Probability  
Assessment & Extent of Disaster for Lawrence  
County Based on NOAA Storm Event Data  
between 1950-2014  
(Chart, 2014: Hazard Mitigation Planning Team)

**Future Probability and Magnitude/Severity**  
There were 28 winter storm events in the planning area in the past 64 years. The percent probability of a winter storm event occurring in Lawrence County is categorized as likely with a future probability percentage of 44% that a winter storm will occur somewhere in Lawrence County in the next year. The assessed magnitude and severity is categorized as limited to critical and depends on the size and location of the winter storm. The extent of the potential hazard could cause billions in economic loss to property, crops, as well as injuries and death if the winter storm effects metropolitan areas and last for several days.



Winter storm event future probability assessment and extent of disaster for Lawrence County based on historical data between 1950 and 2014

Extent of jurisdictional affect:	Historical occurrences:	Percent probability of future occurrence:	Magnitude/severity of event:
Extensive	28	44% – Likely	\$1.312 M limited-critical

Source: hazard mitigation planning team

### RA.3 Assessing Vulnerability Overview

The vulnerability assessment determines the extent of vulnerability the identified hazards have on various components of the planning jurisdiction and includes: Jurisdiction Vulnerability, Critical Facilities and Structures, Estimated Potential Loss, Repetitive Loss, and Development Trends and Population Growth.

#### Jurisdiction Vulnerability to Each Identified Hazard

The vulnerability of each jurisdiction to each identified hazard is discussed in each hazard description earlier in this section and the following classification was used:

- Extensive- 50-100% of planning area affected by hazard
- Significant - 10-50% of planning area affected by hazard
- Significant - 10-50% of planning area affected by hazard

The planning area is equally susceptible to all identified hazards described and profiled with the exception of one hazard, landslides. Landslides are more likely on the southern end of Lawrence County due to the geologic nature of the area. Therefore, the potential impact of the planning area is classified as limited to significant. The table to the right illustrates each jurisdictions vulnerability to each hazard.

The populations of each jurisdiction and county are vulnerable to each of the identified hazards. The table to the right describes the population distribution within Lawrence County as well as population projections for the year 2020. According to the linear population projection methodology, Lawrence County's population will decrease by 1,588 people to 32,188 in 2020. If current growth trends remain the same with all of the participation jurisdictions experiencing population loss, the overall growth of the county will decrease. The projection indicates that all participating jurisdictions will continue a trend of decreased growth.

Individual Jurisdiction's Vulnerability to Identified Hazards						
Identified Hazard	Lawrence County	Courtland	North Courtland	Hillsboro	Moulton	Town Creek
Dam/Levee Failure	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Drought	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Earthquake	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Extreme Temps	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Flood	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Hazardous Materials	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Hurricane	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Landslides	Limited	Limited	Limited	Limited	Limited	Limited
Nuclear Accidents	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Sinkholes	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Severe Storms	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Tornado	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Wildfires	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive
Winter Storms	Extensive	Extensive	Extensive	Extensive	Extensive	Extensive

Population Distribution and Population Projection by Jurisdiction					
Jurisdiction	2012 Population Estimate	2013 Population Estimate	Average Annual % Change	2020 Projected Population	% of Total County Population
Lawrence County	33,777	33,571	-0.6%	32,188	100%
Town of Courtland	607	604	-1.2%	551	1.8%
Town of North Courtland	622	618	-0.6%	592	1.8%
Town of Hillsboro	537	534	-0.6%	511	1.6%
City of Moulton	3,420	3,404	-0.5%	3,285	10.1%
Town of Town Creek	1,085	1,080	-0.5%	1,042	3.2%

Source: U.S. Census Data and Planning Team

**Requirement §201.6(c)(2)(ii) :**  
 [The risk assessment shall include a) description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

**Requirement §201.6(c)(2)(ii)(A):**  
 The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

**Requirement §201.6(c)(2)(ii)(B) :**  
 [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

**Requirement §201.6(c)(2)(ii)(C):**  
 [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

**Requirement §201.6(c)(2)(ii):**  
 (As of October 1, 2008) [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged floods.

Top Right: Individual Jurisdictions' Vulnerability to Identified Hazards  
 (Chart, 2014: Hazard Mitigation Planning Team)

Bottom Right: Population Distribution & Population Projection by Jurisdiction  
 (Chart, 2015: U.S. Census Data, Multi-Hazard Mitigation Planning Team)

Left: NFIP Losses as of June 2015  
(Chart, 2015: fema.gov, Multi-Hazard Mitigation Planning Team)

Bottom Left: NFIP Insurance Policies as of 6/30/15  
(Chart, 2014: fema.gov, Multi-Hazard Mitigation Planning Team)

Right: Lawrence County Flood Prone Areas Map  
(Map, 2015: Multi-Hazard Mitigation Planning Team)

### RA.4 Addressing Repetitive Loss Properties

#### Addressing Repetitive Loss Properties

According to FEMA, a repetitive loss property is a residential property that has two or more losses of at least \$1,000.00 each of which has been paid under the National Flood Insurance Program (NFIP) within any 10 year period since 1978. All five participating jurisdictions are in compliance with NFIP standards. Currently, there are four jurisdictions within the planning area with NFIP losses as of June 30, 2015: Lawrence County, and the City of Moulton, the Town of Courtland, and the Town of Town Creek. Lawrence County has 11 losses with \$73,105.46 in total payments. Moulton has six losses with \$163,925.02 in total losses. Courtland has nine losses, totaling \$124,201.64. Town Creek has two losses, totaling \$393.46.

NFIP Losses as of June 2015		
Jurisdiction	Total Losses	Total Payments
Courtland	9	\$124,201.64
Lawrence County	11	\$73,105.46
Moulton	6	\$163,925.02
Town Creek	2	\$393.46

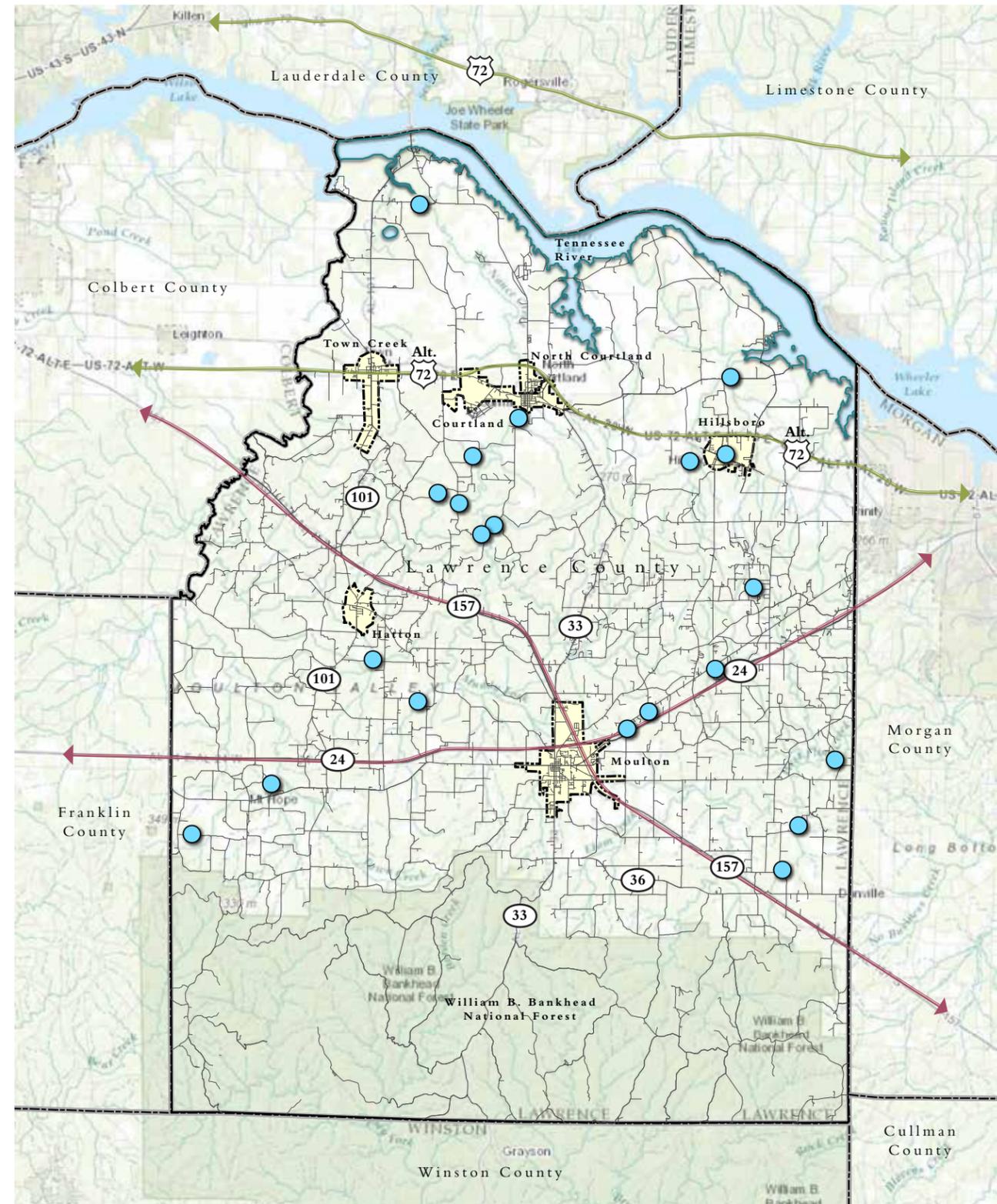
Source: <http://bsa.nfipstat.fema.gov/reports/1040.htm#01>

There are currently 80 NFIP policies within the planning area as of June 2015. Lawrence County has a total of 37 policies with \$7,414,500 in insurance in-force and \$29,335 in written premiums in-force.

NFIP Insurance Policies as of 6/30/15			
Jurisdiction	Policies In Force	Insurance In Force	Written Premium In Force
Courtland	10	\$1,640,600	\$8,330
Hillsboro	4	\$539,000	\$2,326
Moulton	27	\$3,962,500	\$17,437
Town Creek	2	\$213,100	\$1899
Lawrence County	37	\$7,414,500	\$29,335

Source: <http://bsa.nfipstat.fema.gov/reports/1011.htm#ALT>

The map to the right illustrates the flood prone areas within the planning jurisdictions and identifies where there have been repetitive flooding events.



Flood Prone Areas

## RA.5 Identifying Structures

### Critical Facilities and Structures

A critical facility is defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. For the purposes of this plan, the delineation of facilities as critical is based on FEMA's HAZUS standards of critical facility definitions and public feedback from policy committee members. In terms of determining the impact a particular hazard has on an identified critical facility, the HAZUS model is used to estimate potential loss and associated costs. The FEMA HAZUS critical facilities definitions are as follows:

- Essential Facilities - These facilities are critical to the health and welfare of the entire county population and are essential following hazard events. They include emergency response facilities, medical care facilities, schools, and shelters for evacuation.
- Lifeline Utility Systems - These facilities are essential lifelines that include potable water, wastewater, natural gas, electric, and communication systems.
- Transportation Systems - These facilities include highways, bridges, railways, and waterways.
- High Potential Loss Facilities - These facilities include military installations and high potential loss dams.
- Hazardous Materials Facilities - These facilities may pose a threat if disrupted by natural hazards and include hazardous chemicals, explosives, flammables, toxins, and radioactive materials.

Each jurisdiction within the planning area identified critical facilities within their community and the structure type and estimated value was assessed. Local data was gathered in regards to each participating jurisdictions' select critical facilities, as they are perceived by that jurisdiction. In addition, the vulnerability of critical facilities was discussed in relation to future buildings, infrastructure and critical facilities within the planning study area.

Identified critical facilities were delineated by category and include law enforcement stations, fire stations, national guard locations, hospitals, school buildings, warning sirens locations, and transportation facilities. Hazardous materials locations were identified and discussed earlier in the hazard profile portion of this section.

To further verify building types and material values obtained from public feedback, the planning team applied a level one HAZUS-MH analysis to obtain building material types and the amount of structures within those material types. That information along with building types by use are described with the overall estimated replacement value. However, these numbers are estimates and further local data should be gathered to increase the estimates accuracy.



Top Right: Lawrence County Courthouse  
(Photo, 2015: wikipedia.org)

# RISK ASSESSMENT

Left and middle: Selected Critical Facility Values in Lawrence County  
(Chart, 2015: Lawrence County Complete Plan 2010 & HAZUS Data)

Bottom Center: Selected Critical Values in Town of Courtland  
(Chart, 2015: Lawrence County Complete Plan 2010 & HAZUS Data)

Top Right: Selected Critical Values in City of Moulton  
(Chart, 2015: Policy Committee Critical Facility Sheets & HAZUS Data)

Bottom Right: Selected Critical Values in Town of North Courtland  
(Chart, 2014: Lawrence County Complete Plan 2010 & HAZUS Data)

Selected Critical Facilities Values – Lawrence County	
Facility	Value
Courthouse	\$15,000,000
Courthouse Annex #1	\$900,000
Courthouse Annex #1	\$500,000
Courthouse Annex #3	\$450,000
EMA Office	\$500,000
County Jail	\$4,000,000
Health Department	\$1,000,000
Department of Human Resources	\$3,000,000
Joe Wheeler Offices	\$7,203,000
Joe Wheeler substations	\$14,150,000
Joe Wheeler towers and antennas	\$600,000
BOE/schools	\$136,458,457
Courtland Airport	\$80,000
LCATS (COA)	\$111,800
County shop	\$47,800
Rescue squad	\$100,000
West Lawrence water co-op office	\$189,000
West Lawrence water co-op maintenance building	\$160,000
West Lawrence water co-op pump station (hwy 157 – Mt. Hope, Big Nance Creek)	\$30,000
West Lawrence water co-op pump station (hwy 157 – Mt. Hope, Cole Park)	\$70,000
West Lawrence water co-op pump station (CR 460 – Mt. Hope)	\$100,000
West Lawrence water co-op booster pump station (Air Base Road – Mt. Hope)	\$183,000
West Lawrence water co-op booster pump station #2 (CR 23 – Mt. Hope)	\$26,300
West Lawrence water co-op water tank (hwy 157 – Mt. Hope)	\$250,000
West Lawrence water co-op water tank (Mt. Hope)	\$750,000
West Lawrence water co-op water tank (Mt. Hope)	\$525,000
West Lawrence water co-op water tank (CR 108 – Mt. Hope)	\$1,100,000
Caddo Fire Station #1 (building and basic contents)	\$267,228
Caddo Fire Station #2 (building and basic contents)	\$135,818

Hatton Fire station	\$125,000
Mt. Hope Fire Department	\$70,000
County bridges (141) replacement cost does not include state hwy	\$20,000,000
County roads (700 miles paved x \$150,000 per mile to replace)	\$105,000,000
County fuel pump	\$300,000
Watershed dam – Town Creek #3	\$3,658,513
Watershed dam – Town Creek #12	\$1,078,889
Watershed dam – Town Creek #16	\$1,149,096
Watershed dam – Town Creek #22	\$489,579
Watershed dam – Big Nance Creek #4	\$1,165,239
Lawrence Baptist medical center	\$6,035,090
East Lawrence Elementary school	\$5,209,060
East Lawrence middle school	\$9,205,770
East Lawrence high school	\$6,523,950
Speake high school	\$6,799,060
Lawrence County high school	\$9,357,360
Lawrence County Center for Technology	\$6,733,560
Mt. Hope high school	\$3,785,990
Lawrence County Learning Center	\$6,733,560
Hazlewood Elementary school	\$2,011,830
<b>Total critical facilities</b>	<b>\$383,092,903</b>

Source: Lawrence County Complete Plan 2010; HAZUS-MH 2015

Selected Critical Facilities Values – Town of Courtland	
Facility	Value
Town Hall	\$395,000
Police Department/Fire Department #1	\$1,150,000
Fire Department #2 and #3	\$190,000
Baptist Church (shelter)	\$1,500,000
Methodist Church (shelter)	\$1,200,000
TVA substation	\$1,600,000
6 Lift Stations	\$166,000
2 water tanks/pumping station	\$2,200,000
Community center	\$260,000
Three Springs Courtland school	\$6,733,560
Gas regulator station	\$350,000
Bridges (3)	\$5M repair and \$10M replace
<b>Total critical facilities</b>	<b>\$9,011,000</b>

Source: Lawrence County Complete Plan 2010; HAZUS-MH 2015

Selected Critical Facilities Values – City of Moulton	
Facility	Value
City Hall/police station	\$2,600,000
Elementary school	\$10,000,000
Middle school	\$10,000,000
High school	\$25,000,000
Fire departments	\$3,000,000
Gas regulator stations	\$60,000
Lawrence medical	\$20,000,000
Wastewater treatment plant	\$12,000,000
Water treatment plant	\$12,000,000
Moulton Baptist/shelter	\$3,000,000
Water tanks	\$2,000,000
Senior center	\$700,000
Community safe shelters (2)	\$1,200,000
Coliseum	\$1,500,000
Sewer pumping stations (2)	\$300,000
Moulton rec center	\$2,700,000
NHC nursing home	\$20,000,000
Mental health facilities	\$2,000,000
Water pumping stations (4)	\$300,000
Sinking Creek raw pumping station	\$500,000
Gas telemetry monitors (2)	\$6000
<b>Total critical facilities</b>	<b>\$128,866,000</b>

Source: City of Moulton; Hazard Mitigation Planning Team

Selected Critical Facilities Values – Town of North Courtland	
Facility	Value
Town Hall/Police Department	\$25,000
R.A. Hubbard high school	\$3,406,080
Senior center	\$100,000
Baptist Academy	\$275,000
Volunteer fire department	\$40,000
<b>Total Critical Facilities</b>	<b>\$ 3,846,080</b>

Source: Lawrence County Complete Plan 2010; HAZUS-MH 2015

Selected Critical Facilities Values – Town of Town Creek	
Facility	Value
Town Hall	\$200,000
Elementary school campus	\$6,720,338
Fire department	\$425,000
Police Department	\$275,000
Gas department	\$125,000
Healthcare facility	\$575,000
Sewer treatment plant	\$2,900,000
<b>Total critical facilities</b>	<b>\$11,220,338</b>

Source: Lawrence County Complete Plan 2010

Selected Critical Facilities Values – Town of Hillsboro	
Facility	Value
Town Hall	\$200,000
Tennessee Valley school campus	\$350,000
Fire department	\$300,000
VFW building	\$250,000
Park	\$150,000
<b>Total critical facilities</b>	<b>\$1,250,000</b>

Source: Lawrence County Complete Plan 2010

Selected Critical Facilities Values – Caddo-Midway Fire & Rescue District	
Facility	Value
Fire Station #1 (building and basic contents, fire trucks, command post and equipment, rescue equipment)	\$941,728
Fire Station #2 (building and basic contents, fire trucks, rescue equipment)	\$371,818
<b>Total critical facilities</b>	<b>\$1,313,546</b>

Source: Caddo-Midway Fire & Rescue

Building Material Types within Lawrence County and Participating Jurisdictions	
Material Type	Amount of Buildings
Wood	\$2,080,382
Steel	\$236,502
Masonry	\$61,182
Concrete	\$290,265
Manufactured	\$160,348
<b>Total Structures</b>	<b>\$2,828,679</b>

Source: HAZUS -MH 2015

Building Asset Values for Lawrence County and Participating Jurisdictions		
Building Types	Amount of Buildings	Replacement Value
Residential	14,642	\$2,278,882,000
Commercial	648	\$339,998,000
Industrial	159	\$53,931,000
Agriculture	86	\$19,398,000
Religious	126	\$77,499,000
Government	35	\$24,082,000
Education	21	\$34,855,000
<b>Total Structures</b>	<b>15,717</b>	<b>\$2,828,645,000</b>

Source: HAZUS -MH 2015

HAZUS-MH Building Inventory by Material Type for Lawrence County and Participating Jurisdictions		
Material Type	Building Amount	Percent of Total
Wood	10,735	68.3%
Steel	464	3%
Masonry	822	5%
Concrete	33	.2%
Manufactured Housing	3584	23%
<b>Total Buildings</b>	<b>15,717</b>	<b>100%</b>

Source: HAZUS-MH 2015

HAZUS-MH Building Inventory by Occupancy for Lawrence County and Participating Jurisdictions		
Occupancy Type	Building Amount	Percent of Total
Residential	14,642	93%
Commercial	648	4%
Industrial	159	1%
Agriculture	86	.5%
Religion	126	.8%
Government	35	.2%
Education	21	.1%
<b>Total Buildings</b>	<b>15,717</b>	<b>100%</b>

Source: HAZUS -MH 2015

Top Left: Selected Critical Values in Town of Town Creek  
(Chart, 2015: Lawrence County Complete Plan 2010 & HAZUS Data)

Middle Left: Selected Critical Values in Town of Hillsboro  
(Chart, 2015: Lawrence County Complete Plan 2010 & HAZUS Data)

Bottom Left: Selected Critical Values at Caddo-Midway Fire & Rescue District  
(Chart, 2015: Policy Committee Critical Facility Sheets)

Top Center: Building Material Types within Lawrence County  
(Chart, 2015: HAZUS Data)

Center: Building Asset Values for Lawrence County  
(Chart, 2015: HAZUS Data)

Top Right: Building Inventory by Material Type for Lawrence County  
(Chart, 2015: HAZUS Data)

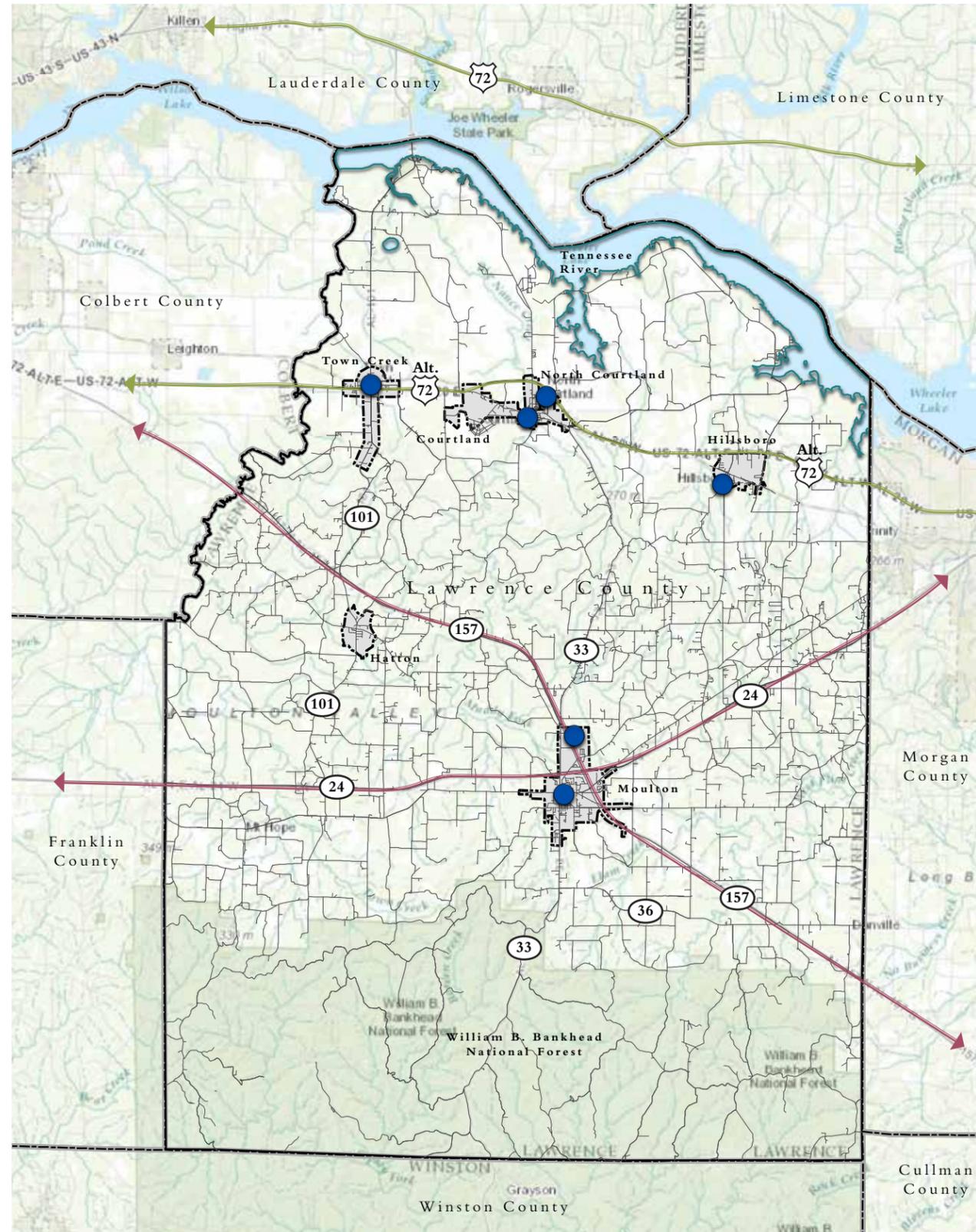
Right: Building Inventory by Occupancy for Lawrence County  
(Chart, 2015: HAZUS Data)

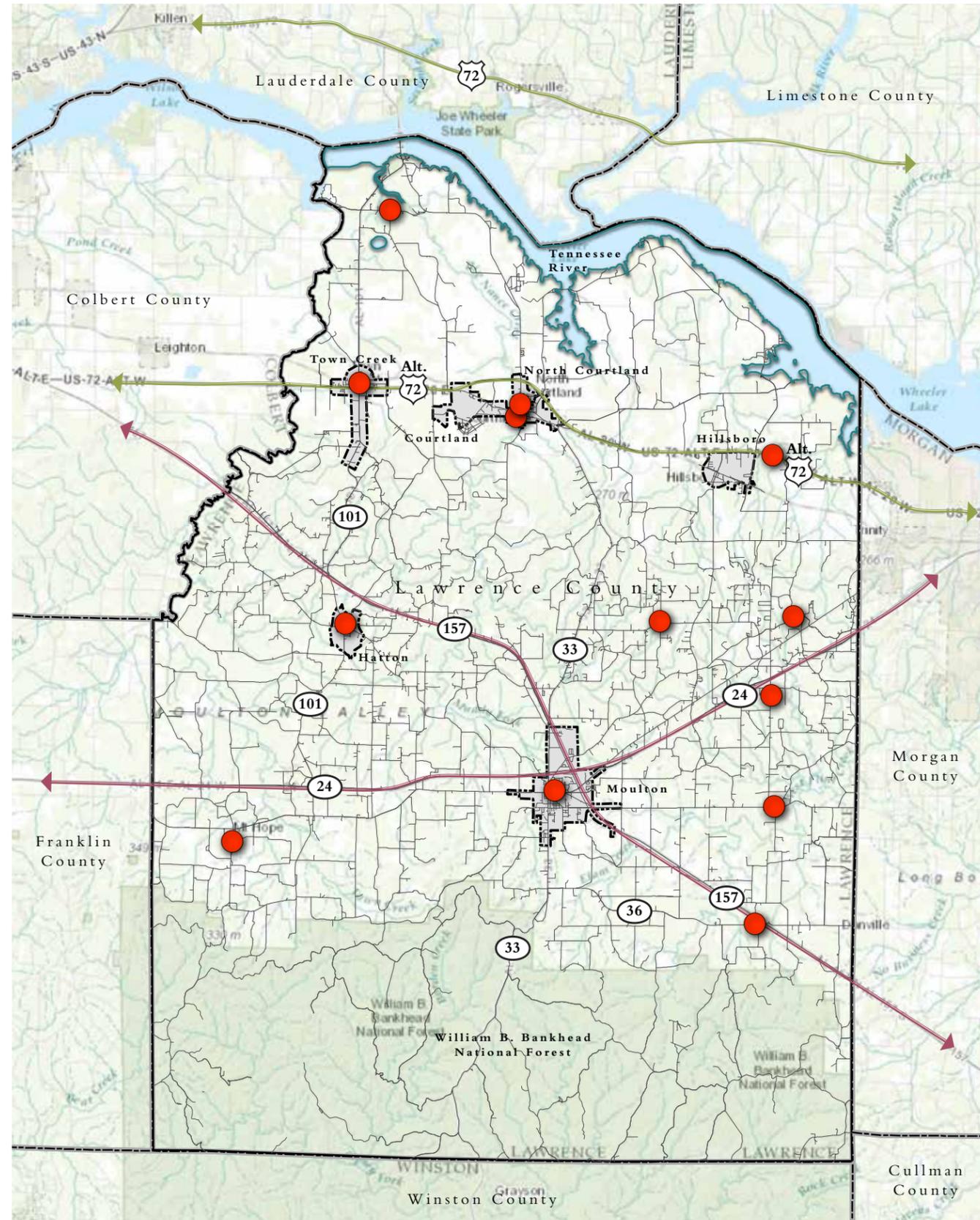
Map: Lawrence County Essential Facilities - Law Enforcement Locations  
(Map, 2015; Multi-Hazard Mitigation Planning Team)

LEGEND

● Law Enforcement Locations

Law Enforcement Locations





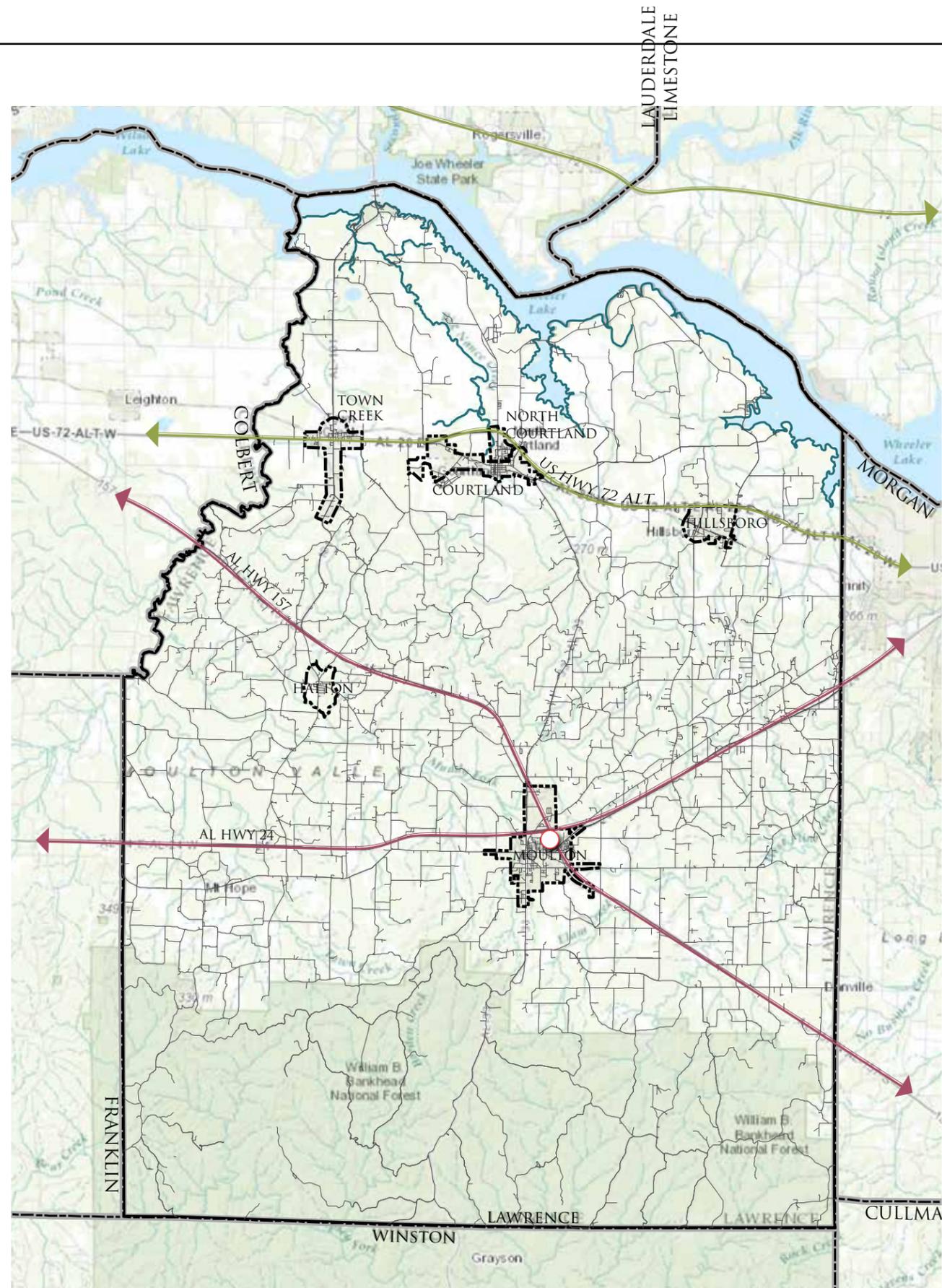
Map: Lawrence County Essential Facilities - Fire Station Locations (Map, 2015: Multi-Hazard Mitigation Planning Team)

LEGEND

● Fire Stations

Fire Station Locations

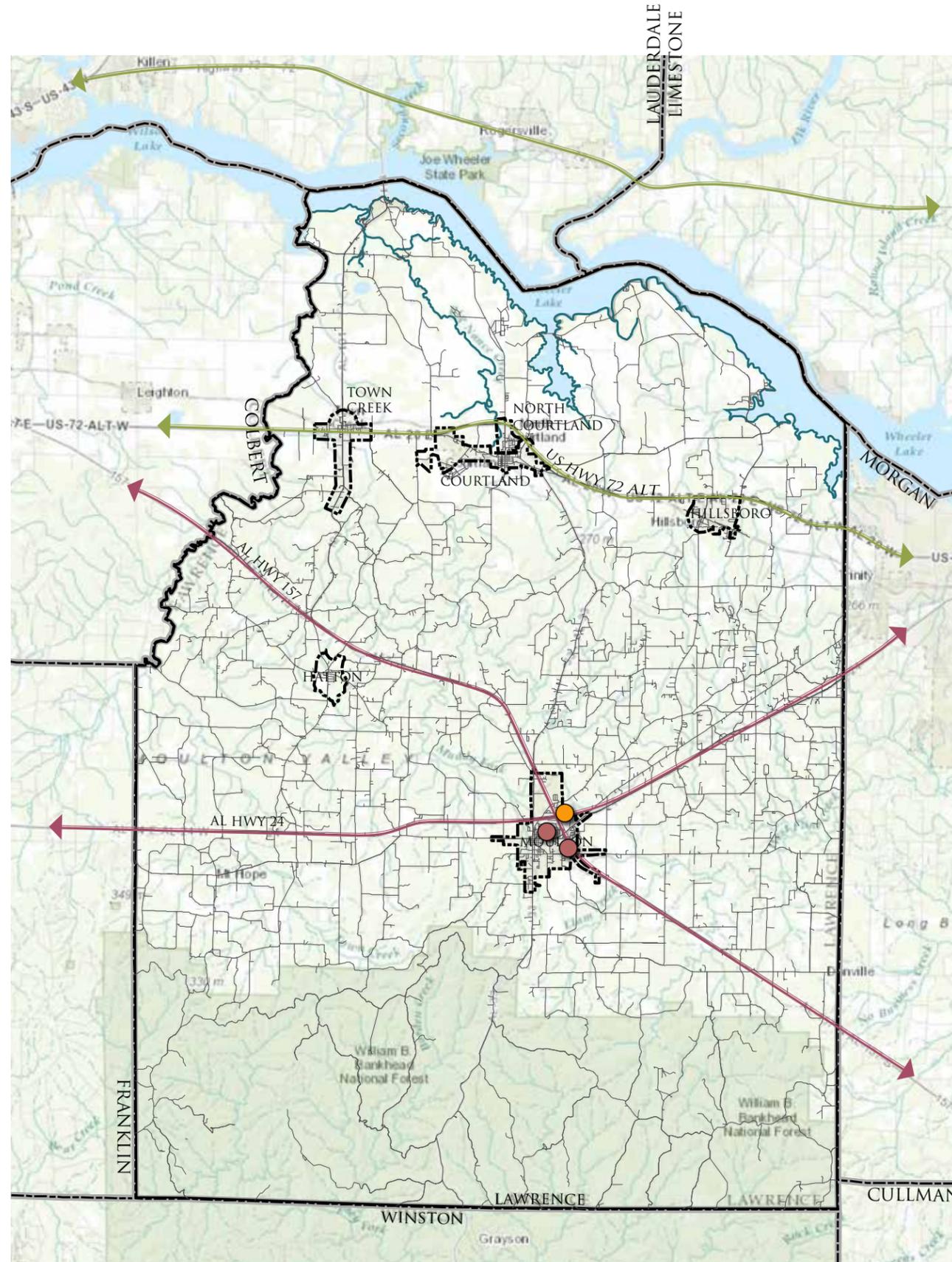
Map: Lawrence County Essential Facilities - National Guard Locations  
(Map, 2015: Multi-Hazard Mitigation Planning Team)



LEGEND

 National Guard Location

National Guard Locations



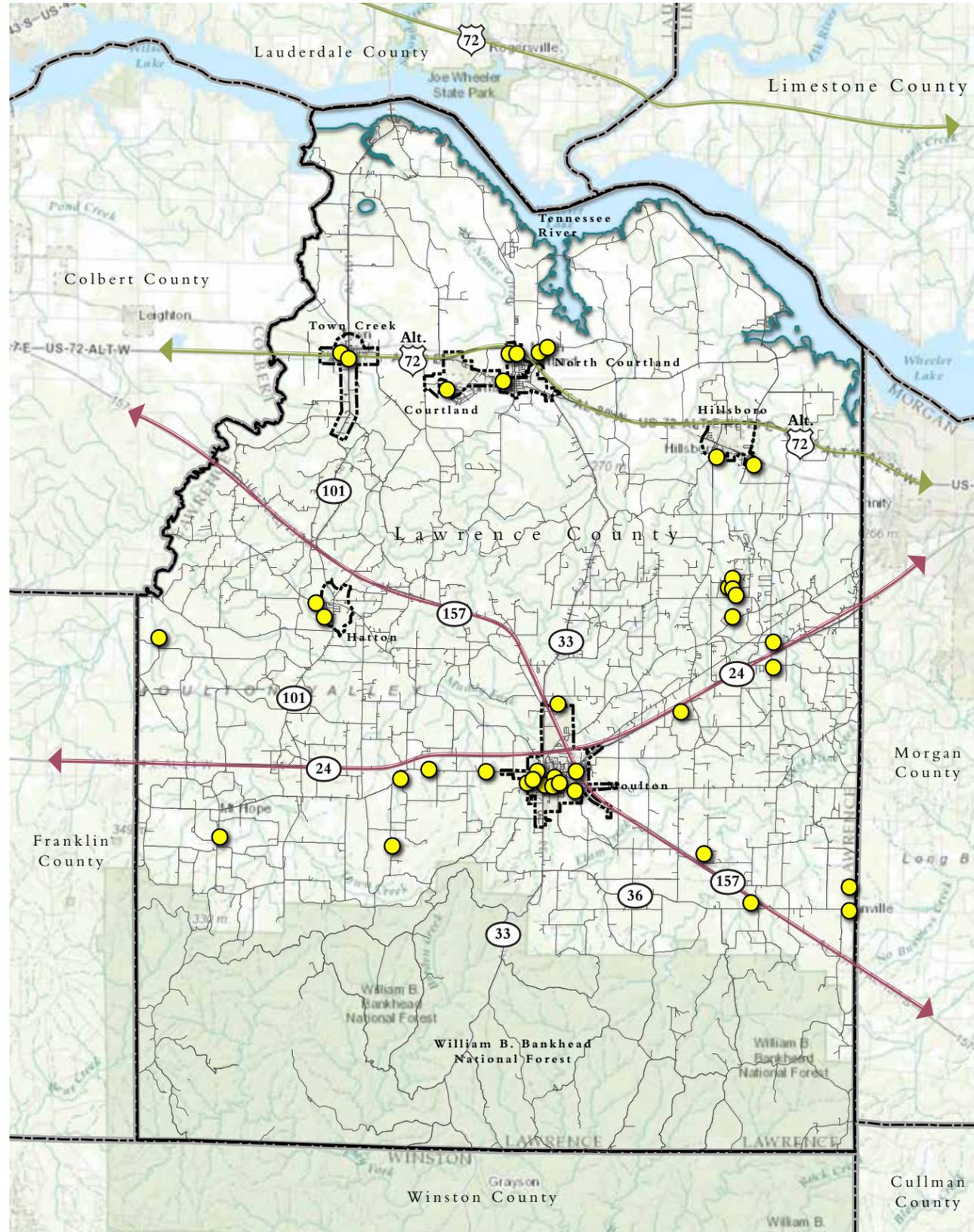
Map: Lawrence County Essential Facilities - Hospital & Ambulance Locations (Map, 2015: Multi-Hazard Mitigation Planning Team)

LEGEND

- Hospitals
- Ambulance Stations

Hospital Locations

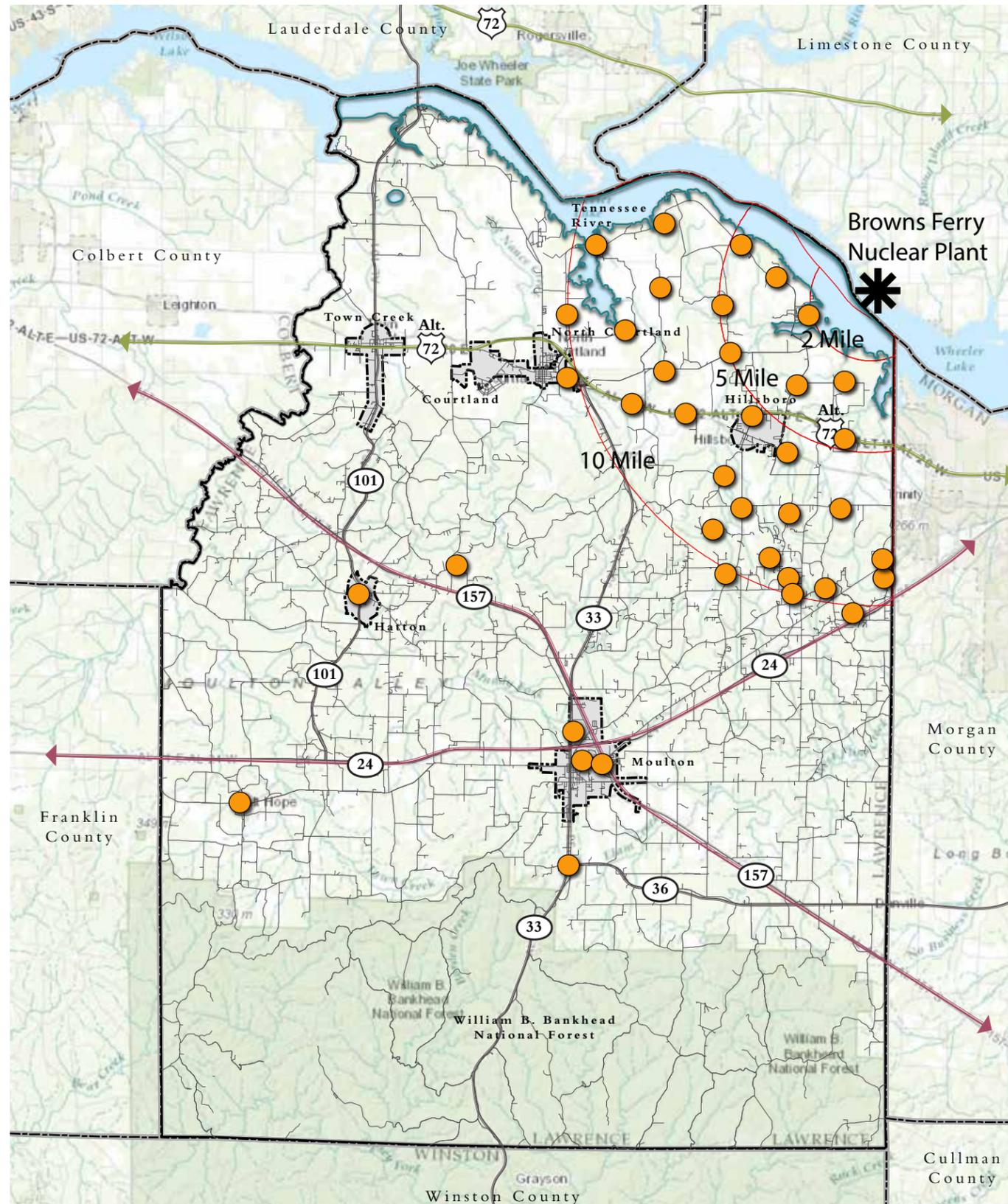
Map: Lawrence County Essential Facilities - School Locations  
 (Map, 2015: Multi-Hazard Mitigation Planning Team)



LEGEND

● School Locations

School Locations



Map: Lawrence County Essential Facilities -  
Warning Siren Locations  
(Map, 2015: Multi-Hazard Mitigation Planning  
Team)

LEGEND  
● Warning Siren

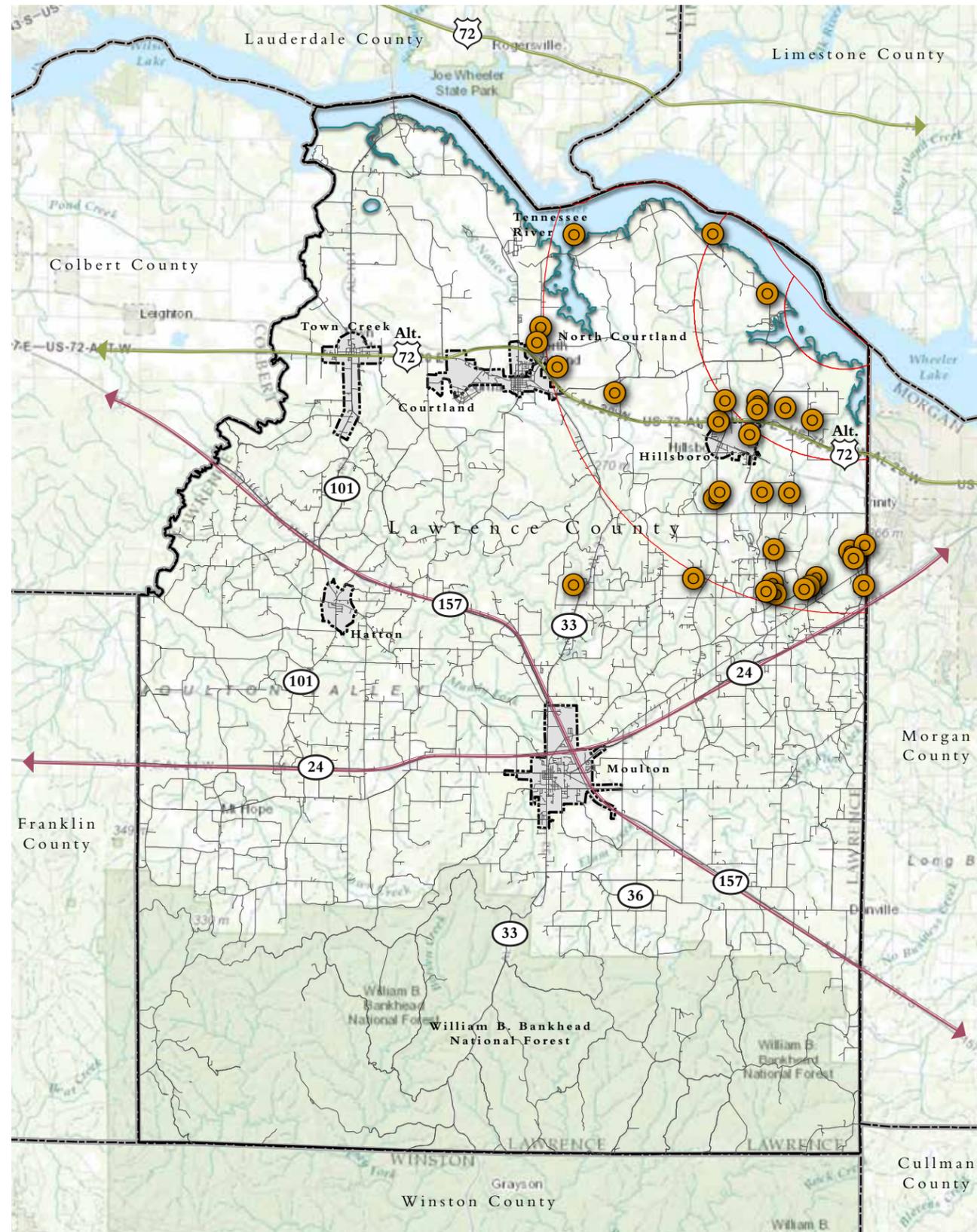
Warning Siren Locations

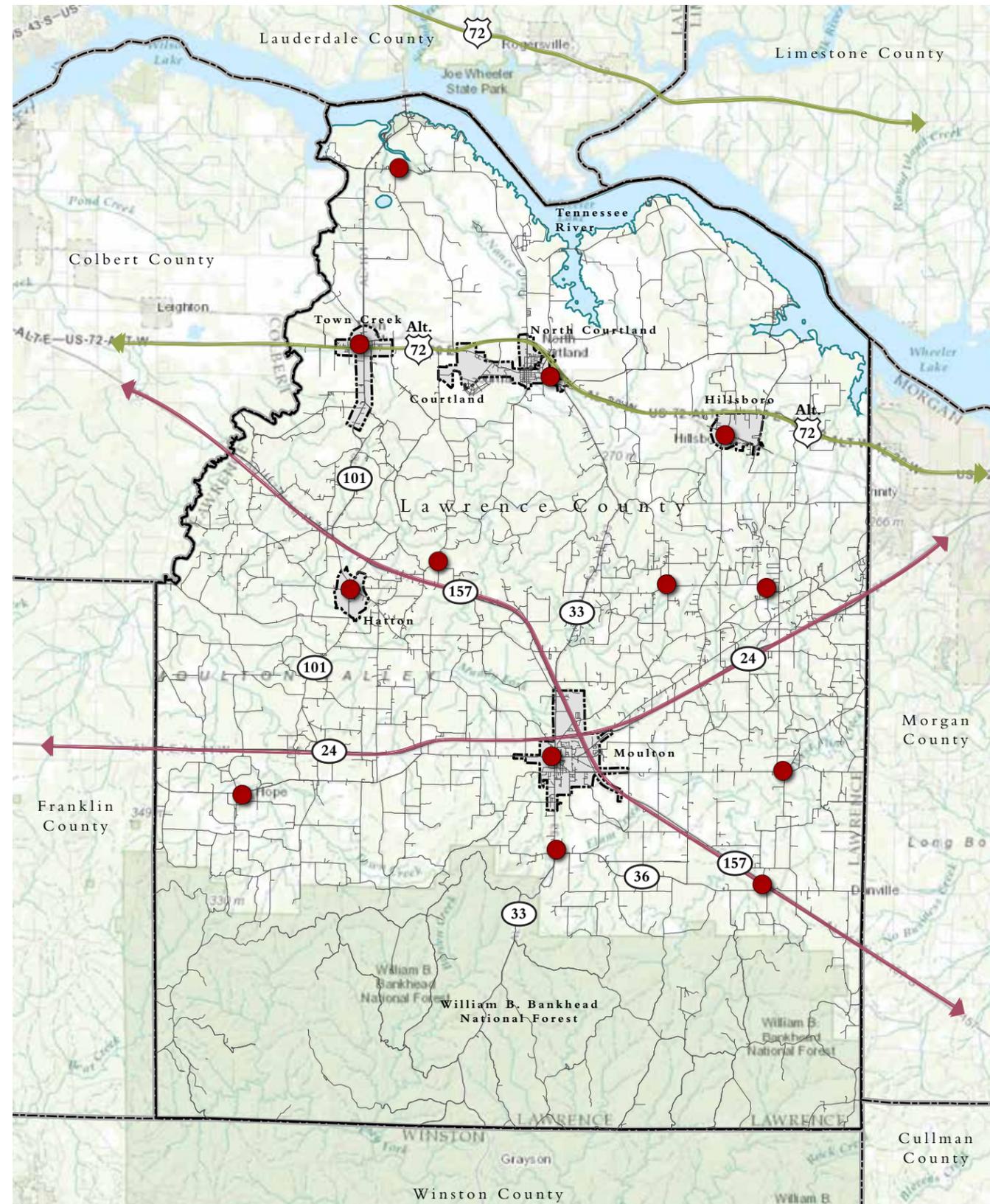
Map: Lawrence County Essential Facilities -  
TVA Evacuation Sign Locations  
(Map, 2015: Multi-Hazard Mitigation Planning  
Team)

LEGEND

 TVA Evacuation Sign

TVA Evacuation Sign Locations





Map: Lawrence County Essential Facilities - Storm Shelters  
 (Map, 2015: Multi-Hazard Mitigation Planning Team)

LEGEND

● Storm Shelter

Shelter Locations

Top Center: Population by Jurisdiction  
(Chart, 2015: U.S. Census Data, Multi-Hazard Mitigation Planning Team)

Top Right: Population Vulnerable to Hazards  
(Chart, 2015: FEMA HAZUS Data, Multi-Hazard Mitigation Planning Team)

Bottom: Value of Buildings Exposed to Hazards in Lawrence County  
(Chart, 2015: FEMA HAZUS Data, Multi-Hazard Mitigation Planning Team)

**RA.6 Estimating Potential Losses**

**Estimated Potential Loss**

The financial estimated loss for each identified hazard is discussed within each hazard description and profile in the beginning of this section. In addition, FEMA HAZUS-MH analysis and damage estimates for the following hazards were also done: floods, earthquake, and hurricane.

Economic losses by jurisdiction were calculated by applying the 2013 population estimate of each jurisdiction in relation to the overall county population. This allows for a generalized estimate of the economic losses by jurisdiction for hazards that are likely to occur countywide and are less likely to be localized. For this study, localized disasters consist of landslides, dam/levee failures, and floods. Flood dollar exposure estimates were calculated by HAZUS-MH. In addition, the Replacement Value of Buildings Exposed to Hazards table deducts a percentage of economic value if the hazard was not perceived to affect the particular jurisdiction. For example, dam/levee failure and the jurisdiction of Moulton have a total apportionment of 10% of the building value. However, it is not affected by dam and levee failure in the planning study area. Therefore, an apportionment was deducted from each category of building value in regards to dam and levee failure.

According to FEMA’s Multi-Hazard Loss Estimation Methodology Flood Model User Manual for HAZUS-MH, the loss estimates from HAZUS are “crude estimates of losses based on a minimum of local input.” It is recommended that users of the HAZUS software develop “a local inventory that best reflects the characteristics of their region such as building types and demographics.” Also, the “quality and uncertainty of the results are affected by the detail and accuracy of the community-specific data provided.” HAZUS program developers have intended the default data sets to be used as initial estimates to determine where more detailed data collection is needed.

Population by Jurisdiction	
Jurisdiction	2013 Population Estimate
Lawrence County	33,571
City of Moulton	3,404
Town of Courtland	604
Town of North Courtland	618
Town of Hillsboro	534
Town of Town Creek	1,080

Source: U.S. Census Data

Population Vulnerable To Hazards		
Hazard Type	Estimated Population	Estimated Households
Dam/Levee Failure		
Drought	33,571	13,382
Earthquake	33,571	13,382
Extreme Temperatures	33,571	13,382
Hazardous Materials	33,571	13,382
Hurricane	33,571	13,382
Landslides		
Nuclear Accidents	33,571	13,382
Sinkholes	33,571	13,382
Severe Storms	33,571	13,382
Tornado	33,571	13,382
Wildfires	33,571	13,382
Windstorms	33,571	13,382

Source: FEMA HAZUS -MH

Value of Buildings Exposed To Hazards in Lawrence County								
Hazards	Residential	Commercial	Industrial	Agricultural	Religious	Government	Education	County Total
Dam/Levee Failure	\$2,050,993,800	\$305,998,200	\$48,537,900	\$17,458,200	\$69,749,100	\$21,673,800	\$31,369,500	\$2,545,780,500
Drought	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Earthquake	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Extreme Temperatures	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Flood 100 year	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Hazardous Materials	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Hurricane	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Landslides	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Nuclear Accidents	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Sinkholes	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Severe Storms	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Tornado	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Wildfires	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000
Windstorms	\$2,278,882,000	\$339,998,000	\$53,931,000	\$19,398,000	\$77,499,000	\$24,082,000	\$34,855,000	\$2,828,645,000

Source: FEMA HAZUS-MH Data

**Estimated Loss for Flooding**

Flooding is, by far, the most frequently occurring identified hazard within the planning jurisdiction. The hazard description and profile in the beginning of this section projects future probability of a flooding event in the next year somewhere within Lawrence County at 261%. The City of Moulton has a 61% probability of experiencing a flood event in the next year.

The tables below show the total economic losses, value of buildings exposed to floods, and a quick assessment of the 100 year and 500 year flood events within the planning jurisdiction. The apportionment table takes the percent of each jurisdiction’s population and extrapolates the countywide economic loss of a 100 year flood. This table indicates that the larger population centers within the county will be the hardest hit and sustain the most damages from a major flood event.

The 100-year flood table evaluates the value of buildings exposed to a 100 year flood. The FEMA HAZUS-MH software places structures into eight categories and assigns an overall dollar value to each category. The HAZUS flood model estimates residential buildings to be the hardest hit from a 100 year flood event with \$2,278,882,000 in exposure. The Quick Assessment Report identifies 14,642 residential structures within the study area.

Building Type	Replacement Value	% of Total Value of Buildings
Residential	\$2,278,882,000	81%
Commercial	\$339,998,000	12%
Industrial	\$53,931,000	2%
Agriculture	\$19,398,000	1%
Religious	\$77,499,000	3%
Government	\$24,082,000	1%
Education	\$34,855,000	1%
Total Value	\$2,828,645,000	100%

Source: FEMA HAZUS-MH Data

Quick Assessment Report Lawrence County	100 Year Flood
Area(square miles)	718
Number of Census Blocks	2305
Number of Residential Buildings	14,642
Number of Building Total	15,717
Number of People in Region	33,571
Building Exposure - Residential	\$2,278,882,000
Building Exposure - Total	\$2,828,645,000

Source: FEMA HAZUS-MH Data

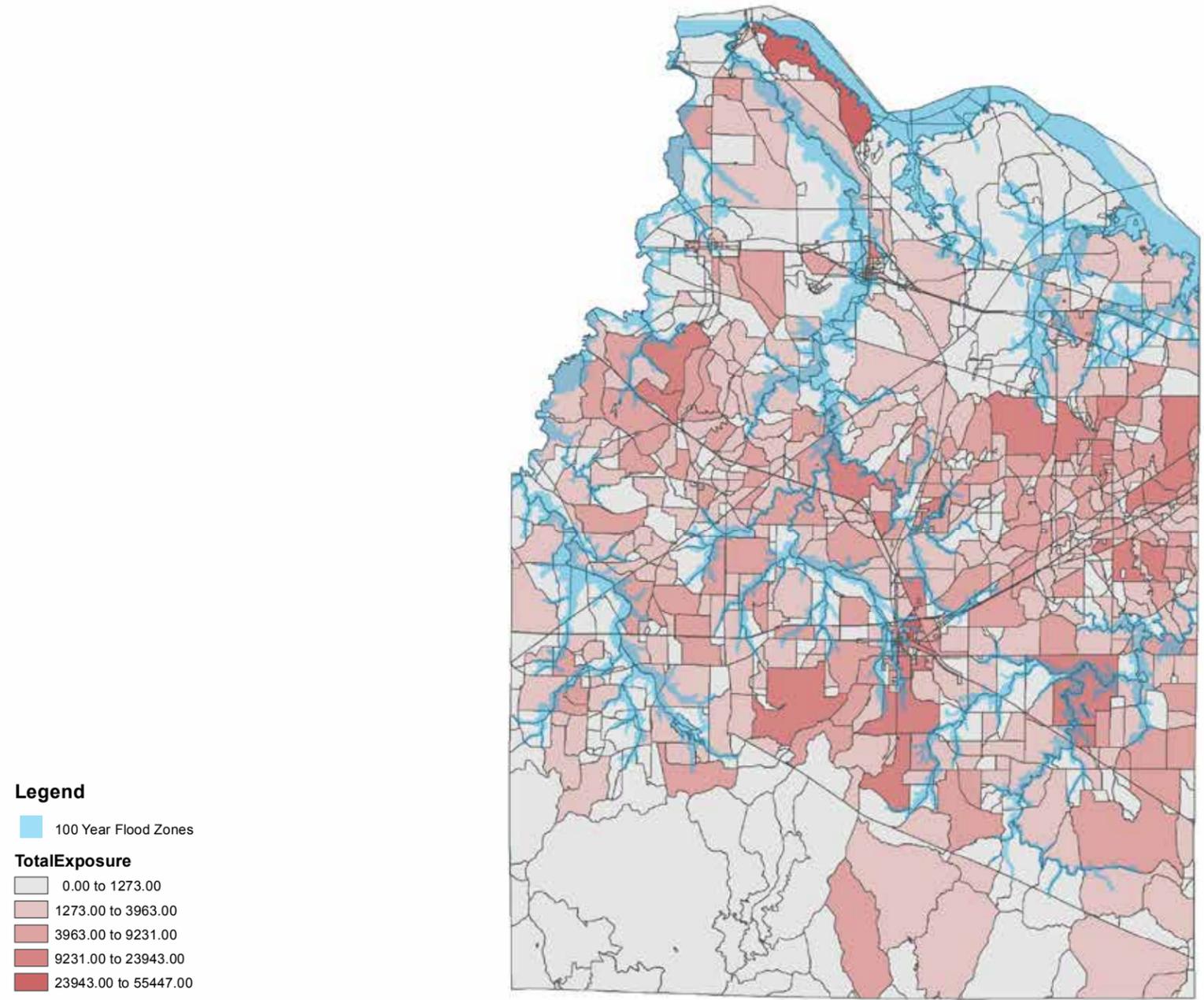
The following maps show the 100-year floodplain residential damage and 100-year floodplain total building damage projections within the planning area. Census maps have been overlaid with the 100-year floodplain to show the specific areas of concern for a flooding event within the planning area as well as the housing density and population distribution.

Top Right: Building Value Exposed to 100 Year Flood  
(Chart, 2015: FEMA HAZUS Data)

Right: Quick Assessment Report Lawrence County  
(Chart, 2015: FEMA HAZUS Data)

Map: Lawrence County 100 Year Flood Total  
Damage Map  
(Map, 2015: FEMA HAZUS Data)

**Study Region: Lawrence County Alabama**  
**Scenario: 100 Year Flood Total Dollar Exposure/Replacement Value (\$thous)**



- Legend**
- 100 Year Flood Zones
- Total Exposure**
- 0.00 to 1273.00
  - 1273.00 to 3963.00
  - 3963.00 to 9231.00
  - 9231.00 to 23943.00
  - 23943.00 to 55447.00

8.5 4.25 0 8.5 Miles



(c) 1997-2011 FEMA

Study Region: Lawrence County Alabama

Scenario: 100 Year Flood Total Residential Dollar Exposure/Replacement Value (\$thous.)

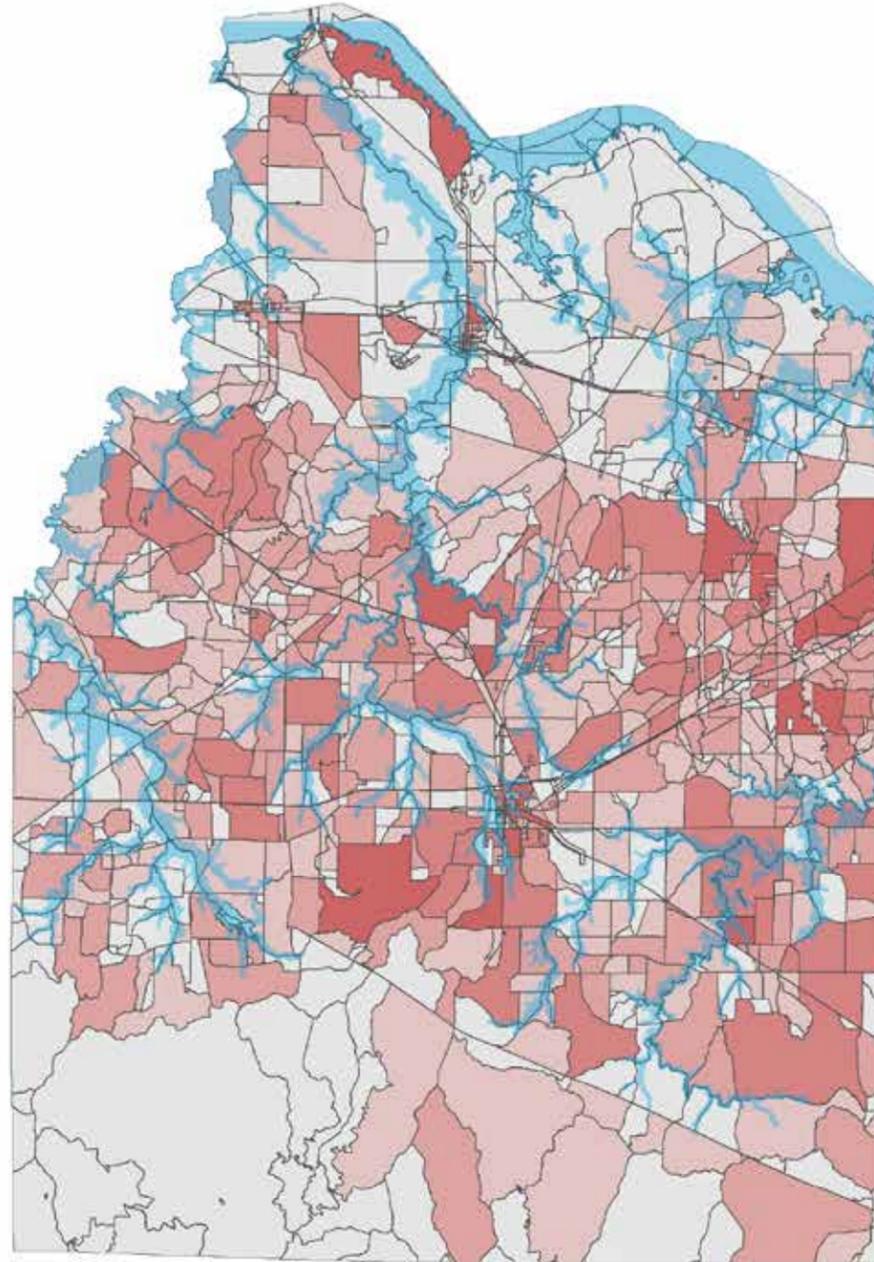
Map: Lawrence County 100 Year Flood Total Residential Building Damage  
(Map, 2015: Multi-Hazard Mitigation Planning Team)

Legend

100 Year Flood Zones

Residential

- 0.00 to 765.00
- 765.00 to 2349.00
- 2349.00 to 4798.00
- 4798.00 to 10249.00
- 10249.00 to 31934.00



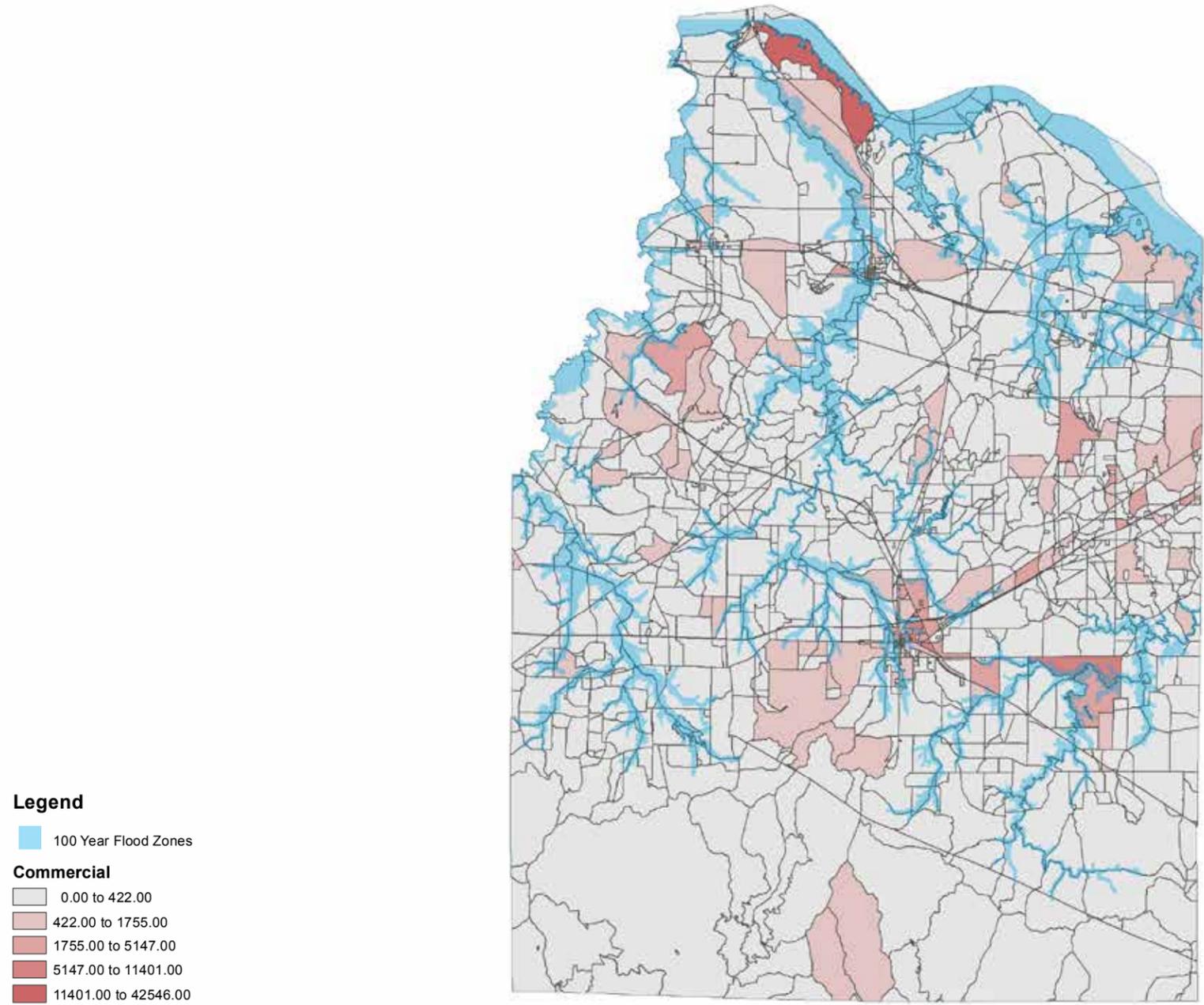
8.5 4.25 0 8.5 Miles



(c) 1997-2011 FEMA

Study Region: Lawrence County Alabama

Scenario: 100 Year Flood Total Commercial Dollar Exposure/Replacement Value (\$thous.)



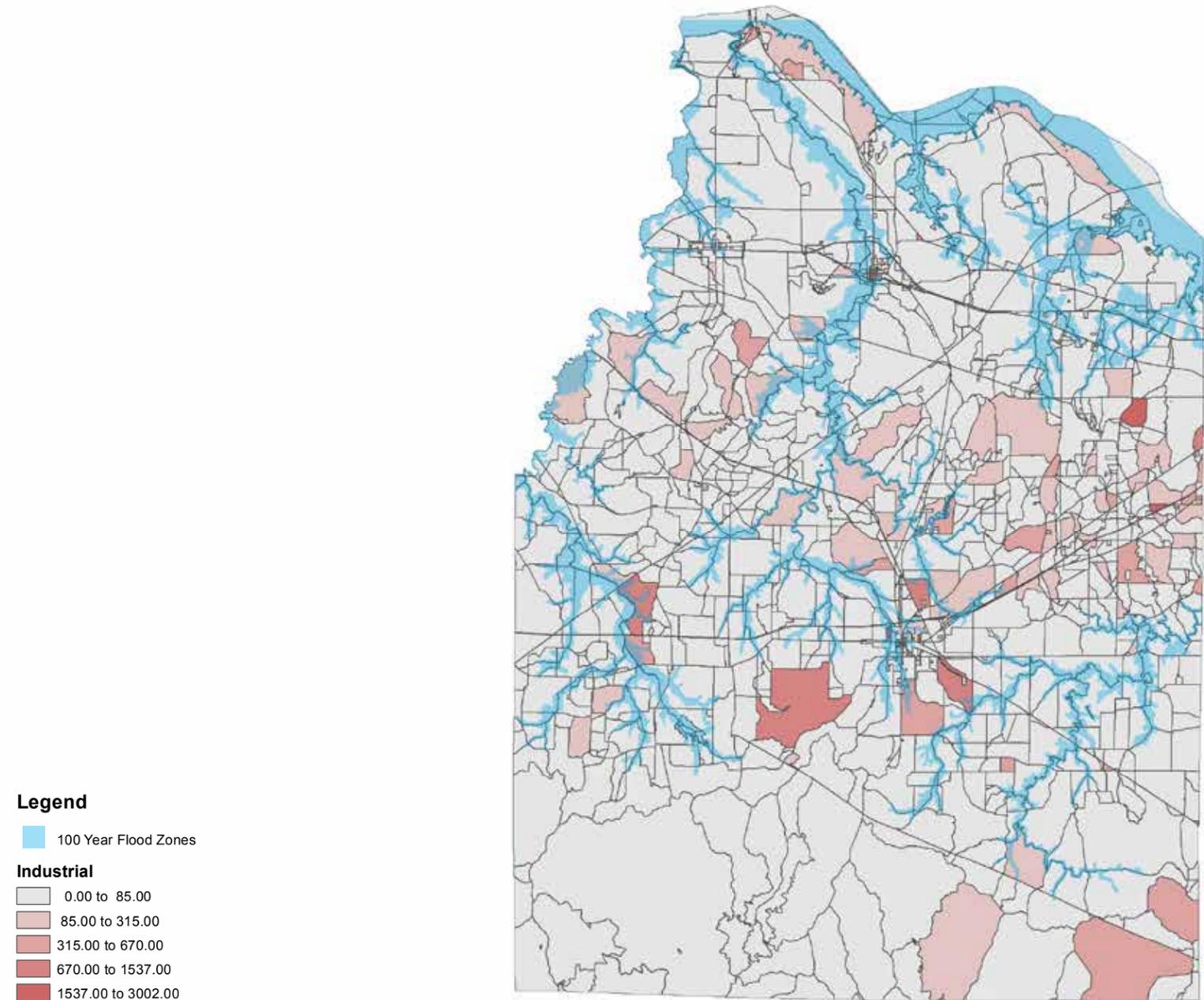
10 5 0 10 Miles



(c) 1997-2011 FEMA

Study Region: Lawrence County Alabama

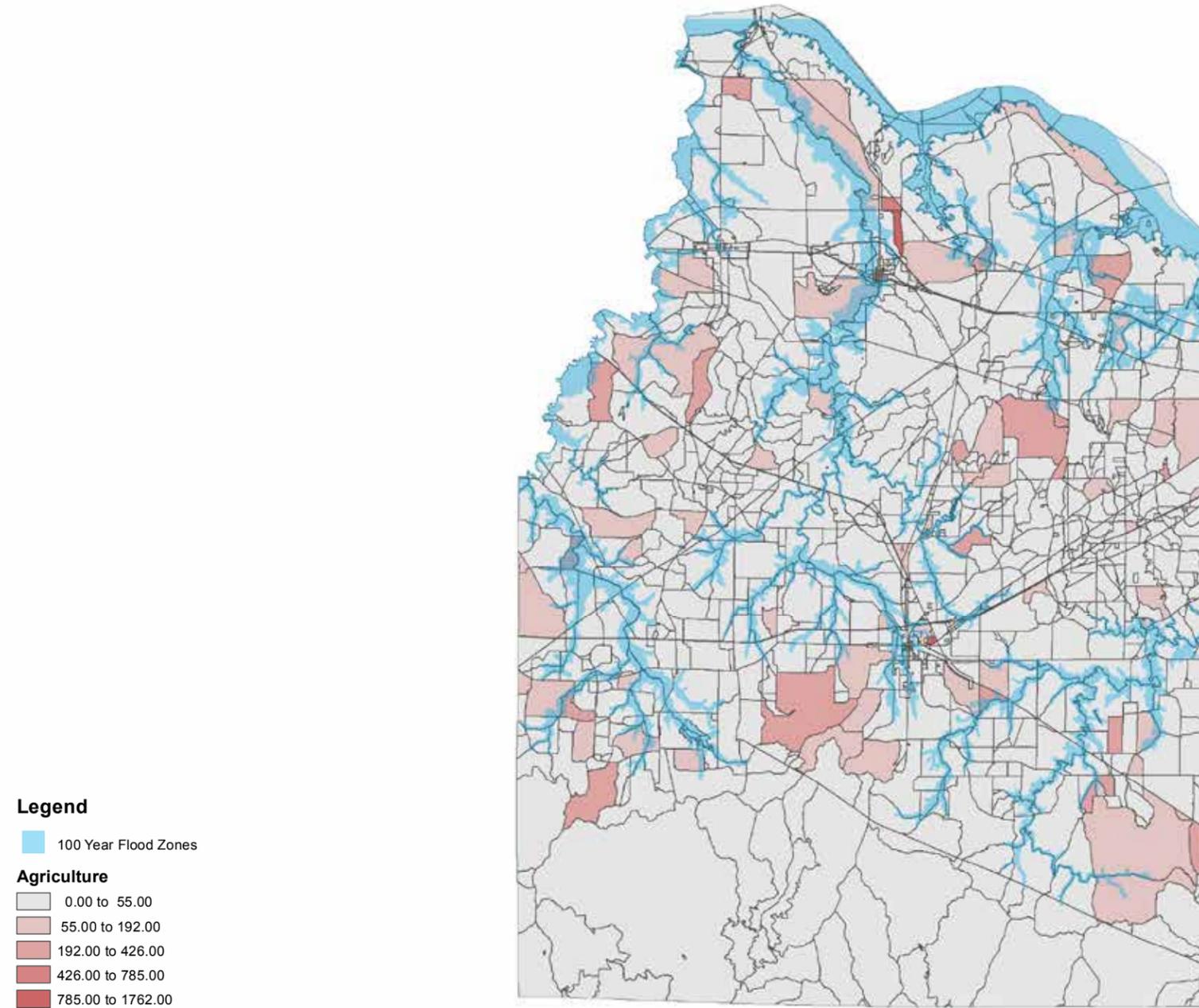
Scenario: 100 Year Flood Total Industrial Dollar Exposure/Replacement Value (\$thous.)



(c) 1997-2011 FEMA

Study Region: Lawrence County Alabama

Scenario: 100 Year Flood Total Agricultural Building Dollar Exposure/Replacement Value (\$thous.)



**Legend**  
100 Year Flood Zones  
**Agriculture**  
0.00 to 55.00  
55.00 to 192.00  
192.00 to 426.00  
426.00 to 785.00  
785.00 to 1762.00

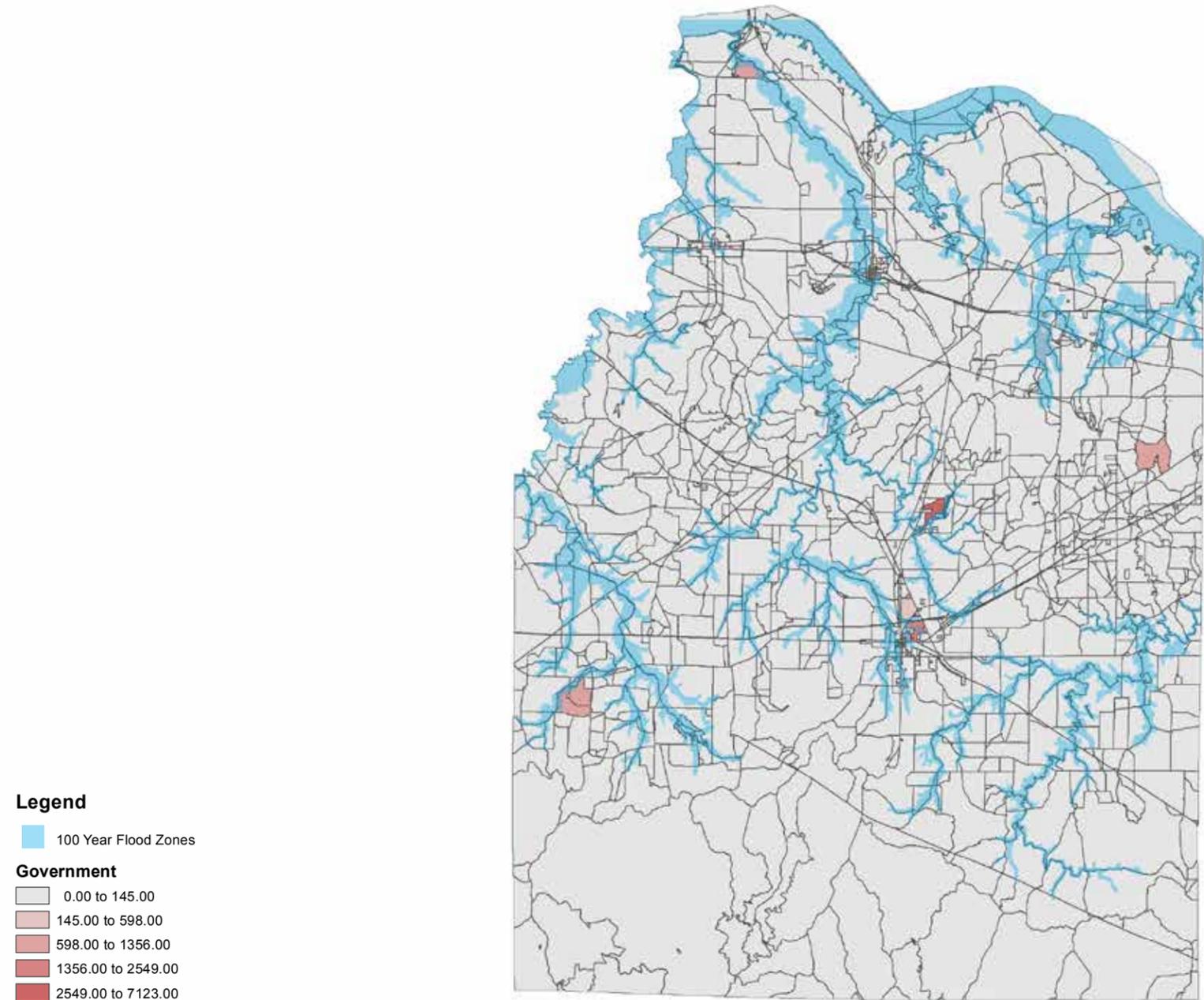
10 5 0 10 Miles



(c) 1997-2011 FEMA

Study Region: Lawrence County Alabama

Scenario: 100 Year Flood Total Government Building Dollar Exposure/Replacement Value (\$thous.)



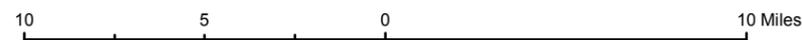
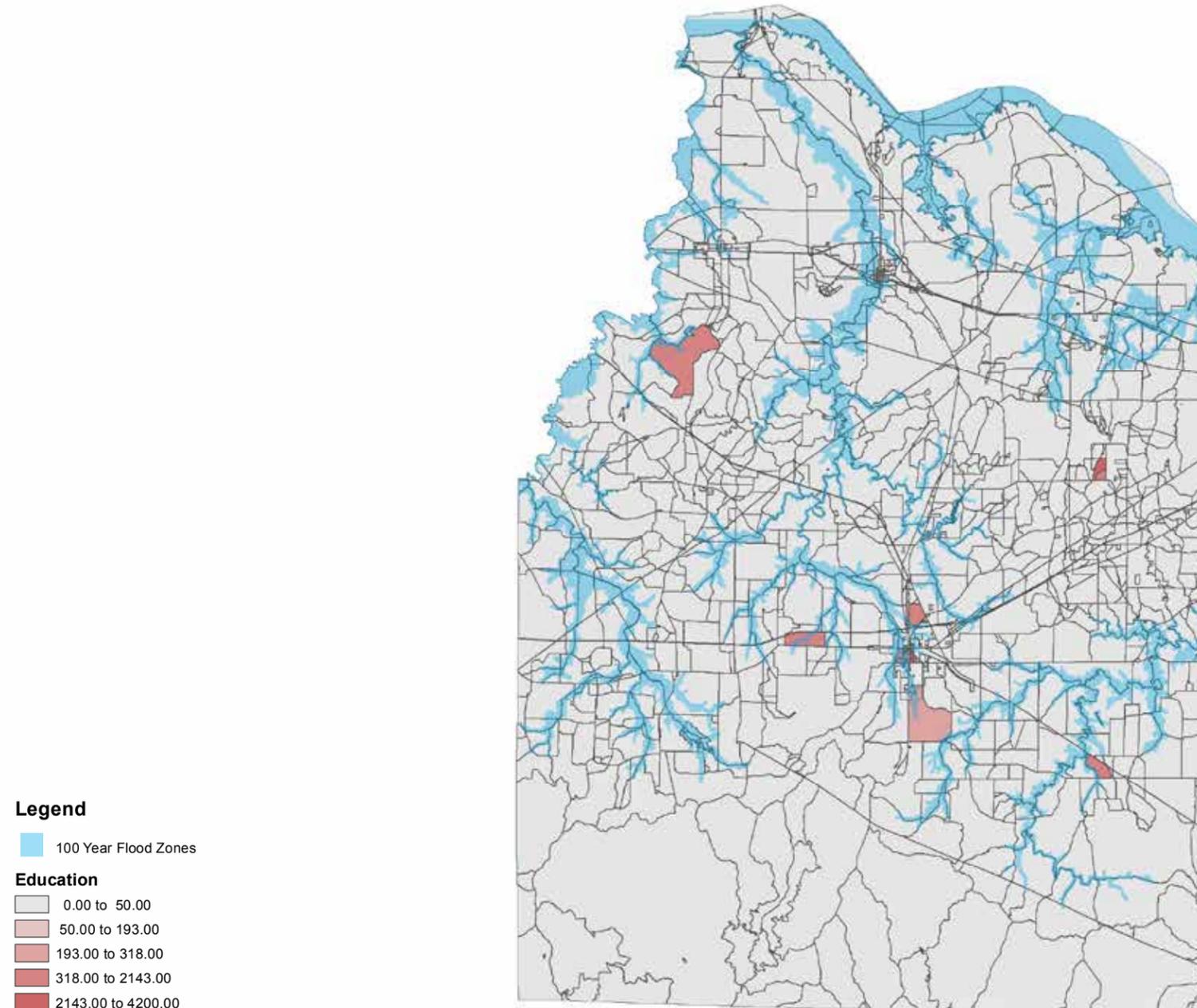
10 5 0 10 Miles



(c) 1997-2011 FEMA

Study Region: Lawrence County Alabama

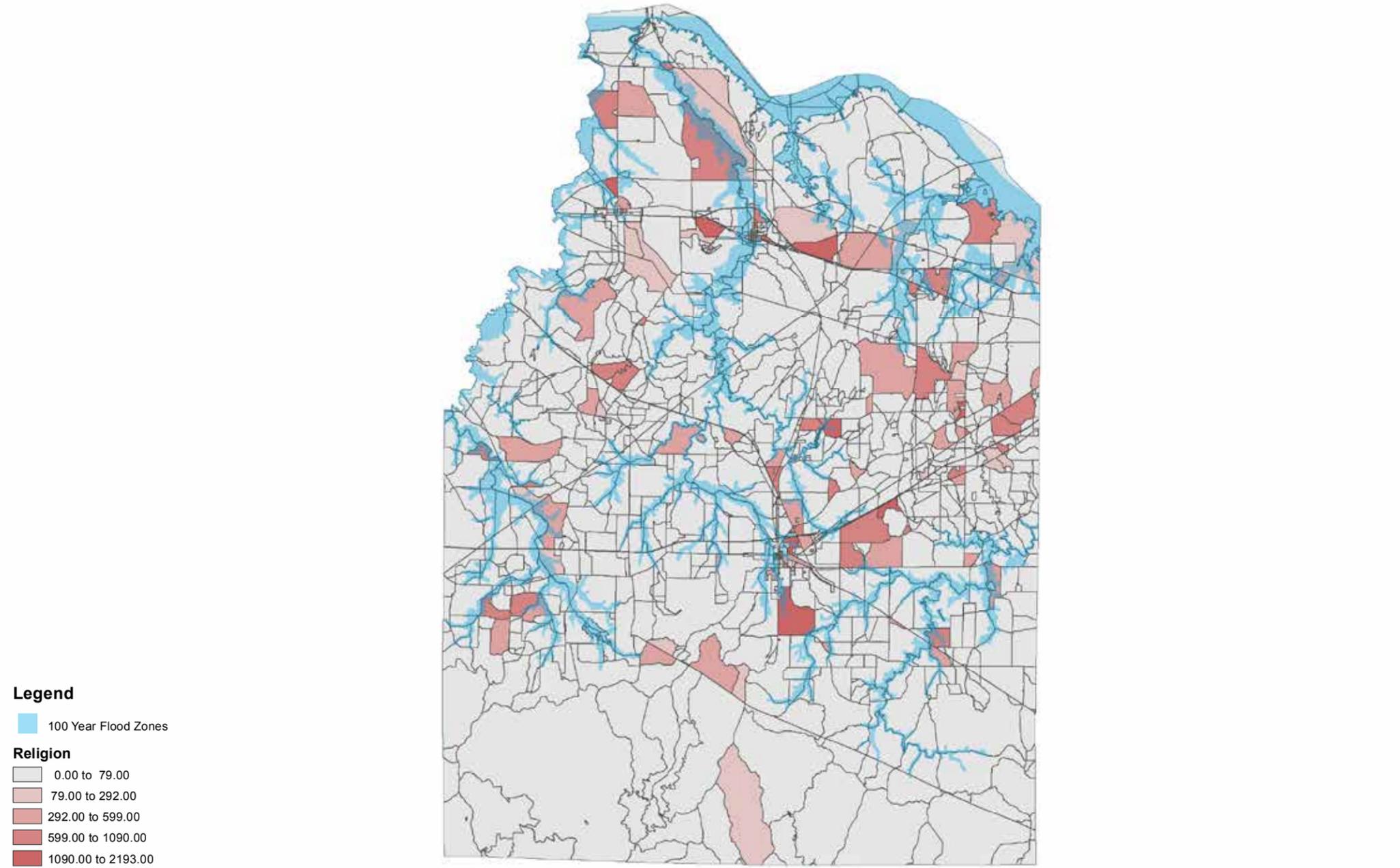
Scenario: 100 Year Flood Total Educational Building Dollar Exposure/Replacement Value (\$thous.)



(c) 1997-2011 FEMA

Study Region: Lawrence County Alabama

Scenario: 100 Year Flood Total Religious Building Dollar Exposure/Replacement Value (\$thous.)

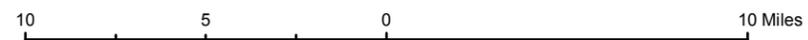


**Legend**

100 Year Flood Zones

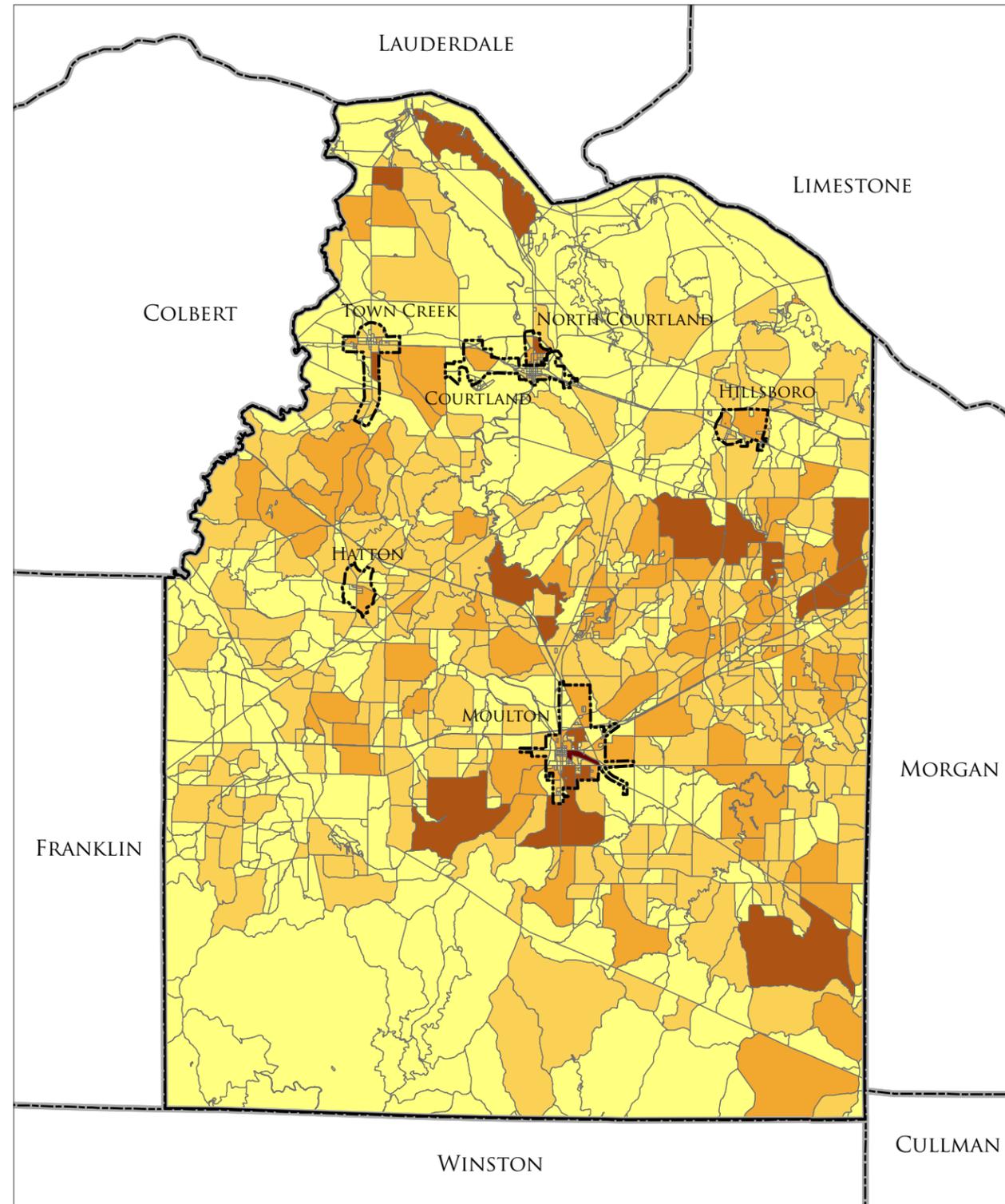
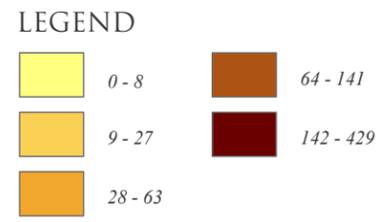
**Religion**

- 0.00 to 79.00
- 79.00 to 292.00
- 292.00 to 599.00
- 599.00 to 1090.00
- 1090.00 to 2193.00

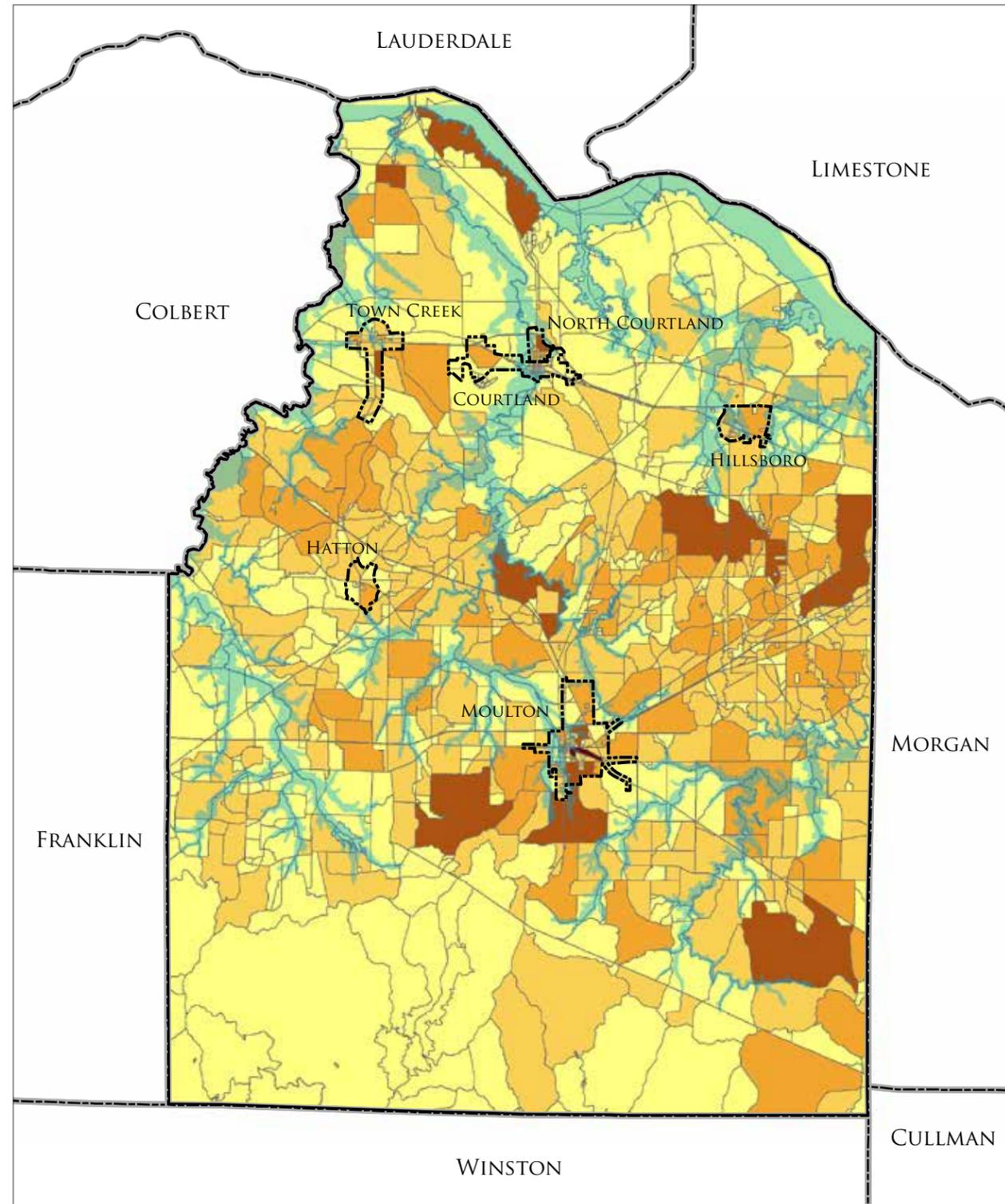


(c) 1997-2011 FEMA

Map: Lawrence County Estimating Potential Losses Households by Census Block  
(Map, 2015: Multi-Hazard Mitigation Planning Team)

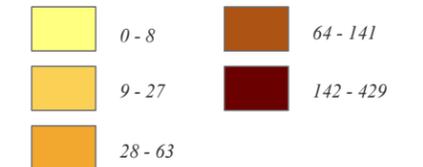


Estimating Potential Losses  
Housing Units by Census Block

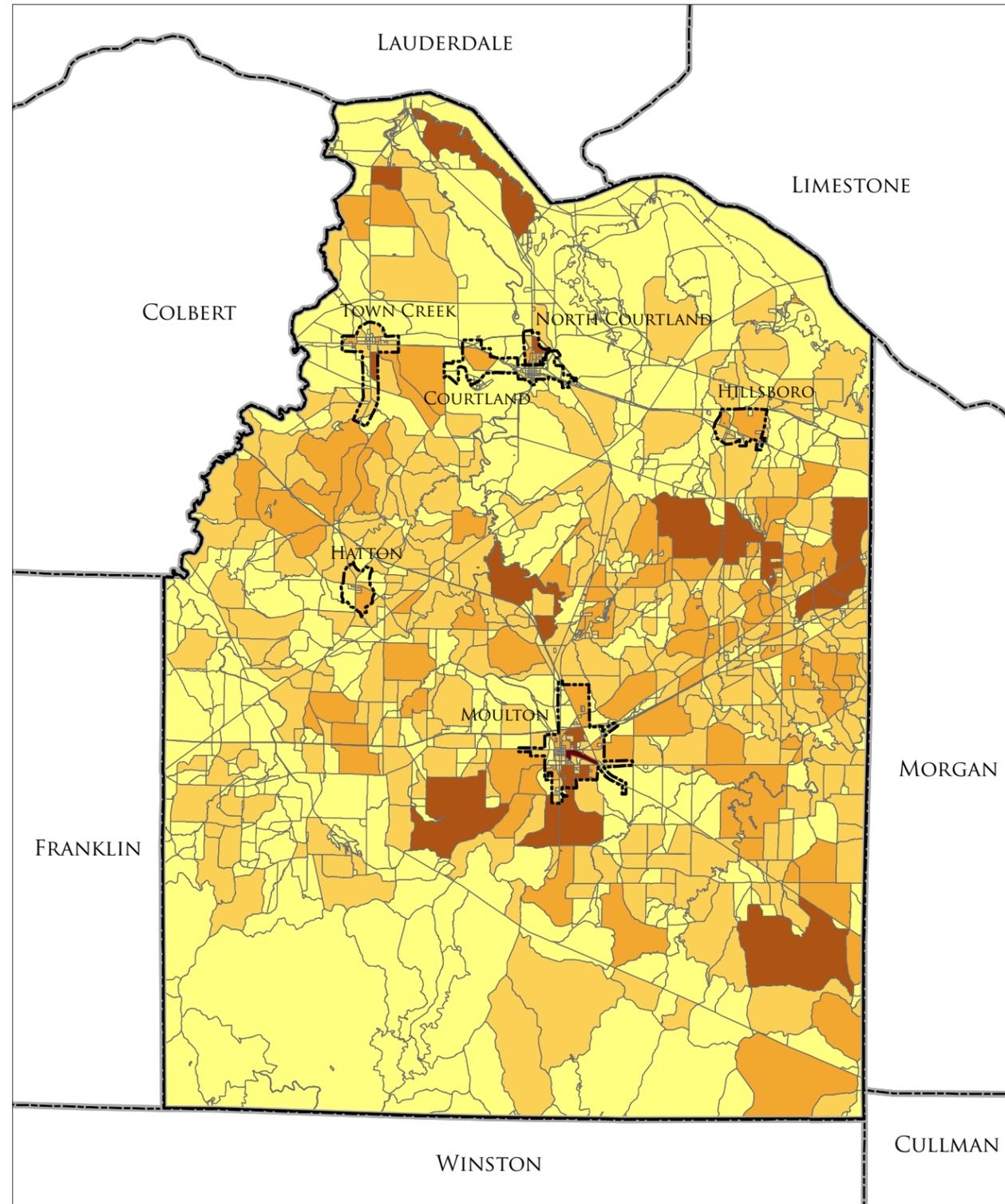
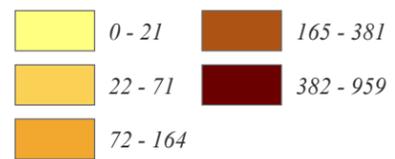


Map: Lawrence County Estimating Potential Losses 100 Year Flood Impact on Households by Census Block  
 (Map, 2015: Multi-Hazard Mitigation Planning Team)

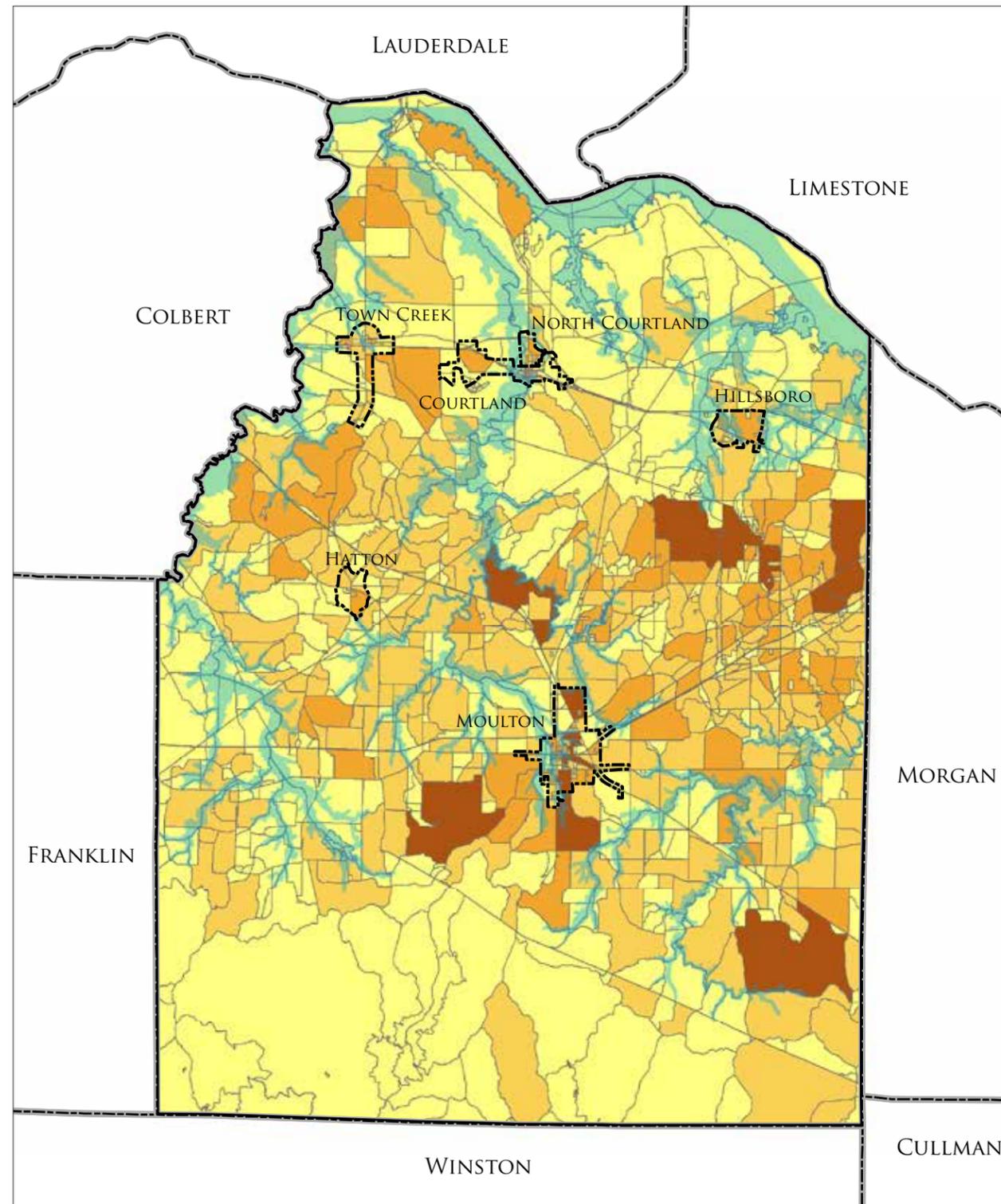
LEGEND



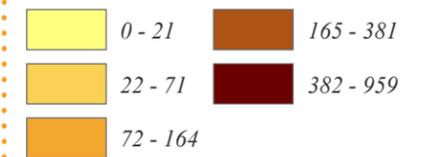
Estimating Potential Losses  
 100 Year Flood Impact on Housing Units by Census Block



Estimating Potential Losses  
Population by Census Block



Map: Lawrence County Estimating Potential Losses 100 Year Flood on Population by Census Block  
 (Map, 2015: Multi-Hazard Mitigation Planning Team)



*Estimating Potential Losses:  
 100 Year Flood Impact on Population by Census Block.*

**Estimated Loss for Magnitude Earthquake 5.0 Probabilistic Loss Estimates**

The impact of a 5.0 magnitude earthquake was evaluated with the HAZUS-MH software. The 5.0 earthquake model indicates minimal damage to buildings and infrastructure in the planning area. The estimated number of buildings damaged ranges between 1,000 and 7,000 with no casualties expected. Less than one household seeking shelter due to damage from a 5.0 magnitude earthquake is projected by the model. The tables below summarize the 5.0 probabilistic scenario and carry slightly different values of damage than are shown in the Direct Economic Losses map. The 5.0 Magnitude Earthquake Map indicates where potential economic losses might occur after a 5.0 magnitude earthquake event within the planning area.

5.0 Magnitude Earthquake Estimated Economic Loss (\$Billions) for Lawrence County and Participating Jurisdictions		
Category	Description	Range
General Building Stock	Building Damage	00.0-0.2
	Building Contents	<0.1
	Business Interruption	<0.1
Infrastructure	Lifelines Damage	
TOTAL		0.10-0.30

*Source: FEMA HAZUS-MHM-4 Data*

5.0 Magnitude Earthquake Estimated Building Damage(Thousands of Buildings) for Lawrence County and Participating Jurisdictions				
Description	Residential	Commercial	Other	Total
Minor	1-6	<1.0	<1.0	1-7
Major	<1.0	<1.0	<1.0	<1.0
Total	1-7	<1.0	<1.0	1-7

*Source: FEMA HAZUS-MHM-4 Data*

5.0 Magnitude Earthquake Estimated Shelter Needs for Lawrence County and Participating Jurisdictions		
Type	Household	People
Displaced Households	<1.0	N/A
Public Shelter	N/A	N/A

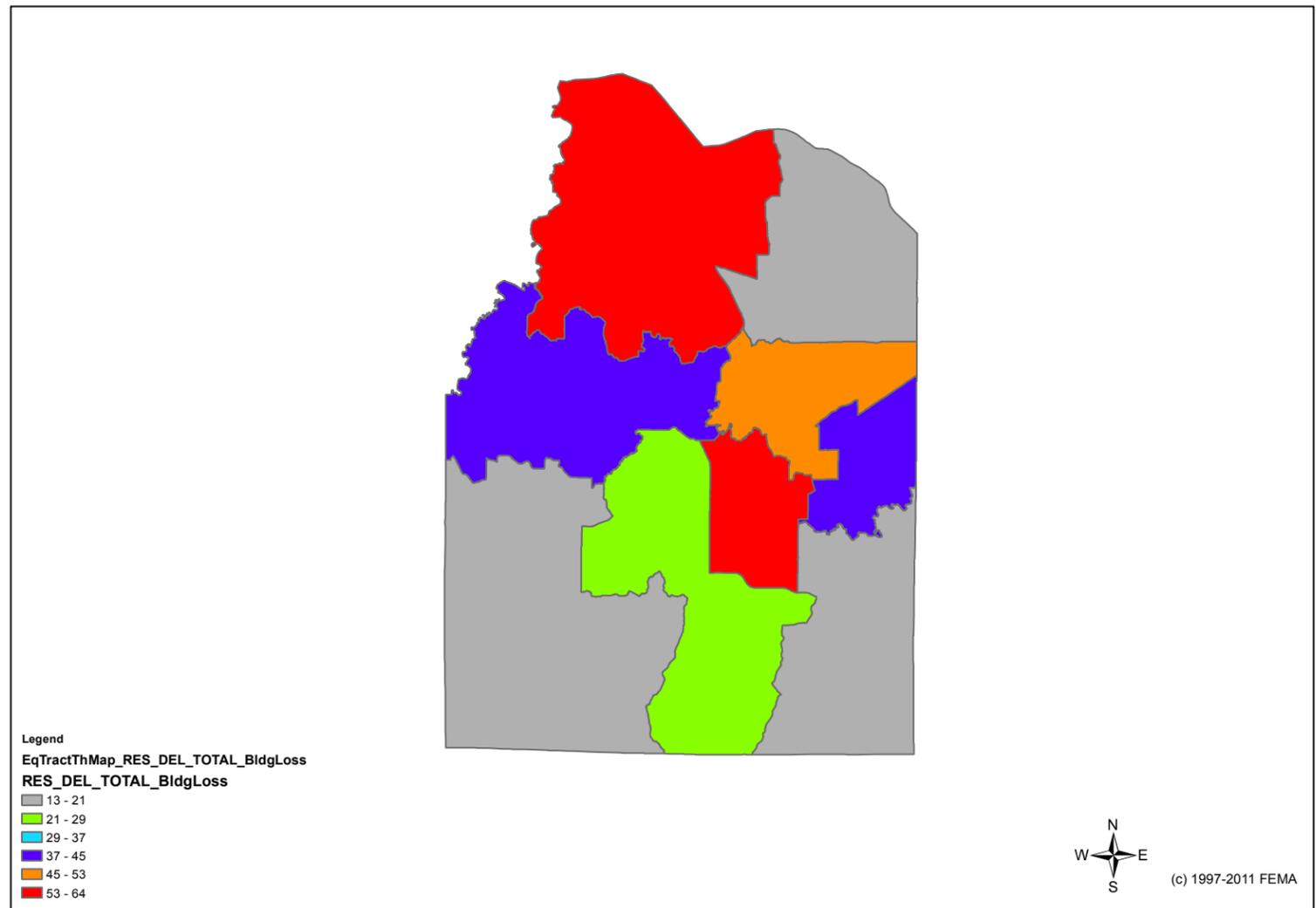
*Source: FEMA HAZUS-MHM-4 Data*

5.0 Magnitude Earthquake Estimated Casualties: Commute Time for Lawrence County and Participating Jurisdictions		
Severity Level	Description	# Persons
Level 1	Medical Aid	N/A
Level 2	Hospital Care	N/A
Level 3	Life-Threatening	N/A
Level 4	Fatalities	N/A

*Source: FEMA HAZUS-MHM-4 Data*

Study Region: Lawrence County Alabama

Scenario: 5.0 Earthquake - Direct Economic Losses, Total Building Damage (\$thous.)



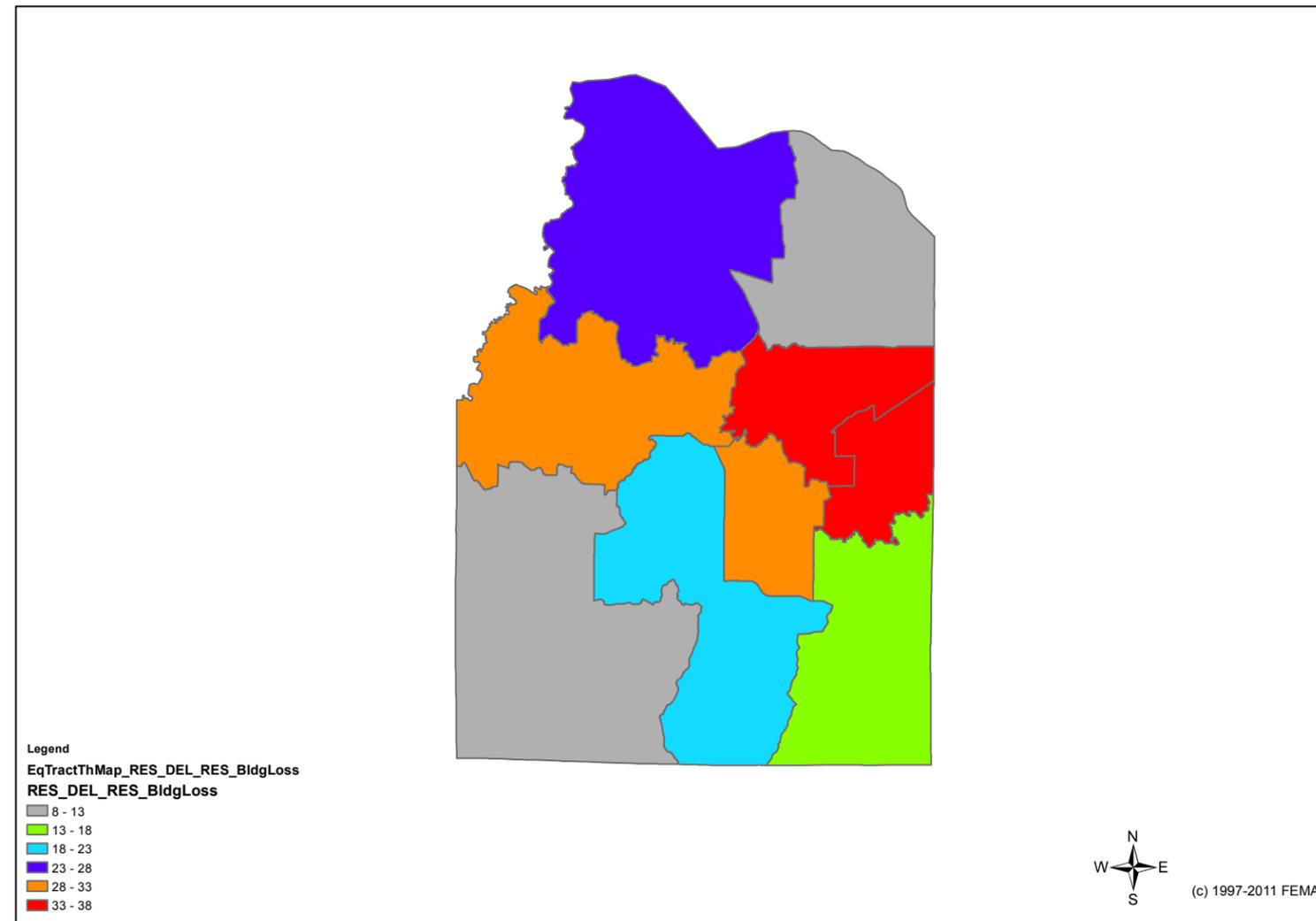
**Estimated Loss for Magnitude Earthquake 6.5 Probabilistic Loss Estimates**

According to the FEMA HAZUS software, a 6.5 magnitude earthquake would cause significant damage to structures and infrastructure within the planning area. The estimated economic losses reach into the billions as shown in the Estimated Economic Losses chart. In comparison to the 5.0 magnitude earthquake, the 6.5 earthquake is expected to cause significant damage within the heavily developed areas in and around the City of Moulton. Preparing and implementing mitigation strategies for this magnitude of an earthquake should be considered to lessen the effects of this

disaster. The most significant mitigation strategy for earthquakes is design and enforcement of local building codes. The maps below summarize the 6.5 probabilistic scenario and carry slightly different values of damage than are shown in the Direct Economic Losses map. The 6.5 Magnitude Earthquake Map indicates where potential economic losses might occur after a 6.5 magnitude earthquake event within the planning area.

Study Region: Lawrence County Alabama

Scenario: 5.0 Earthquake - Direct Economic Losses, Residential Building Damage (\$thous.)



Left: Probabilistic Hurricane Economic Losses for Lawrence County  
 (Charts, 2015: FEMA HAZUS Data, Multi-Hazard Mitigation Planning Team)

Map: 10, 20, 100, 200, and 1000-Year Probabilistic Hurricane Storm Tracks  
 (Charts, 2014: FEMA HAZUS Data, Multi-Hazard Mitigation Planning Team)

**Estimated Loss for Hurricanes**

Historically, hurricanes lose strength when moving inland and are downgraded to a tropical storm by the time they reach Lawrence County and damages are minimal and equivalent to a severe storm. However, Hurricane Katrina did have economic damages within the planning area and increased the community’s concern for future hurricanes and tropical storm events within the County.

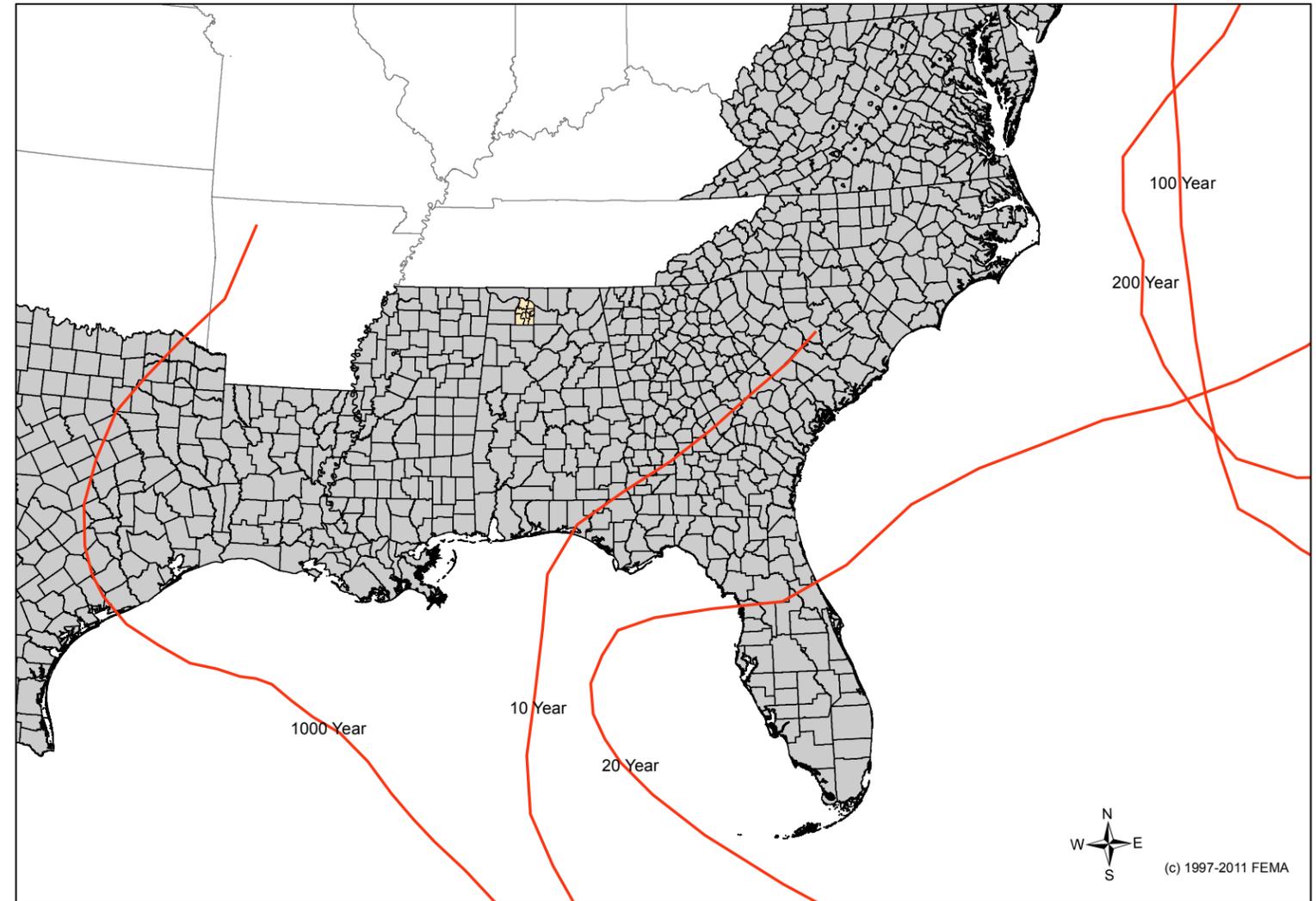
FEMA HAZUS MH M-4 analysis was conducted on hurricane events for the planning area. Seven storm event periods were analyzed. Storm tracks for the 10, 100, 200, and 1000 year hurricane storms are shown below.

According to the HAZUS data, damages from the probabilistic scenarios began to occur during the 50 year storm and accelerated greatly from a 1000 year hurricane. The 50 year storm is projected to have \$1,731,441,000 in damage. The Probabilistic Hurricane Economic Losses table below shows the expected economic damages from storms of different strength.

Probabilistic Hurricane Economic Losses for Lawrence County and Participating Jurisdictions		
Hurricane Period	Total economic losses	Total economic losses of buildings damaged
10 Year Storm	\$0	\$0
20 Year Storm	\$0	\$0
50 Year Storm	\$1,731,441,000	\$1,327,768,000
100 Year Storm	\$1,532,929,000	\$1,291,262,000
200 Year Storm	\$3,956,604,000	\$341,342,000
500 Year Storm	\$9,431,136,000	\$7,754,152,000
1000 Year Storm	\$14,780,770,000	\$11,913,080,000

Source: FEMA HAZUS-MHM-4 Data

Study Region: Lawrence County Alabama  
 Scenario: Probabilistic Hurricane Tracks



RA.7 Analyzing Development Trends

Analyze Development Trends

In 2013, Lawrence County had a population estimate of 33,571. Population trends from 2000- 2013 indicate all jurisdictions and the county overall have lost population, with the exception of the city of Moulton, which has seen an increase of 144 people. However, the city has lost population since the 2010 census. The City of Moulton is the largest jurisdiction in the planning area, and makes up 10.1% of the total population of the county. The highest density of residential and commercial structures are located within the city of Moulton. A large portion of the county is dedicated conservation land within the Bankhead national Forest located on the southern end of Lawrence County, making up almost a quarter of the land mass. The northern portion of the county, especially the jurisdictions along Highway 72, such as town Creek, Courtland, North Courtland, and Hillsboro, are more concentrated residential and commercial areas along the highway. The central areas surrounding Moulton are primarily rural farmland. Residential areas can be seen all along the Tennessee River all through the county where property is privately owned. The Tennessee Valley Authority (TVA) owns a lot of the riverfront property, however, TVA has plans to sell portions of these lots to private entities in the future. Efforts should be made to ensure that only appropriate land uses are allowed in flood prone areas, which are primarily in the northern portion of the county along the Tennessee River. The Population Distribution and Population Projection table to the right illustrates the population demographic of the planning area.

Lawrence County continues to experience decreased growth, with an average annual growth rate of -0.6%, resulting in a loss of 1,232 residents from 2000 to 2013. The towns of Courtland, North Courtland, Hillsboro, and Town Creek have all experienced population loss over the same period. The Growth Allocation by Jurisdiction table illustrates these trends. The City of Moulton has added new residents during the 2000 to 2013 growth period, however, in recent years, the jurisdiction has lost population, losing 67 residents from 2010 to 2013. Efforts have been made to increase densities in already developed areas as opposed to undeveloped rural parts of the county. Efforts have been made by planning officials to execute site plan reviews to ensure proper land choices for new construction to avoid new floodplain properties and repetitive loss claims.

Population Distribution and Population Projection by Jurisdiction					
Jurisdiction	2012 Population Estimate	2013 Population Estimate	Average Annual % Change	2020 Projected Population	% of Total County Population
Lawrence County	33,777	33,571	-0.6%	32,188	100%
Town of Courtland	607	604	-1.2%	551	1.8%
Town of North Courtland	622	618	-0.6%	592	1.8%
Town of Hillsboro	537	534	-0.6%	511	1.6%
City of Moulton	3,420	3,404	-0.5%	3,285	10.1%
Town of Town Creek	1,085	1,080	-0.5%	1,042	3.2%

Source: U.S. Census Data and Planning Team

Growth Allocation by Jurisdiction					
Jurisdiction	2000 Census	2010 Census	2013 Population Estimate	2000-2013 Growth	Percent of Growth Allocation
Lawrence County	34,803	34,339	33,571	-1232	
City of Moulton	3,260	3,471	3,404	144	
Town of Courtland	769	609	604	-165	
Town of North Courtland	799	632	618	-181	
Town of Hillsboro	608	552	534	-74	
Town of Town Creek	1,216	1,100	1,080	-136	

Source: U.S. Census Data and Planning Team

Residential development in Lawrence County has primarily occurred in the five incorporated jurisdictions. It is anticipated that the largest portion of residential development will continue to occur in and around the city limits of Moulton. However, only slight residential development is expected within the next twenty years. The majority of industrial development in the planning area will continue to be concentrated in the northernmost portions of Lawrence County along the Tennessee River, Alabama Highway 20, and the Norfolk Southern Railroad. Lawrence County has several industrial parks in this area with available land for future growth. Commercial development will continue to locate along major transportation routes, such as Alabama Highway 157, County Road 33, and along Alabama Highway 24, with some along Alabama Highway 20 West, within or just outside the county's jurisdictions.

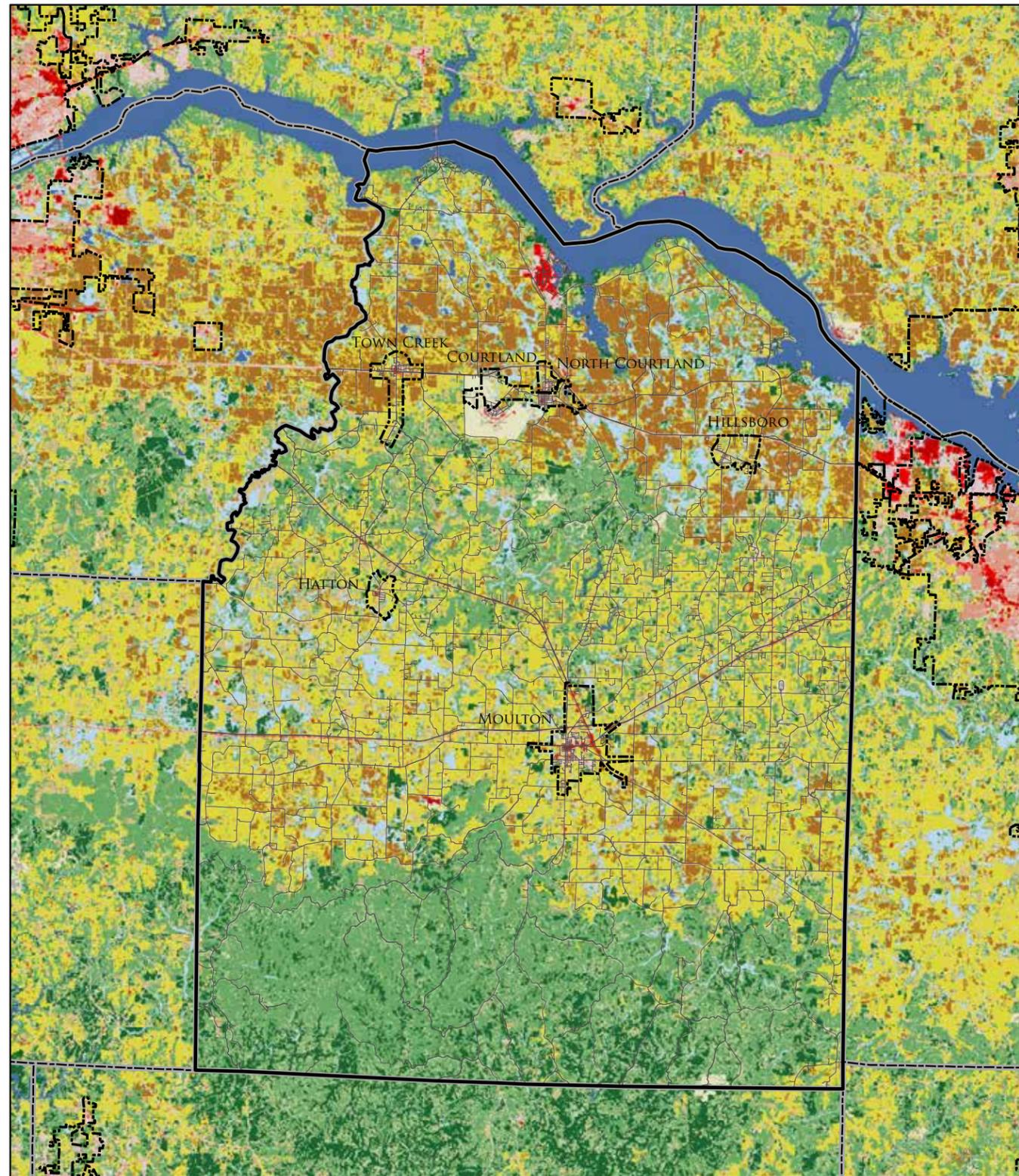
Top Right: Population Distribution & Population Projection by Jurisdiction (Chart, 2015: U.S. Census Data & Hazard Mitigation Planning Team)

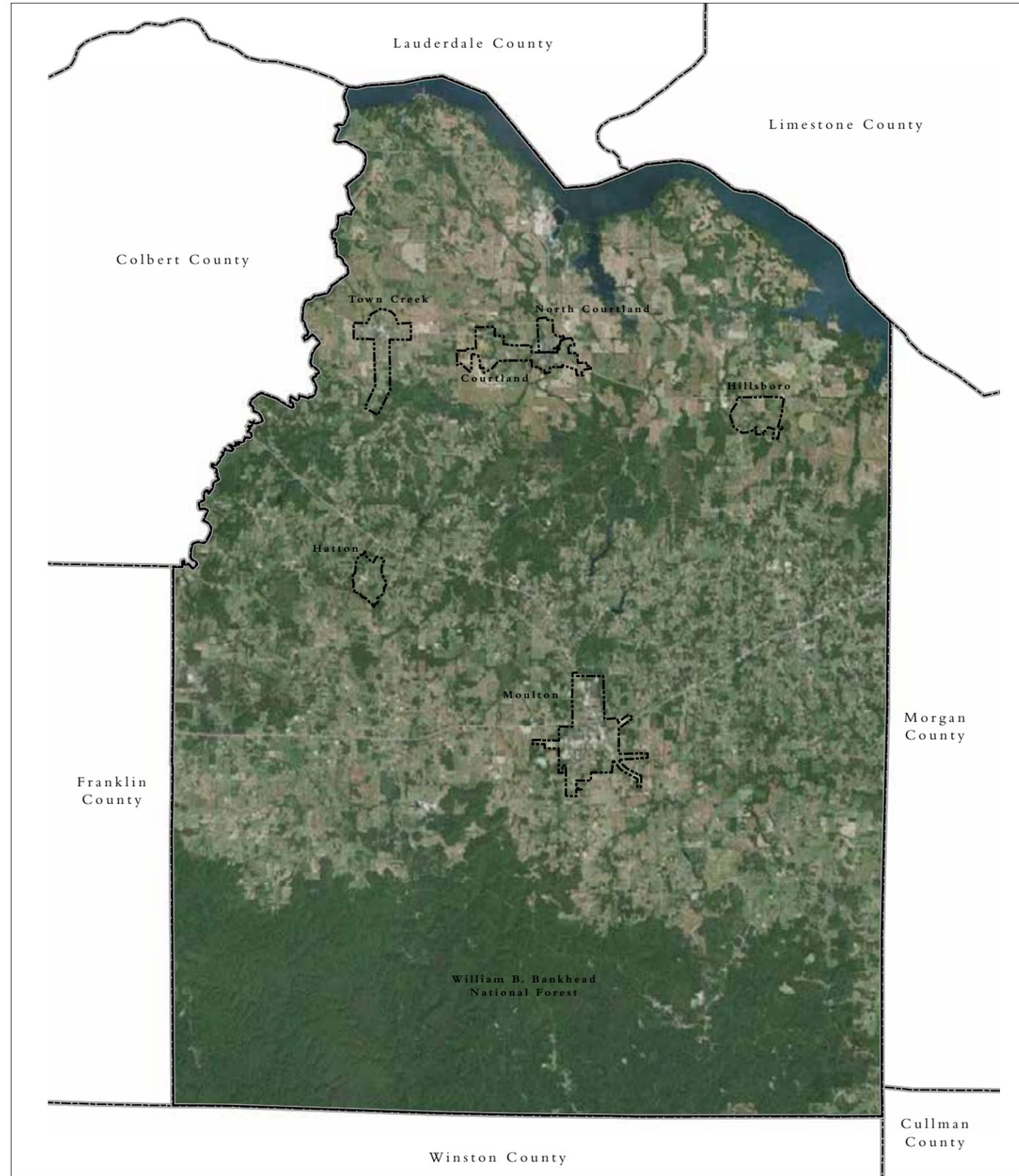
Right: Growth Allocation by Jurisdiction (Chart, 2015: U.S. Census Data & Hazard Mitigation Planning Team)

Map: Lawrence County Land Use Land Cover Map  
 (Map, 2015: Multi-Hazard Mitigation Planning Team)

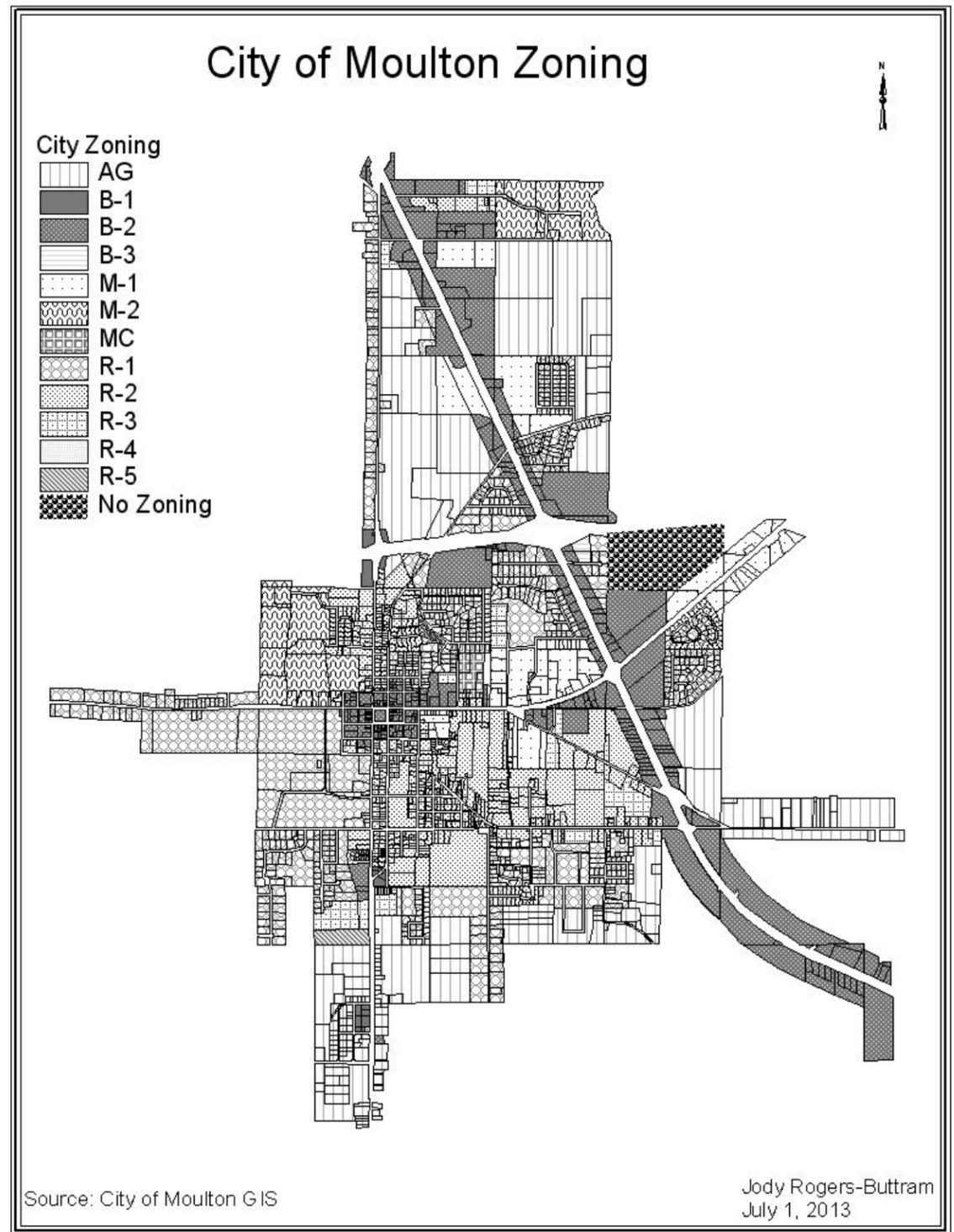
-  Barren Land
-  Cultivated Crops
-  Deciduous Forest
-  Developed, High Intensity
-  Developed, Low Intensity
-  Developed, Medium Intensity
-  Developed, Open Space
-  Emergent Herbaceous Wetlands
-  Evergreen Forest
-  Hay/Pasture
-  Herbaceous
-  Mixed Forest
-  Open Water
-  Shrub/Scrub
-  Woody Wetlands

Land Use / Land Cover Map

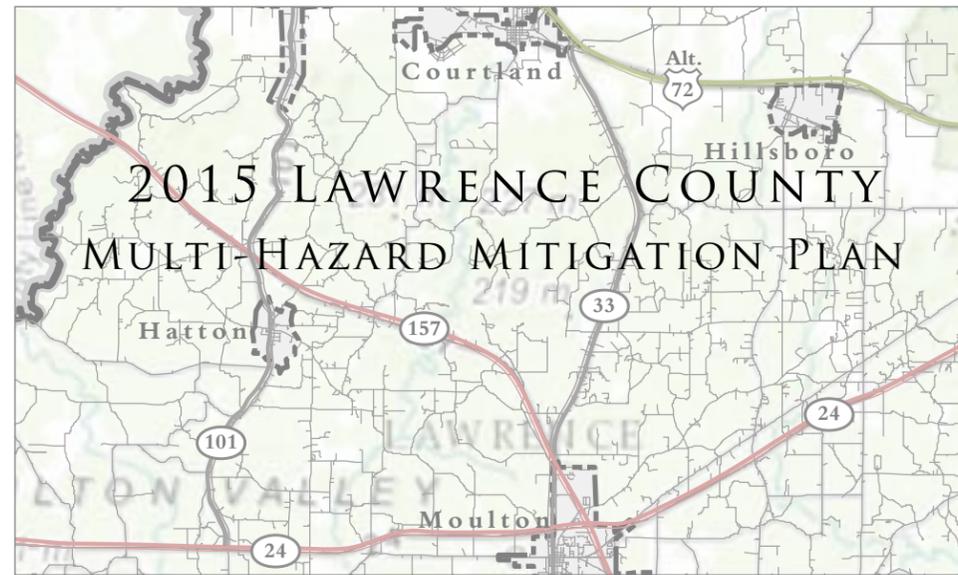




*Land Use Development Trends  
Existing Development Patterns*



City of Moulton Zoning Map



Mitigation Strategies Section **G**

**44 CFR § 201.6**

**Local Mitigation Plans:**

**Local Mitigation Plans**

(c) Plan content. The plan shall include the following:

(3) A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section shall include:

(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

**MITIGATION STRATEGIES**

**G.1 LOCAL HAZARD MITIGATION GOALS**

**G.2 IDENTIFICATION & ANALYSIS OF MITIGATION ACTIONS**

**G.3 NFIP IMPLEMENTATION STRATEGY**

**G.4 MITIGATION ACTION IMPLEMENTATION**

*This section describes the natural hazards mitigation strategy that serves as the jurisdiction's action plan for reducing potential losses identified in the risk assessment section of this plan. The purpose of mitigation planning is to lessen a community's vulnerability to the hardship and cost of disasters. A sustainable community is one in which the economic and social needs of people, businesses, critical facilities, and institutions coexist with the natural environment. Consistent and comprehensive mitigation planning will establish the region as a safe, healthy, and prosperous place to live, work, and play.*

**MS.1 Local Hazard Mitigation Goals**

**Description of Hazard Mitigation Goal Development**

The mitigation strategy was developed by the Lawrence County Multi-Jurisdictional Hazard Mitigation Policy Committee based on the identified risk assessment. The strategy was developed through a collaborative group process that involved reviewing the 2010 plan's mitigation strategies, evaluating the success of past goals and objectives associated with each risk to determine which needed to be continued and what new strategies should be added. The updated mitigation strategies were placed under mitigation action group categories and discussed further in regards to which jurisdictions they were appropriate for. The Committee used the following FEMA guidance to guide the development of their mitigation goals and objectives:

From the FEMA guidance document, *Developing the Mitigation Plan* (2002):

- Goals are general guidelines that explain what you want to achieve. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. They are usually long-term, broad, policy-type statements.
- Objectives define strategies or implementation steps to attain the identified goals and are specific and measurable.
- Mitigation Actions are specific actions that help achieve goals and objectives.

**Planning Jurisdictions Goals and Objectives**

The goals and objectives of the planning team was to create a plan that provided direction for reducing hazard related losses in the Lawrence County County planning area. The mission of the Lawrence County Mitigation Plan is to promote public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards. This can be achieved by implementing actions for risk reduction, lessening vulnerability through local regulations, increasing public awareness, and identifying activities that will guide the county, and its municipalities, towards building a safer, more sustainable community. The goals and objectives identified in this plan describe the direction that Lawrence County and its agencies, organizations, municipalities, and citizens can take to accomplish successful hazard mitigation.

After the committee reviewed the 2010 Plan's goals and objectives, it was decided that most of the goals and objectives still applied to the planning area for the 2015 Plan Update, with some additional changes. Therefore, the Lawrence County Multi-Jurisdictional Hazard Mitigation Plan's goals and objectives are:

**Protect Life & Property**

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural hazards.
- Promote flood control, such as storm drainage maintenance programs and encourage new storm drainage infrastructure
- Provide adequate warning capability by providing warning sirens or other more effective means to relay warnings for all hazards.
- Encourage the construction of community storm shelters/safe rooms to protect lives during severe storms and tornadoes.
- Ensure that all hospitals, schools, and nursing home facilities have a severe weather plan in place to protect patients and students. Encourage the installation of back-up generators in critical facilities.
- Reduce losses and repetitive damages for chronic hazard events.
- Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventative measures for existing development in areas vulnerable to natural hazards, especially those that are area specific.
- Properly manage flood prone areas and natural resources along with continued participation in the National Flood Insurance Program to minimize damages and control the effects of flooding.

**Public Awareness**

- Develop, implement, and expand current education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, partnership opportunities, and funding resources for municipalities and the community as a whole to assist in implementing mitigation activities.

**Natural Systems**

- Balance planning, natural resource management, and land use planning with natural hazard mitigation to protect life, property, and the environment.
- Preserve, rehabilitate, and enhance natural systems to serve as natural hazard mitigation functions.

**Partnership & Information**

- Strengthen communication and coordinate participation among and within public agencies, municipalities, citizens, non-profit organizations, business, and industry to gain a unified interest in plan implementation and maintenance.
- Encourage leadership within public and private sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.

**Emergency Services**

- Establish policies to ensure mitigation projects for critical facilities, services, and infrastructure.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, municipalities, non-profit organizations, businesses, and industry.
- Coordinate and integrate natural hazard mitigation activities, where appropriate, with emergency operation plans and procedures.

**Compatibility with the State of Alabama 2007 Plan Update**

During the development of the 2015 Plan Update, the Committee reviewed the 2013 State of Alabama Hazard Mitigation Plan Update to ensure that local goals and objectives that were developed by the Committee were consistent and reflective of the state's hazard plan's vision and goals. The following are the 2013 State of Alabama Hazard Mitigation Plan's goals:

1. Enhance the comprehensive statewide hazard mitigation system.
2. Reduce the State of Alabama's vulnerability to hazards.
3. Reduce vulnerability of new and future development.
4. Foster public support and acceptance of hazard mitigation.
5. Expand and promote interagency hazard mitigation cooperation.

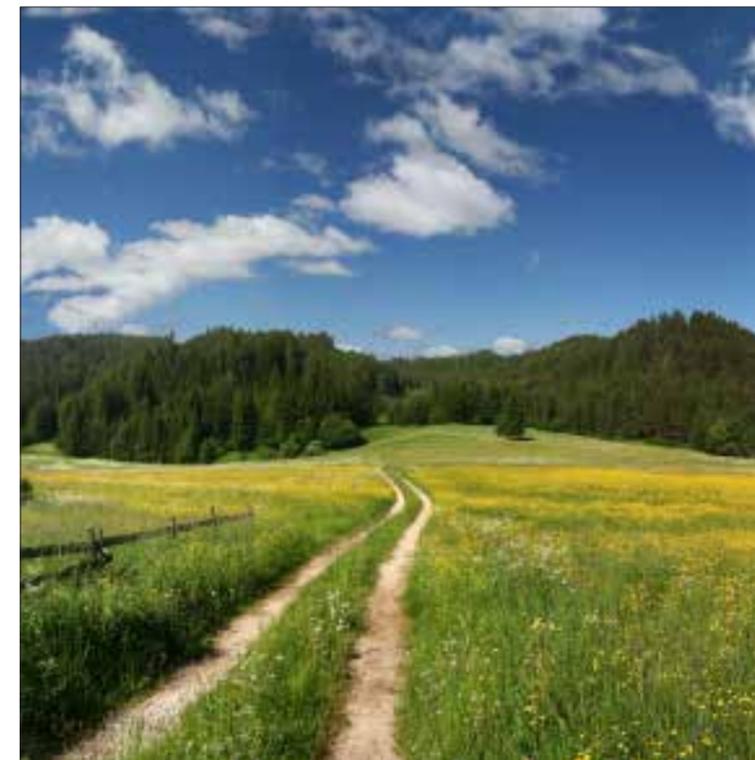
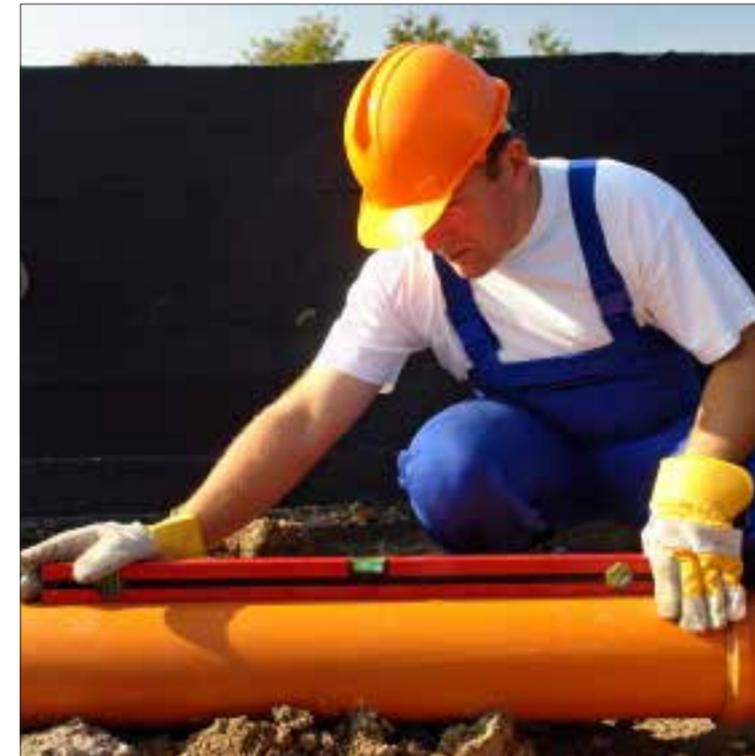
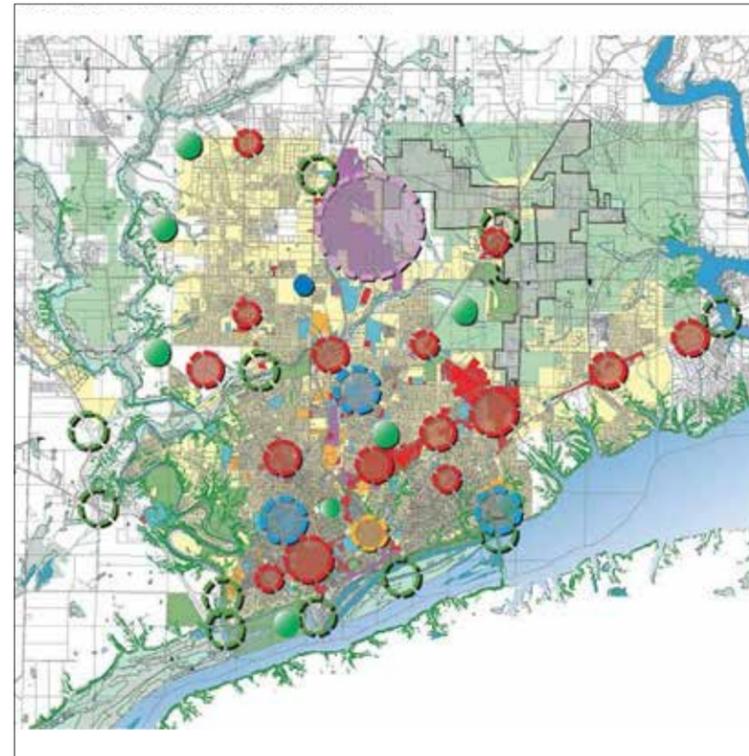
*MS.2 Identification & Analysis of Mitigation Actions*

The following sub-section contains the hazard mitigation strategies presented to the Policy Committee members, stakeholders, and citizens of the planning area. Survey respondents selected which mitigation strategies worked best for their jurisdiction. Each identified risk is listed with their proposed mitigation strategies. The mitigation strategies are organized into five categories:

- **Prevention** - are “government administrative or regulatory actions or processes that influence the way land and buildings are developed and built.”
- **Property Protection** - are actions “that involve the modification of existing buildings or infrastructure to protect them from hazard, or removal from hazard areas.”
- **Public Education & Awareness** - are “actions to inform and educate citizens, elected officials, and property owners about potential risks from hazards and potential ways to mitigate them.”
- **Natural Resource Protection** - are “actions that, in addition to minimizing hazard losses also preserve or restore the functions of natural systems.”
- **Structural Projects** - are “actions that involve the construction of structures to reduce the impact of a hazard.”

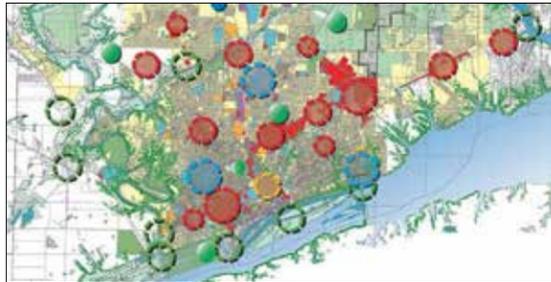
Each jurisdiction has defined the mitigation actions they will adopt and implement. Mitigation strategies listed in the previous 2010 Florence-Lauderdale Multi-Hazard Mitigation Plan that were not chosen by the jurisdictions are not listed in this section. Due to local differences in mitigating natural disasters, each jurisdiction selected mitigation strategies that it felt it had the capacity and political support to implement and that were relevant to the jurisdiction. The listed strategies were selected from each jurisdiction’s responses to the online hazard mitigation survey conducted in the Spring of 2015. Prioritization of mitigation strategies were based on need, quality of life issues, and political support, and was the recommendation of the Hazard Mitigation Committee. Priority ranking was determined high (annually or 1-3 years for completion), medium (2-4 years for completion), and low (5 or 3-5 years).

The hazard mitigation plan will be integrated into the listed mitigation actions found on the following pages. It is the intent of each participating jurisdiction to include these hazard mitigation strategies (tailored for each jurisdiction) into local planning practices. The mitigation measures will be administered, implemented, and funded through the local jurisdictions, the state and local EMA, and FEMA. The Policy Committee recognizes that in most instances, priority is relative to funding availability.

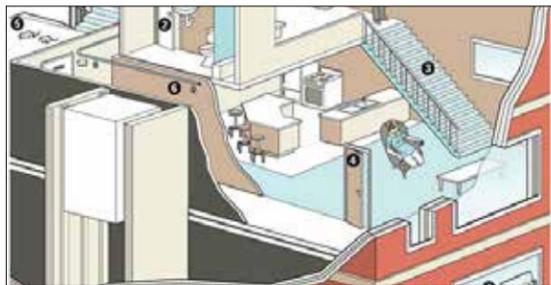




*Earthquake Mitigation Actions - Prevention:*



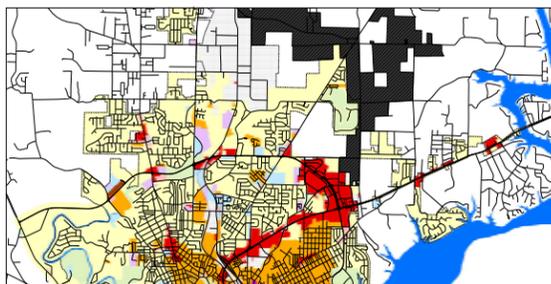
**Comprehensive Planning -**  
 Comprehensive planning sets forth goals and describes and illustrates a vision for the physical, social, and economic characteristics of the community in years ahead. The policies and guidelines intended to implement the vision are outlined in a Comprehensive Plan document that is required by state code for all incorporated places.



**Building Codes and Construction Req's**  
 A building code is a set of rules that specify the minimum acceptable level of safety for constructed objects. The main purpose of the building code is to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures. Building codes are enforced by jurisdictions and become local building construction laws.



**Capital Improvements Programs -**  
 The capital improvement program (CIP) is a five to six year schedule of capital projects. Capital planning involves the purchase or construction, major repair, reconstruction, or replacement of capital items, such as bridges, buildings, utility systems, parks and landfills.



**Land Use Development Regulations -**  
 Land use or "zoning ordinance divides a local government's jurisdiction into districts or zones. For each district or zone, the zoning ordinance can regulate land uses, density of development patterns and the amount of parking." A zoning map usually accompanies the ordinance to identify the different districts and the properties for which it applies.



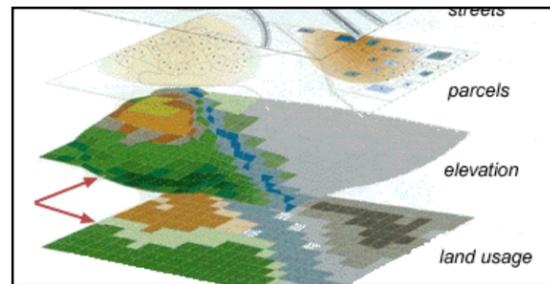
**Subdivision Regulations -**  
 A subdivision ordinance controls the division of a tract of land for building and development purposes. Subdivision regulations determine the layout and design standards that must be met by the proposed subdivision. These standards help to insure that future owners get safe neighborhoods and sound construction.



**Safe Shelter Requirements -**  
 Planning and development of safe shelters should take in depth analysis of community planning and development strategies for placement and function of the facility. In addition, the coordination of the facility with other facilities within the jurisdiction should be taken into account. Safe shelters "ensure the protection of people from dangerous incidents caused by tornadoes, severe storms, and hurricanes through special regulatory standards for safe rooms."



**Critical Facilities Assessments -**  
 Critical facility minimum standards should be set for Lawrence County and the municipal jurisdictions. These standards should be drafted and approved by the policy committee for performing assessments of critical facilities including hospitals, schools, fire and police stations, emergency operation centers, special needs housing, etc. The assessments should address building and site vulnerabilities to hazards.



**Geographic Information Systems -**  
 Geographic information system (GIS) is a tool that connects databases to maps. It combines layers of information about where things are located with descriptive data about those things and their surroundings. Information such as where a point is located on a map, the length of a road, or the size of a parcel of property. This information can be stored in digital format in layers and used to generate detailed and exact maps of communities.

*Earthquake Mitigation Actions -  
Prevention (Continued):*



**Planning Studies -**

A plan is an adopted statement of policy, in the form of text, maps, and graphics, used to guide public and private actions that affect the future. A plan provides decision makers with the information they need to make informed decisions affecting the long-range social, economic, and physical growth of a community.



**Mitigation Planning Technology Support -**

Mitigation technologies come in a variety of forms that include warning sirens, flood warning systems, automatic icing indicators on critical bridges, telephone based flood warning system, cell phone warning applications, 911 service back up site, and communication re-routing in emergency response.

*Earthquake Mitigation Actions -  
Property Protection:*



**Real Estate Flooding Acquisition and Building Relocations -**

Establish a county and local jurisdiction program through the Lawrence County EMA that acquires recurring flood properties and other natural hazard areas that contain existing buildings. The buildings should then be demolished and the establishment of open space for recreation and wildlife should occur.



**Flood Prone Building Proofing and Retrofitting -**

Redesigning and modification of structures to allows a building to remain in the floodplain where necessary. Although long term plans should be to remove the building from the floodplain.



**Critical Facilities Protection -**

Redesigning and modification of existing critical facilities to protect them during a disaster so they may remain viable for disaster relief after the hazard has occurred. New structures should be sited in such a manner as to be away from high risk zones and designed and constructed for "maximum protection from all hazards."



**Freeboard Requirements for Building Elevations -**

The freeboard is " any additional height above a flood elevation on a building is called the freeboard. A community may use this elevation calculation to determine the required level of elevation for a structure's lowest floor in accordance with floodplain management regulations." Standard is the Base Flood Elevation (BFE) plus 1 foot of rise.





*Earthquake Mitigation Actions -  
Property Protection (Continued):*



**Emergency Power Generation -**

Establishment of back up emergency power for critical facilities in order to maintain the electric power during an emergency situation involving loss of power during severe storms and other natural disasters.



**Storm Shutter Programs and Installation -**

Storm shutter programs provide protection of existing structures that may not meet modern standards for storm readiness.



**Building Retrofit and New Construction of Shatter Resistant Glass Structures -**

Retrofitting of existing buildings to safeguard against damages from identified natural hazards in the jurisdiction. As well as requiring shatter resistant glass in new construction involving critical facilities and public buildings.



*Earthquake Mitigation Actions -  
Public Education & Awareness:*

**Outreach Projects -**

Identification of outreach and community projects that provide publicity and support in achieving hazard mitigation goals identified in the plan. Projects should be identified in each of the participating jurisdictions and promoted in achieving hazard mitigation goals and objectives.



**Hazard Information Kiosk and Centers-**

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*Earthquake Mitigation Actions -  
Public Education & Awareness (Continued):*



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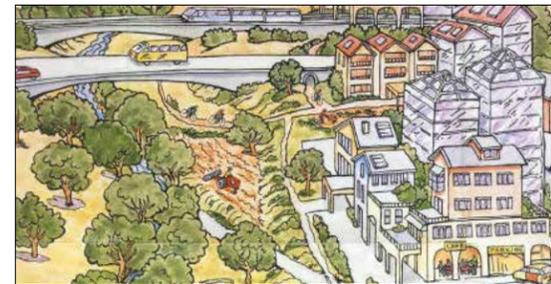
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*Earthquake Mitigation Actions -  
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**Open Space Easements and Acquisition -**

“The preservation of open space has been a major focus of land trusts and a number of government programs.” Some of these strategies include: Fee-Simple Acquisition, Land Trust, Land & Water Conversation Fund, State Programs, Conversation Easements on agricultural and woodland properties.



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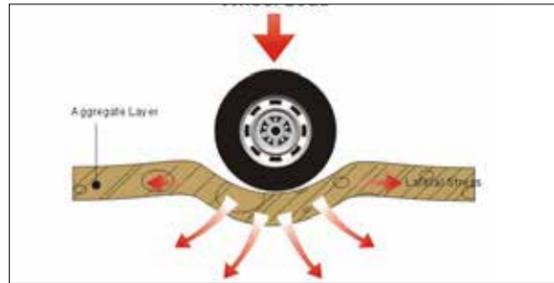


*Earthquake Mitigation Actions -  
Structural Projects:*



**Neighborhood and Community Safe Rooms**

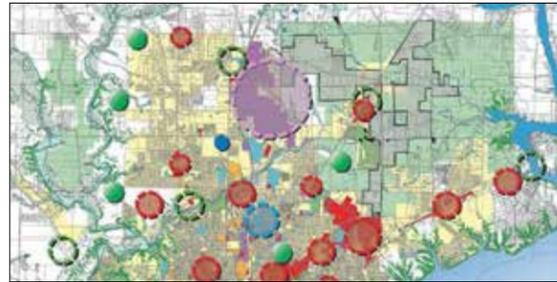
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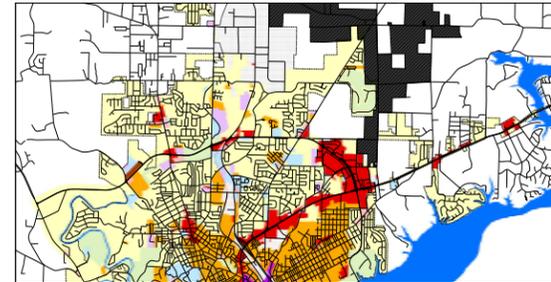
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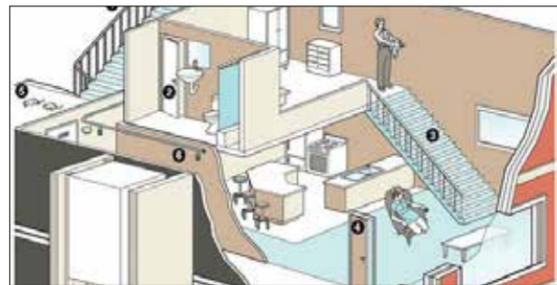
*Dam & Levee Failure Mitigation Actions - Prevention:*



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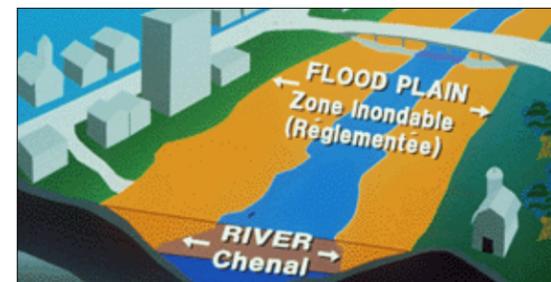
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**Levee and Dam Management –**  
Dams either store water, control river flow or can be used to generate hydroelectric power. A levee is built to prevent river water from flowing into a floodplain or floodway. Levees and dams may suffer catastrophic failure if they are not maintained routinely and on a scheduled basis. Dam management puts in place practices for maintaining existing dams that are in the local jurisdictions control.



DAM / LEVEE FAILURE

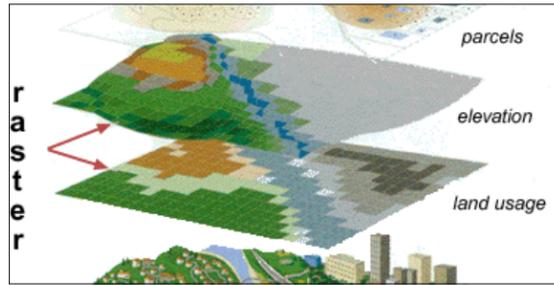


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**Mitigation Planning Technology Support –**

Mitigation technologies come in a variety of forms that include warning sirens, flood warning systems, automatic icing indicators on critical bridges, telephone based flood warning system, cell phone warning applications, 911 service back up site, and communication re-routing in emergency response.

*Dam & Levee Failure Mitigation Actions - Property Protection:*



**Critical Facilities Protection –**

Redesigning and modification of existing critical facilities to protect them during a disaster so they may remain viable for disaster relief after the hazard has occurred. New structures should be sited in such a manner as to be away from high risk zones and designed and constructed for “maximum protection from all hazards.”



**Freeboard Requirements for Building Elevations –**

The freeboard is “any additional height above a flood elevation on a building is called the freeboard. A community may use this elevation calculation to determine the required level of elevation for a structure’s lowest floor in accordance with floodplain management regulations.” Standard is the Base Flood Elevation (BFE) plus 1 foot of rise.

*Dam & Levee Failure Mitigation Actions -  
Public Education & Awareness:*



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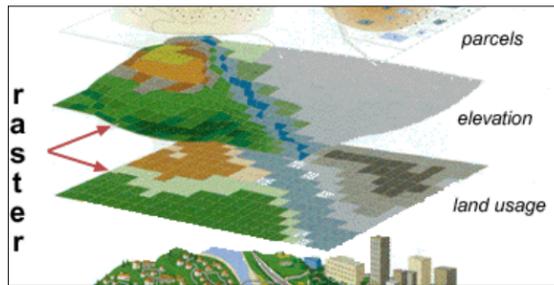


*Dam & Levee Failure Mitigation Actions - Natural Resource Protection:*



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*Dam & Levee Failure Mitigation Actions - Structural Projects:*



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**Dam Modifications –**

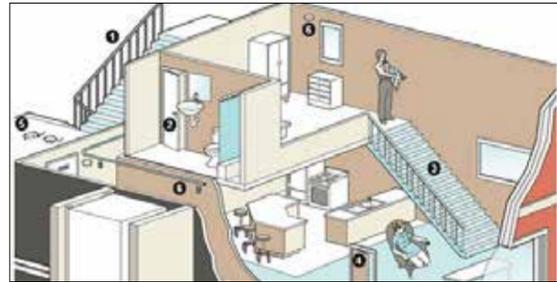
Dam modifications allow for safe and effective operation of existing structures that contain large volumes of water within a reservoir. Modifications can enable the structure to function more efficiently as well as continue the life span of the dam itself.



**Ground Stabilization –**

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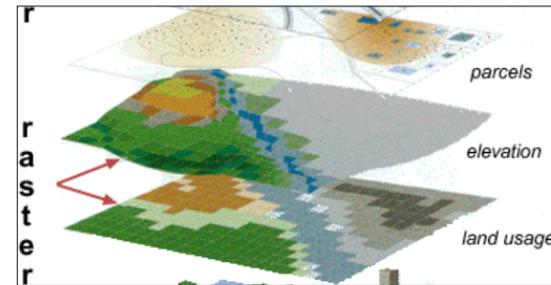
*Drought Mitigation Actions - Prevention:*



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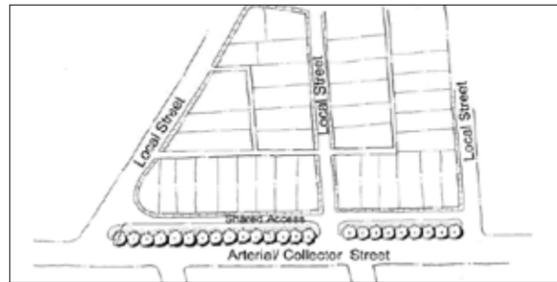


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*Drought Mitigation Actions -  
Property Protection:*



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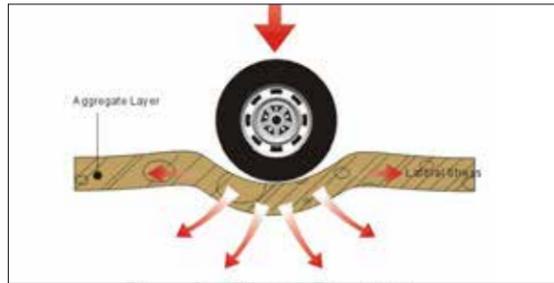


*Drought Mitigation Actions -  
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**Neighborhood and Community Safe Rooms**

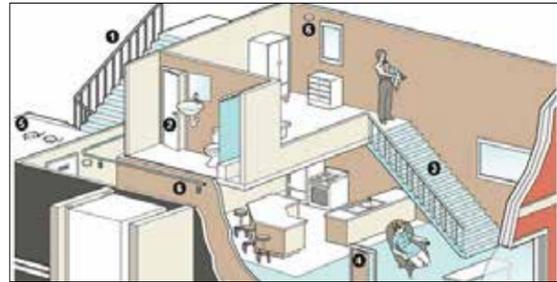
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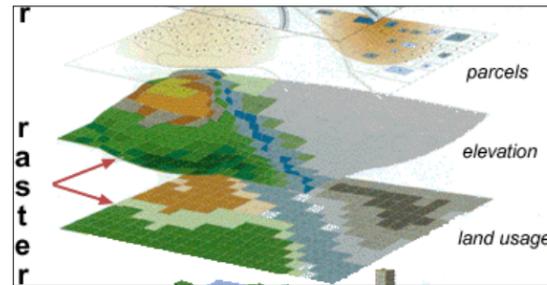
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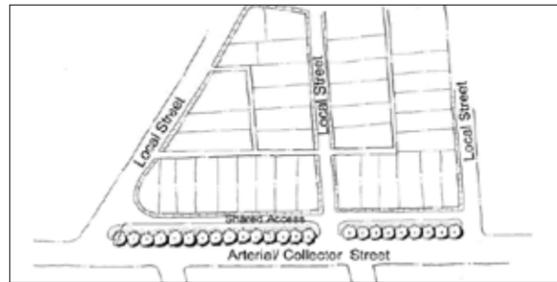
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EXTREME TEMPERATURES



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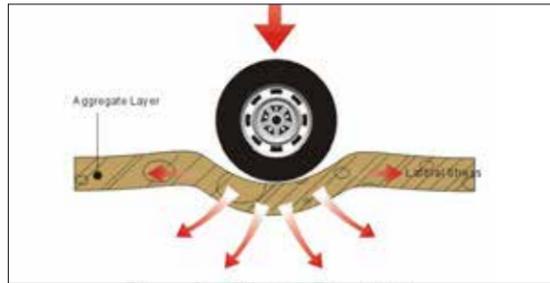


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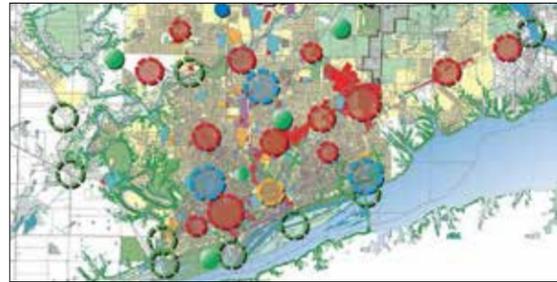
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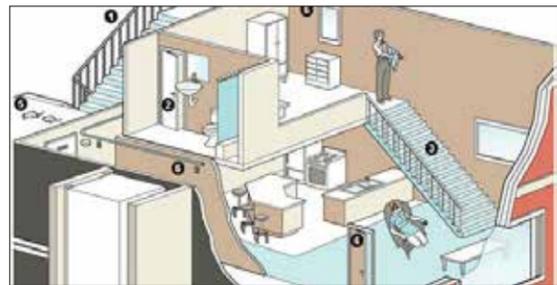
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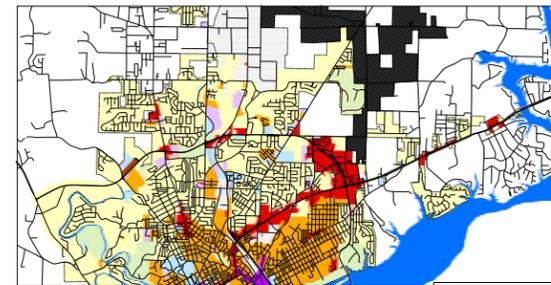
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FLOOD



*Flood Mitigation Actions -  
Prevention (Continued):*



**Levee and Dam Management –**

Dams either store water, control river flow or can be used to generate hydroelectric power. A levee is built to prevent river water from flowing into a floodplain or floodway. Levees and dams may suffer catastrophic failure if they are not maintained routinely and on a scheduled basis. Dam management puts in place practices for maintaining existing dams that are in the local jurisdictions control.



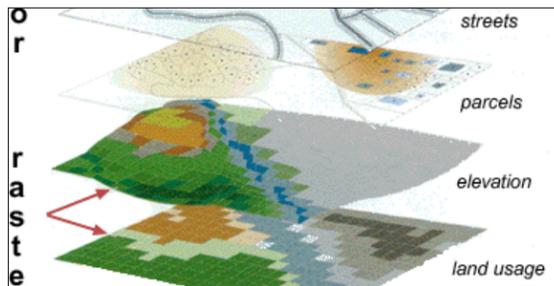
**Public Right-of-Way Maintenance Regulations –**

Clarification of public right-of-way maintenance requirements through mapping and policy committee discussion increases awareness of responsibility. In addition, jurisdictions should enforce dumping and littering in the public right-of-way and encourage maintenance to be shared with adjoining property owners.



**Critical Facilities Assessments –**

Critical facility minimum standards should be set for Lawrence County and the municipal jurisdictions. These standards should be drafted and approved by the policy committee for performing assessments of critical facilities including hospitals, schools, fire and police stations, emergency operation centers, special needs housing, etc. The assessments should address building and site vulnerabilities to hazards.



**Geographic Information Systems –**

Geographic information system (GIS) is a tool that connects databases to maps. It combines layers of information about where things are located with descriptive data about those things and their surroundings. Information such as where a point is located on a map, the length of a road, or the size of a parcel of property. This information can be stored in digital format in layers and used to generate detailed and exact maps of communities.



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A plan is an adopted statement of policy, in the form of text, maps, and graphics, used to guide public and private actions that affect the future. A plan provides decision makers with the information they need to make informed decisions affecting the long-range social, economic, and physical growth of a community.



**Mitigation Planning Technology Support –**

Mitigation technologies come in a variety of forms that include warning sirens, flood warning systems, automatic icing indicators on critical bridges, telephone based flood warning system, cell phone warning applications, 911 service back up site, and communication re-routing in emergency response.

*Flood Mitigation Actions -  
Property Protection:*



**Real Estate Flooding Acquisition and Building Relocations –**

Establish a county and local jurisdiction program through the Lawrence County EMA that acquires recurring flood properties and other natural hazard areas that contain existing buildings. The buildings should then be demolished and the establishment of open space for recreation and wildlife should occur.



**Emergency Power Generation –**

Establishment of back up emergency power for critical facilities in order to maintain the electric power during an emergency situation involving loss of power during severe storms and other natural disasters.



**Flood Prone Building Proofing and Retrofitting –**

Redesigning and modification of structures to allows a building to remain in the floodplain where necessary. Although long term plans should be to remove the building from the floodplain.



**Separate Sewer System Collection and Protection**

Sewer systems come in two major types of either combined with storm water collection or separate sewer system from storm water collection. A combined system is one in which both wastewater and storm water are conveyed through the same set of pipes. This combined type can overflow and often does during heavy rainfall and flooding. Separate systems tend to reduce untreated sewage from entering rivers and streams.



**Critical Facilities Protection –**

Redesigning and modification of existing critical facilities to protect them during a disaster so they may remain viable for disaster relief after the hazard has occurred. New structures should be sited in such a manner as to be away from high risk zones and designed and constructed for “maximum protection from all hazards.”



**Storm Shutter Programs and Installation –**

Storm shutter programs provide protection of existing structures that may not meet modern standards for storm readiness.



**Free Board Requirements for Building Elevations –**

The freeboard is “ any additional height above a flood elevation on a building is called the freeboard. A community may use this elevation calculation to determine the required level of elevation for a structure’s lowest floor in accordance with floodplain management regulations.” Standard is the Base Flood Elevation (BFE) plus 1 foot of rise.



**Building Retrofit and New Construction of Shatter Resistant Glass Structures –**

Retrofitting of existing buildings to safeguard against damages from identified natural hazards in the jurisdiction. As well as requiring shatter resistant glass in new construction involving critical facilities and public buildings.



*Flood Mitigation Actions -  
Public Education & Awareness:*



**Outreach Projects –**

Identification of outreach and community projects that provide publicity and support in achieving hazard mitigation goals identified in the plan. Projects should be identified in each of the participating jurisdictions and promoted in achieving hazard mitigation goals and objectives.



**Adult and Community Education Programs**

Mitigation and land use workshops can be conducted to inform individuals of different hazards within the planning jurisdictions and methods of mitigation those hazards.



**Real Estate Disclosure Requirements –**

Encourage and or require the disclosure of flood plain locations within a real estate transaction. This includes the location of floodplains within the property being sold as well as adjoining properties.



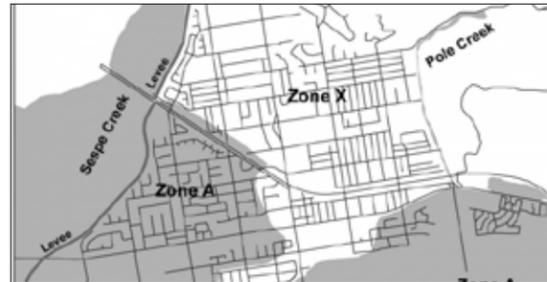
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Publish and distribute the adopted – Lawrence Hazard Mitigation Plan in full. In addition there should be distribution of specific mitigation efforts taking place within Lawrence County and its municipal jurisdictions.



**Hazard Information Kiosk and Centers-**

Promoting the Lawrence County Hazard Mitigation Policy Committee agenda throughout Lawrence County. This can be done through providing lectures, speakers and information for county and municipal events that discuss existing mitigation and planning efforts within Lawrence County.



**Flood Map Information Distribution –**

Distribute to media and public a simplified flood map as a general information guide. The guide should discuss the importance of floodplains to local economies and the regional environment. Graphic material should be used to communicate this information.



**School Age Education Programs –**

Provide a methodology and curriculum to introduce students to mitigation strategies and land planning efforts within the planning jurisdiction. The program should be promoted by the – Lawrence Hazard Mitigation Policy Committee and developed in conjunction with school systems within the mitigation planning jurisdictions.



**NOAA Weather Radio Programs –**

Promote the use of weather radios in critical facilities, institutions, businesses, and homes as a means for advance warning to implement mitigation measures and to increase public awareness of hazard risks.

*Flood Mitigation Actions -  
Public Education & Awareness (Continued):*



**Press and Media Mitigation Releases and Training Sessions –**

Utilization of mass media outlets like newspapers, television, cable access, internet blogs, podcasts, video sharing, and online social networking to increase public awareness of hazard mitigation efforts.

*Flood Mitigation Actions -  
Natural Resource Protection:*



**Sediment and Erosion Control –**

“Erosion is any process by which sediment is entrained (eroded) and moved away from its original location by gradational agents, which include gravity, water, wind, ice, and humans.” The best approach is avoidance of the eroding area by identifying the area affected by the hazard and enforce plans not to develop such identified areas. Other options include using landscape architects to engineer the construction of the natural system.



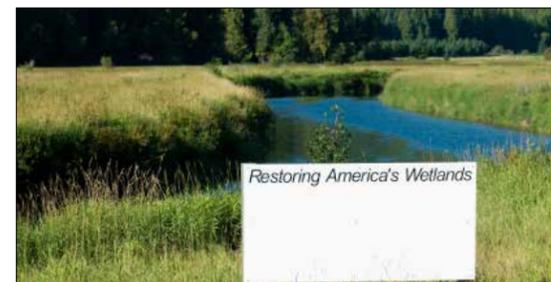
**Stream Corridor Restoration –**

“A wide range of efforts fall under stream restoration, including cleaning local creeks, daylighting small urban creeks (taking them out of concrete culverts), and rebuilding entire river channels and restoring flow regimes” back to the water body. “ Restoration goals should respond to human needs and be realistic in terms of physical and ecological processes.”



**Watershed Management –**

Watershed management is “broadly defined as a suite of zoning and land-use management techniques applied to help align compatible land uses with resource quality.” The management style is based on basins, sub-basins, watersheds, sub-watersheds, and catchments.



**Wetland Restoration and Wetland Preservation –**

Wetlands provide wildlife habitat, serve as filters of groundwater, and aid in flood control. Restoration and preservation begins with the national wetlands inventory map. Section 404 of the federal clean water act requires permits from the Army Corps of Engineers when dredging or filling waters within the United States. Regulations now include wetlands.





*Flood Mitigation Actions -  
Natural Resource Protection (Continued):*



**Open Space Easements and Acquisition –**  
“The preservation of open space has been a major focus of land trusts and a number of government programs.” Some of these strategies include: Fee-Simple Acquisition, Land Trust, Land & Water Conversation Fund, State Programs, Conversation Easements on agricultural and woodland properties.”



**Water Resource Conservation Programs –**  
Water resource programs “protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.” Water conservation is defined as “activities designed to reduce the demand for water, improve efficiency in use, and reduce losses and waste of water.”



**River/Stream Corridor Restoration and Protection –**  
General principles are: “Recognize that ecological goals and economic development goals are mutually beneficial; protect and restore natural river features and functions; provide for public access, connections, and recreational uses.”



**Urban Forestry Planning and Development Programs –**  
Development of urban forestry and neighborhood tree programs can be invaluable in storm water management and suppression of other storms including heat periods within urban neighborhoods.



**Press and Media Mitigation Releases and Training Sessions –**  
Informing media representatives about mitigation efforts allows for accurate information to be distributed on long term mitigation projects. This training begins with a sound understanding of the overall mitigation plan and the mitigation efforts underway within the community. Targeted representatives include newspapers, television reporters and radio correspondents.

*Flood Mitigation Actions -  
Structural Projects:*



**Storm Water Diversion Culverts –**  
Diversion culverts act as a constructed system to divert storm water away from undesirable areas. Diversion culverts simple move storm water into piped systems that can be day lighted into appropriate locations. However, improperly used culverts can create storm water systems that introduce increased volumes of water into rivers and streams thus causing erosion and sedimentation.



**Dam Modifications –**  
Dam modifications allow for safe and effective operation of existing structures that contain large volumes of water within a reservoir. Modifications can enable the structure to function more efficiently as well as continue the life span of the dam itself.



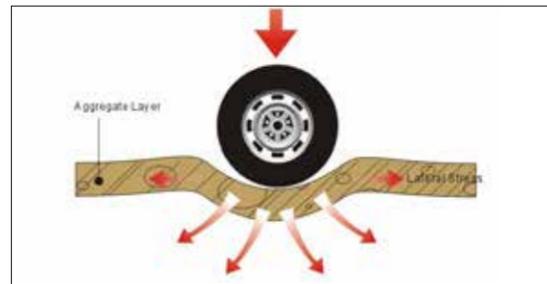
**Storm Water Flood Walls –**  
Storm water flood walls divert storm water away from undesirable areas and into constructed via ducts and culverts.



**Storm Sewer System Construction –**  
Storm sewer systems involve the “efficient conveyance of water from one point to another and the control of increased peak rates of runoff associated with land use alteration.” There are two approaches to storm water systems. The directly connected system involves “efficient collection of runoff at the source and then conveyance to a detention area.” The Natural Systems Approach works to mimic the natural conditions of a site.



**Seawalls –**  
Seawalls prevent erosion of river and lake banks due to highly constructed environments. Seawalls allow for stabilized stream and river banks in situations where development is desired along shore lines.



**Ground Stabilization –**  
Ground stabilization techniques mitigate hazards of undesirable soils that are not good for road construction or development. These soils and their underlying geologic formations require stabilization techniques ranging from large stone placement, asphalt reclamation geotechnical pavers and concrete additives.



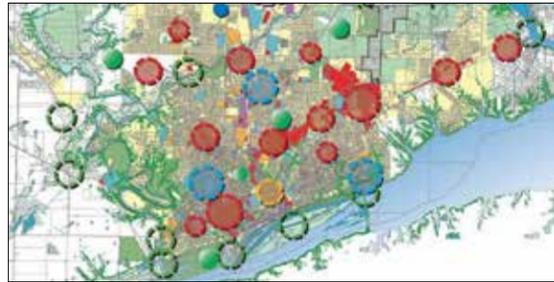
**Neighborhood and Community Safe Rooms**  
Neighborhood and community safe rooms are “freestanding, single purpose community storm shelters or safe rooms within buildings used for other purposes to provide temporary shelter from hurricanes, tornadoes, and severe storms.”



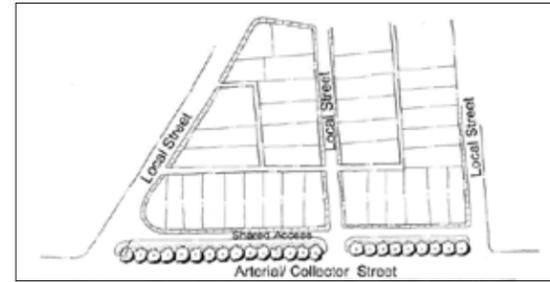
**Reservoir Construction –**  
Construction of reservoirs and dams for flood control “where deemed cost effective and feasible” can assist in mitigating potential disasters. However, when creating the reservoir a man made technical hazard is created and must be maintained and evaluated on a consistent basis.



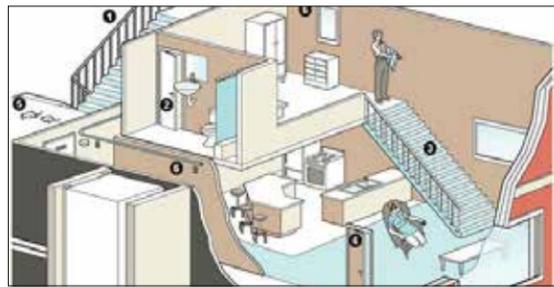
*Hazardous Materials Mitigation Actions - Prevention:*



**Comprehensive Planning –**  
 Comprehensive planning sets forth goals and describes and illustrates a vision for the physical, social, and economic characteristics of the community in years ahead. The policies and guidelines intended to implement the vision are outlined in a Comprehensive Plan document that is required by state code for all incorporated places.



**Subdivision Regulations –**  
 A subdivision ordinance controls the division of a tract of land for building and development purposes. Subdivision regulations determine the layout and design standards that must be met by the proposed subdivision. These standards help to insure that future owners get safe neighborhoods and sound construction.



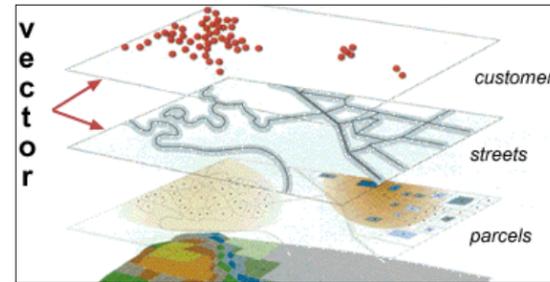
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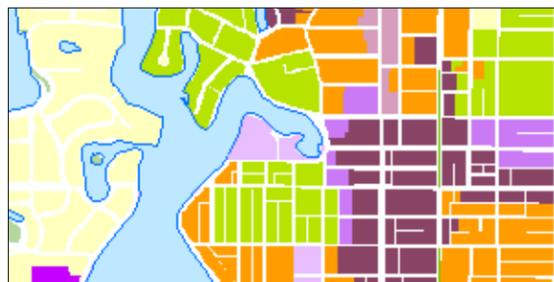
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**Land Use Development Regulations –**  
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Prevention (Continued):*



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HAZARDOUS MATERIALS



*Hazardous Materials Mitigation Actions - Public Education & Awareness:*



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*Hazardous Materials Mitigation Actions -  
Structural Projects:*



**Retaining Walls –**

Retaining walls provide stabilization to slopes allowing urbanization and development to occur. Retaining walls are used along interstates, within residential neighborhoods and urban centers. Retaining walls allow for safe habitation and movement of goods and services in areas that contain poor soil conditions and steep slopes that may be undesirable for development.



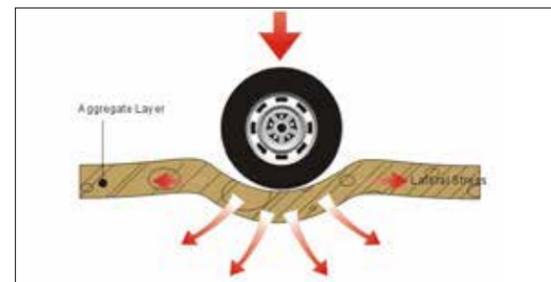
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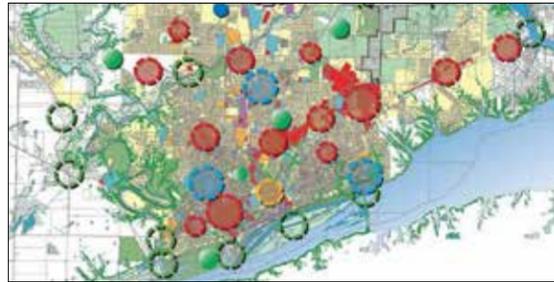
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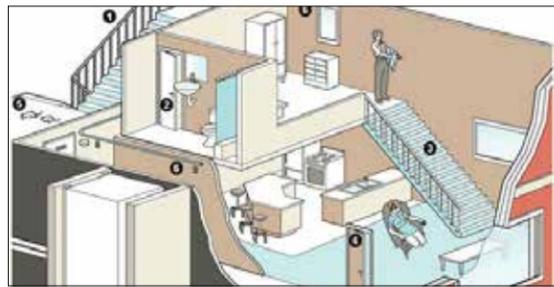
*Hurricanes & Tropical Cyclones Mitigation Actions - Prevention:*



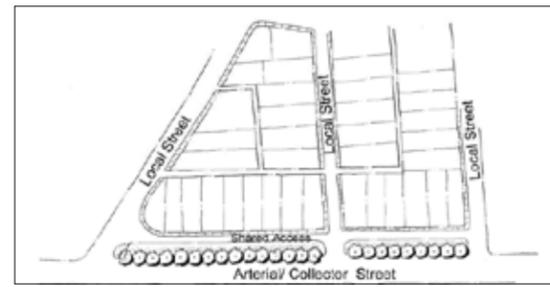
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**Safe Shelter Requirements –**  
Planning and development of safe shelters should take in depth analysis of community planning and development strategies for placement and function of the facility. In addition, the coordination of the facility with other facilities within the jurisdiction should be taken into account. Safe shelters “ensure the protection of people from dangerous incidents caused by tornadoes, severe storms, and hurricanes through special regulatory standards for safe rooms.



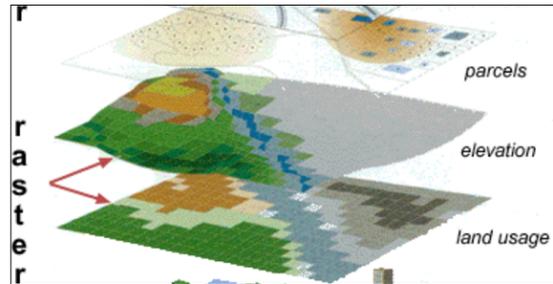
**Open Space Preservation –**  
The preservation of open space is a voluntary process involving a landowner who is donating or selling land to a government agency or a qualified private organization. “Open space broadly includes woodlands, fields, wetlands, stream banks, floodplains, and unique geologic formations.



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*Hurricanes & Tropical Cyclones Mitigation Actions - Prevention (Continued):*

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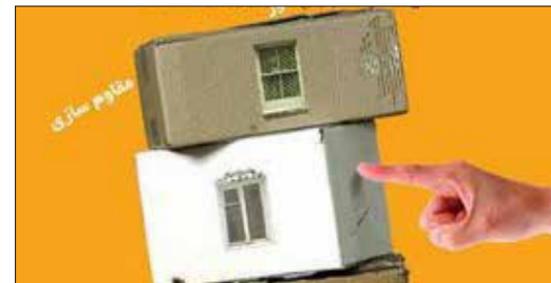
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HURRICANES & TROPICAL CYCLONES

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*Hurricanes & Tropical Cyclones Mitigation Actions - Property Protection (Continued):*



**Emergency Power Generation –**

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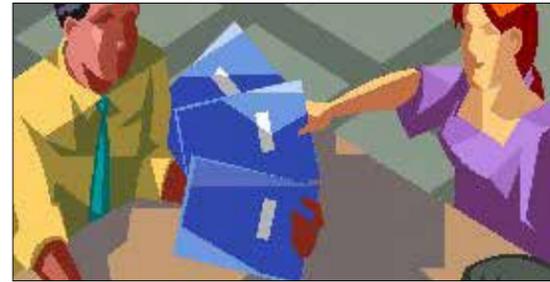
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HURRICANES & TROPICAL CYCLONES

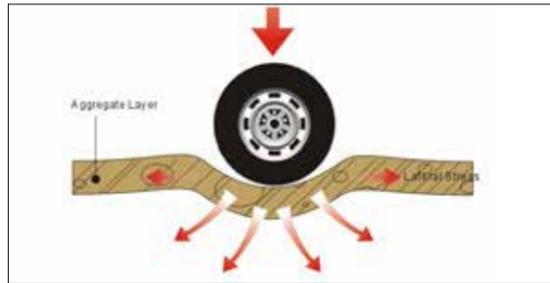


*Hurricanes & Tropical Cyclones Mitigation  
Actions - Structural Projects:*



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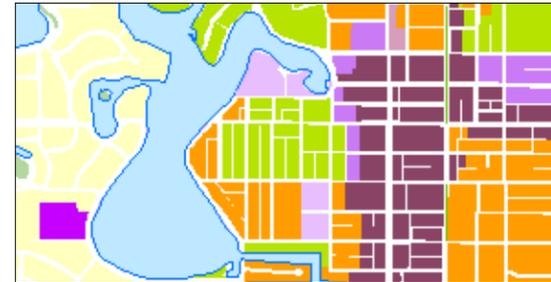
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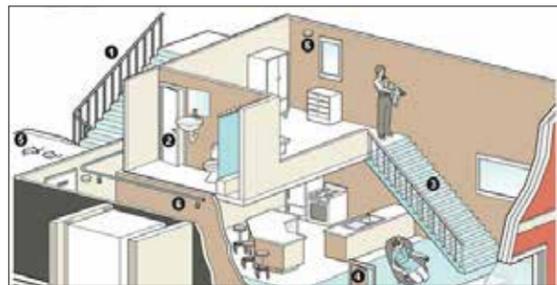
*Landslide Mitigation Actions - Prevention:*



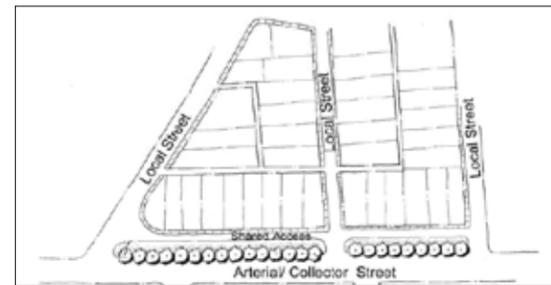
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The capital improvement program (CIP) is a five to six year schedule of capital projects. Capital planning involves the purchase or construction, major repair, reconstruction, or replacement of capital items, such as bridges, buildings, utility systems, parks and landfills.



**Burn Permits –**  
Burn permits establish controls and guidelines that allow for the appropriate timing and safety of debris burning within the jurisdiction. Through an expensive permit the jurisdiction can safely guide citizens into the best times to burn debris and the best methods of doing so.



**Open Space Preservation –**  
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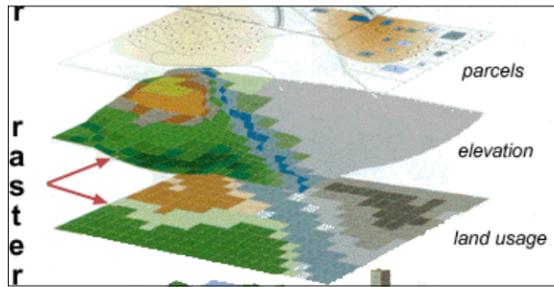


*Landslide Mitigation Actions - Prevention (Continued):*



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Mitigation technologies come in a variety of forms that include warning sirens, flood warning systems, automatic icing indicators on critical bridges, telephone based flood warning system, cell phone warning applications, 911 service back up site, and communication re-routing in emergency response.

*Landslide Mitigation Actions - Property Protection:*



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Public Education & Awareness:*



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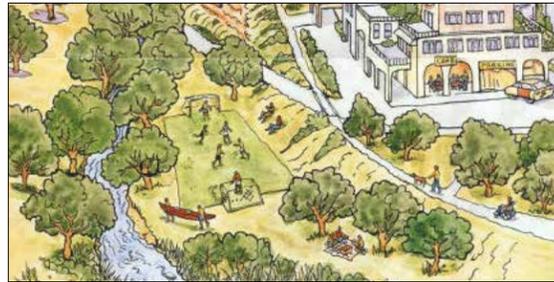
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LANDSLIDE



*Landslide Mitigation Actions -  
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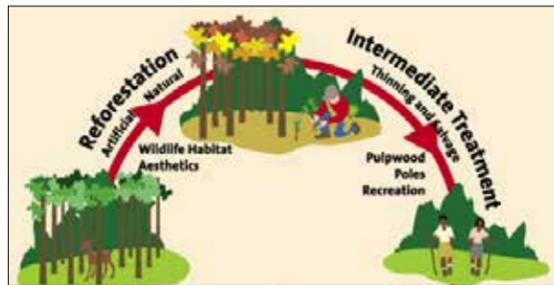
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*Landslide Mitigation Actions -  
Structural Projects:*



**Retaining Walls –**

Retaining walls provide stabilization to slopes allowing urbanization and development to occur. Retaining walls are used along interstates, within residential neighborhoods and urban centers. Retaining walls allow for safe habitation and movement of goods and services in areas that contain poor soil conditions and steep slopes that may be undesirable for development.



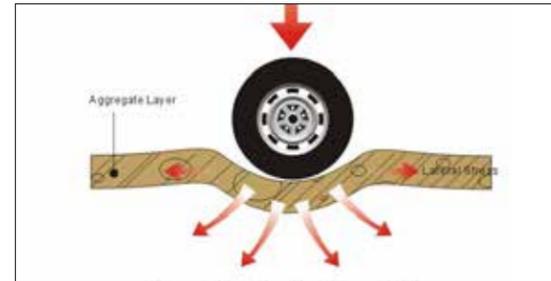
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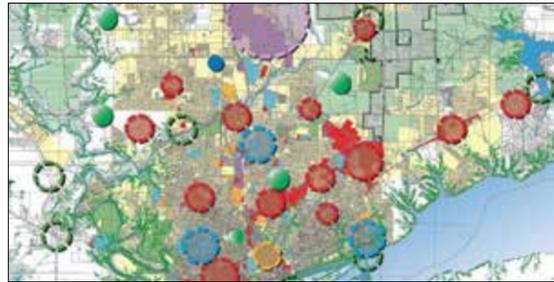
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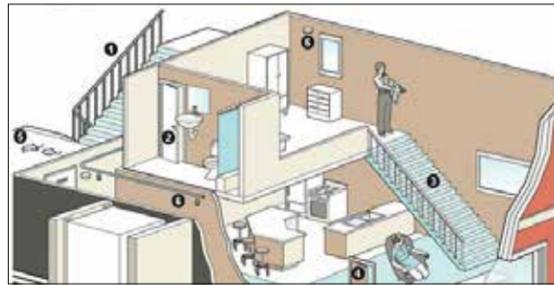
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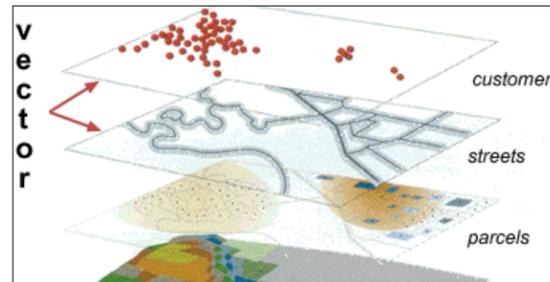
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Prevention (Continued):*



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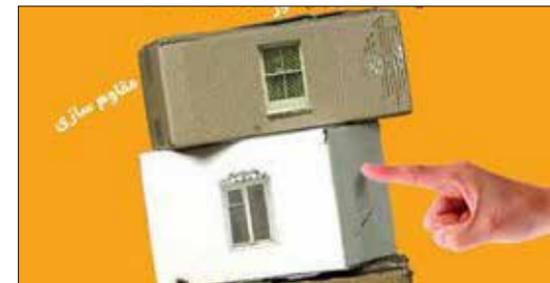
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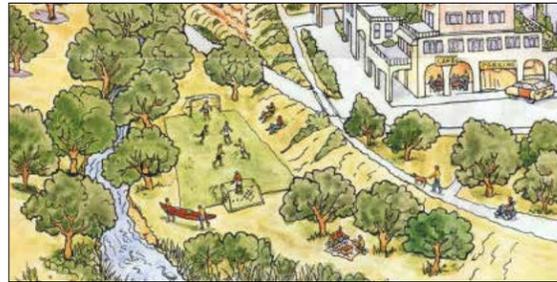
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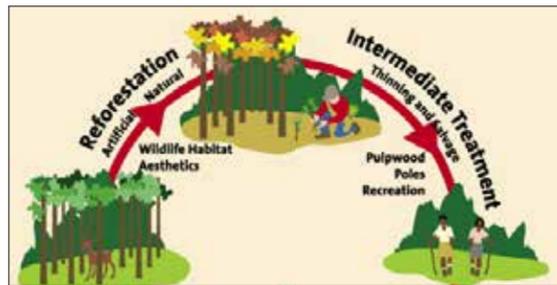
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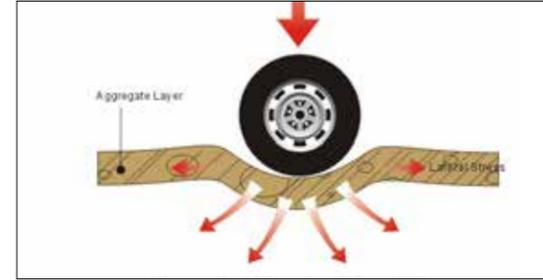
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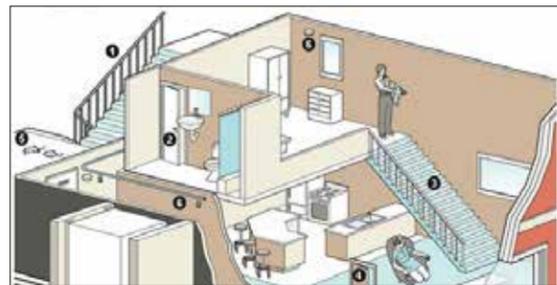
Severe Storm Mitigation Actions -  
Prevention:



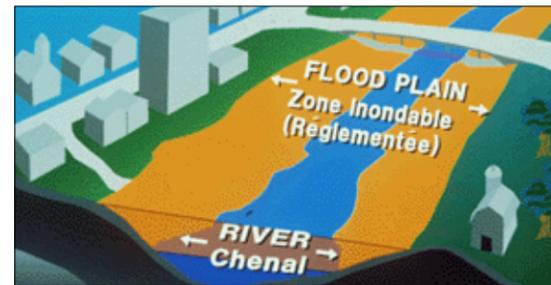
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**Flood Plain Management Programs –**  
Flood plain management begins with active participation in the National Flood Insurance Program (NFIP). “The mapping functions of the NFIP provide an effective basis for establishing floodplain management regulations through zoning, subdivision controls, and other measures within clearly defined areas. . .” Existing structures should be relocated or elevated above the floodplain.



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**Storm Water Management –**  
Storm water management is the methodology for drainage and flood controls based on natural systems, where runoff is retained or infiltrated at the source. The flow of the retained storm water is within a more naturalized channel and flood control is provided by protection and maintenance of floodplains.



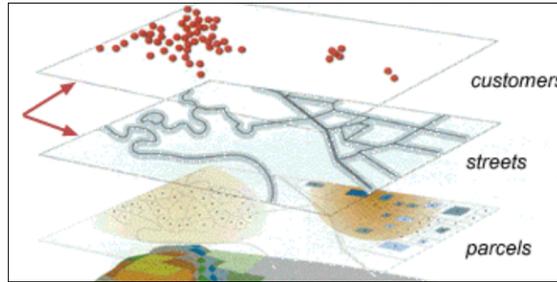
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SEVERE STORM



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Prevention (Continued):*



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Property Protection:*



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**Free Board Requirements for Building Elevations –**  
The freeboard is “ any additional height above a flood elevation on a building is called the freeboard. A community may use this elevation calculation to determine the required level of elevation for a structure’s lowest floor in accordance with floodplain management regulations.” Standard is the Base Flood Elevation (BFE) plus 1 foot of rise.

Severe Storm Mitigation Actions -  
Property Protection (Continued):



**Emergency Power Generation –**  
Establishment of back up emergency power for critical facilities in order to maintain the electric power during an emergency situation involving loss of power during severe storms and other natural disasters.



**Storm Shutter Programs and Installation –**  
Storm shutter programs provide protection of existing structures that may not meet modern standards for storm readiness.



**Building Retrofit and New Construction of Shatter Resistant Glass Structures –**  
Retrofitting of existing buildings to safeguard against damages from identified natural hazards in the jurisdiction. As well as requiring shatter resistant glass in new construction involving critical facilities and public buildings.

Severe Storm Mitigation Actions -  
Public Education & Awareness:



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Public Education & Awareness (Continued):*



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**NOAA Weather Radio Programs –**

“Promote the use of weather radios in critical facilities, institutions, businesses, and homes as a means for advance warning to implement mitigation measures and to increase public awareness of hazard risks.”



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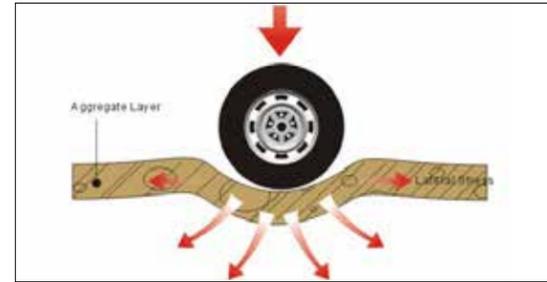
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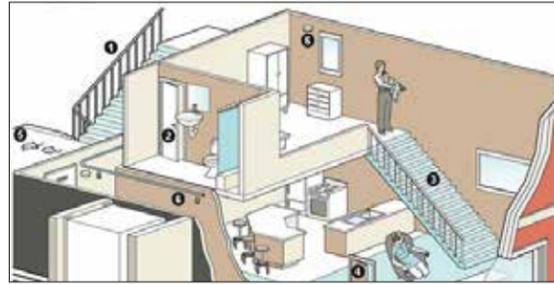
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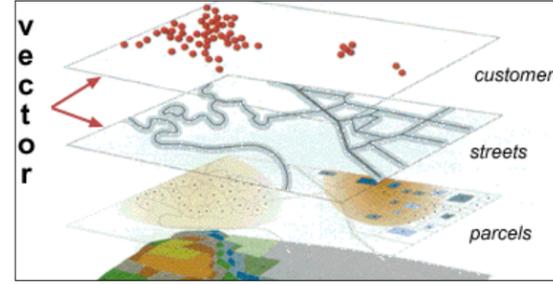
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**Emergency Power Generation –**  
Establishment of back up emergency power for critical facilities in order to maintain the electric power during an emergency situation involving loss of power during severe storms and other natural disasters.



**Storm Shutter Programs and Installation –**  
Storm shutter programs provide protection of existing structures that may not meet modern standards for storm readiness.



**Building Retrofit and New Construction of Shatter Resistant Glass Structures –**  
Retrofitting of existing buildings to safeguard against damages from identified natural hazards in the jurisdiction. As well as requiring shatter resistant glass in new construction involving critical facilities and public buildings.

*Tornado Mitigation Actions -  
Public Education & Awareness:*



**Outreach Projects –**  
Identification of outreach and community projects that provide publicity and support in achieving hazard mitigation goals identified in the plan. Projects should be identified in each of the participating jurisdictions and promoted in achieving hazard mitigation goals and objectives.



**Hazard Information Kiosk and Centers–**  
Promoting the Lawrence County Hazard Mitigation Policy Committee agenda throughout Lawrence County. This can be done through providing lectures, speakers and information for county and municipal events that discuss existing mitigation and planning efforts within Lawrence County.



**School Age Education Programs –**  
Provide a methodology and curriculum to introduce students to mitigation strategies and land planning efforts within the planning jurisdiction. The program should be promoted by the – Lawrence Hazard Mitigation Policy Committee and developed in conjunction with school systems within the mitigation planning jurisdictions.



**Adult and Community Education Programs**  
Mitigation and land use workshops can be conducted to inform individuals of different hazards within the planning jurisdictions and methods of mitigation those hazards.





*Tornado Mitigation Actions -  
Public Education & Awareness (Continued):*



**Hazard Mitigation Plan and Pamphlet Distribution –**

Publish and distribute the adopted - Lawrence Hazard Mitigation Plan in full. In addition there should be distribution of specific mitigation efforts taking place within Lawrence County and its municipal jurisdictions.



**NOAA Weather Radio Programs –**

“Promote the use of weather radios in critical facilities, institutions, businesses, and homes as a means for advance warning to implement mitigation measures and to increase public awareness of hazard risks.”



**Press and Media Mitigation Releases and Training Sessions –**

Utilization of mass media outlets like newspapers, television, cable access, Internet blogs, podcasts, video sharing, and online social networking to increase public awareness of hazard mitigation efforts.

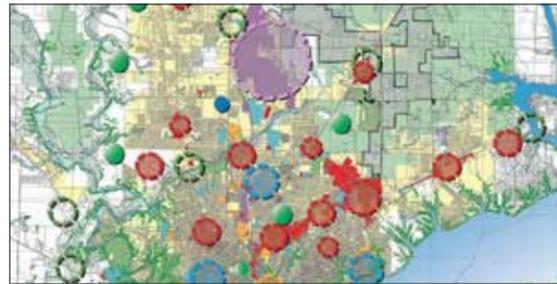
*Tornado Mitigation Actions -  
Structural Projects:*



**Neighborhood and Community Safe Rooms**

Neighborhood and community safe rooms are “freestanding, single purpose community storm shelters or safe rooms within buildings used for other purposes to provide temporary shelter from hurricanes, tornadoes, and severe storms.”

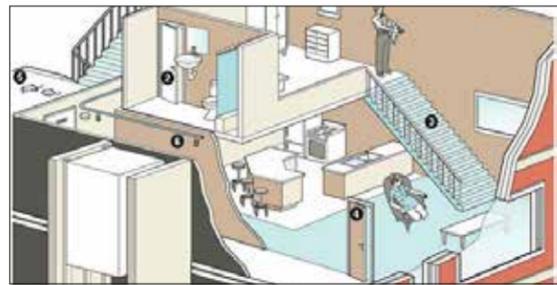
*Wildfire Mitigation Actions - Prevention:*



**Comprehensive Planning –**  
Comprehensive planning sets forth goals and describes and illustrates a vision for the physical, social, and economic characteristics of the community in years ahead. The policies and guidelines intended to implement the vision are outlined in a Comprehensive Plan document that is required by state code for all incorporated places.



**Land Use Development Regulations –**  
Land use or “zoning ordinance divides a local government’s jurisdiction into districts or zones. For each district or zone, the zoning ordinance can regulate land uses, density of development patterns and the amount of parking.” A zoning map usually accompanies the ordinance to identify the different districts and the properties for which it applies.



**Building Codes and Construction Req’s –**  
A building code is a set of rules that specify the minimum acceptable level of safety for constructed objects. The main purpose of the building code is to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures. Building codes are enforced by jurisdictions and become local building construction laws.



**Subdivision Regulations –**  
A subdivision ordinance controls the division of a tract of land for building and development purposes. Subdivision regulations determine the layout and design standards that must be met by the proposed subdivision. These standards help to insure that future owners get safe neighborhoods and sound construction.



**Capital Improvements Programs –**  
The capital improvement program (CIP) is a five to six year schedule of capital projects. Capital planning involves the purchase or construction, major repair, reconstruction, or replacement of capital items, such as bridges, buildings, utility systems, parks and landfills.



**Burn Permits –**  
Burn permits establish controls and guidelines that allow for the appropriate timing and safety of debris burning within the jurisdiction. Through an expensive permit the jurisdiction can safely guide citizens into the best times to burn debris and the best methods of doing so.



**Open Space Preservation –**  
The preservation of open space is a voluntary process involving a landowner who is donating or selling land to a government agency or a qualified private organization. “Open space broadly includes woodlands, fields, wetlands, stream banks, floodplains, and unique geologic formations.



**Safe Shelter Requirements –**  
Planning and development of safe shelters should take in depth analysis of community planning and development strategies for placement and function of the facility. In addition, the coordination of the facility with other facilities within the jurisdiction should be taken into account. Safe shelters “ensure the protection of people from dangerous incidents caused by tornadoes, severe storms, and hurricanes through special regulatory standards for safe rooms.



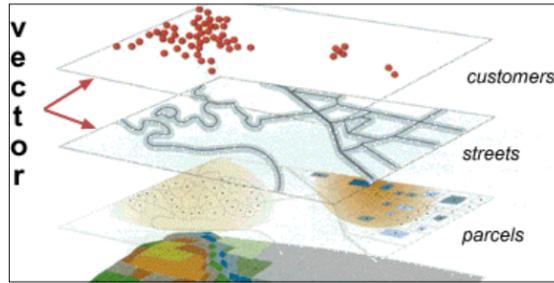


*Wildfire Mitigation Actions - Prevention (Continued):*



**Critical Facilities Assessments –**

Critical facility minimum standards should be set for Lawrence County and the municipal jurisdictions. These standards should be drafted and approved by the policy committee for performing assessments of critical facilities including hospitals, schools, fire and police stations, emergency operation centers, special needs housing, etc. The assessments should address building and site vulnerabilities to hazards.



**Geographic Information Systems –**

Geographic information system (GIS) is a tool that connects databases to maps. It combines layers of information about where things are located with descriptive data about those things and their surroundings. Information such as where a point is located on a map, the length of a road, or the size of a parcel of property. This information can be stored in digital format in layers and used to generate detailed and exact maps of communities.



**Planning Studies –**

A plan is an adopted statement of policy, in the form of text, maps, and graphics, used to guide public and private actions that affect the future. A plan provides decision makers with the information they need to make informed decisions affecting the long-range social, economic, and physical growth of a community.



**Mitigation Planning Technology Support –**

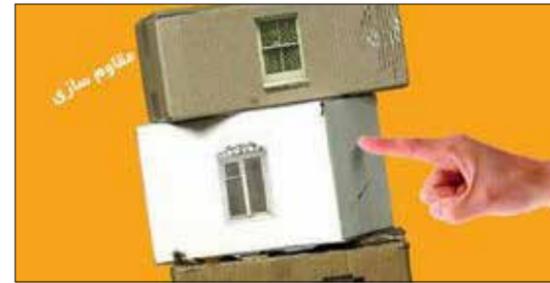
Mitigation technologies come in a variety of forms that include warning sirens, flood warning systems, automatic icing indicators on critical bridges, telephone based flood warning system, cell phone warning applications, 911 service back up site, and communication re-routing in emergency response.

*Wildfire Mitigation Actions - Property Protection:*



**Real Estate Flooding Acquisition and Building Relocations –**

Establish a county and local jurisdiction program through the Lawrence County EMA that acquires recurring flood properties and other natural hazard areas that contain existing buildings. The buildings should then be demolished and the establishment of open space for recreation and wildlife should occur.



**Flood Prone Building Proofing and Retrofitting –**

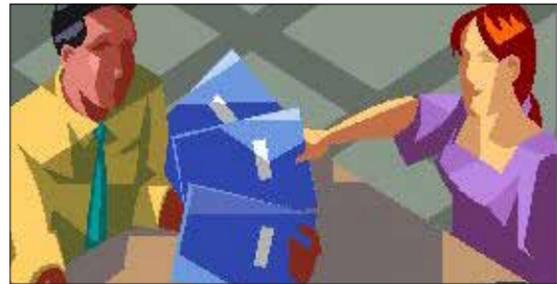
Redesigning and modification of structures to allows a building to remain in the floodplain where necessary. Although long term plans should be to remove the building from the floodplain.



**Critical Facilities Protection –**

Redesigning and modification of existing critical facilities to protect them during a disaster so they may remain viable for disaster relief after the hazard has occurred. New structures should be sited in such a manner as to be away from high-risk zones and designed and constructed for “maximum protection from all hazards.”

*Wildfire Mitigation Actions -  
Public Education & Awareness:*



**Outreach Projects –**

Identification of outreach and community projects that provide publicity and support in achieving hazard mitigation goals identified in the plan. Projects should be identified in each of the participating jurisdictions and promoted in achieving hazard mitigation goals and objectives.



**Hazard Mitigation Plan and Pamphlet Distribution –**

Publish and distribute the adopted - Lawrence Hazard Mitigation Plan in full. In addition there should be distribution of specific mitigation efforts taking place within Lawrence County and its municipal jurisdictions.



**Hazard Information Kiosk and Centers-**

Promoting the Lawrence County Hazard Mitigation Policy Committee agenda throughout Lawrence County. This can be done through providing lectures, speakers and information for county and municipal events that discuss existing mitigation and planning efforts within Lawrence County.



**Press and Media Mitigation Releases and Training Sessions –**

Utilization of mass media outlets like newspapers, television, cable access, Internet blogs, podcasts, video sharing, and online social networking to increase public awareness of hazard mitigation efforts.



**School Age Education Programs –**

Provide a methodology and curriculum to introduce students to mitigation strategies and land planning efforts within the planning jurisdiction. The program should be promoted by the - Lawrence Hazard Mitigation Policy Committee and developed in conjunction with school systems within the mitigation planning jurisdictions.



**Adult and Community Education Programs**

Mitigation and land use workshops can be conducted to inform individuals of different hazards within the planning jurisdictions and methods of mitigation those hazards.



*Wildfire Mitigation Actions -  
Natural Resource Protection:*



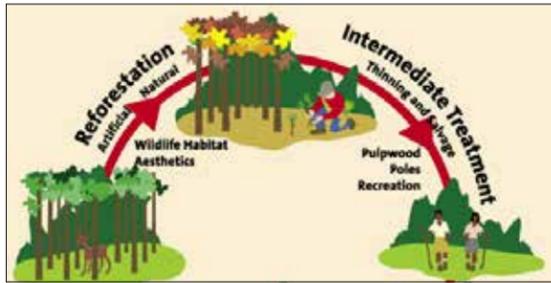
**Watershed Management –**

Watershed management is “broadly defined as a suite of zoning and land-use management techniques applied to help align compatible land uses with resource quality.” The management style is based on basins, sub-basins, watersheds, sub-watersheds, and catchments.



**Press and Media Mitigation Releases and Training Sessions –**

Informing media representatives about mitigation efforts allows for accurate information to be distributed on long-term mitigation projects. This training begins with a sound understanding of the overall mitigation plan and the mitigation efforts underway within the community. Targeted representatives include newspapers, television reporters and radio correspondents.



**Forest and Vegetation Management –**

Forest management focuses on best management practices (BMP) established for silviculture activities related to timber harvesting by each state. BMP include establishing defensible space in forested areas and wildfire fuel reduction etc . . .



**Water Resource Conservation Programs –**

Water resource programs “protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.” Water conservation is defined as “activities designed to reduce the demand for water, improve efficiency in use, and reduce losses and waste of water.”



**Open Space Easement and Acquisition –**

“The preservation of open space has been a major focus of land trusts and a number of government programs.” Some of these strategies include: Fee-Simple Acquisition, Land Trust, Land & Water Conversation Fund, State Programs, Conversation Easements on agricultural and woodland properties”.



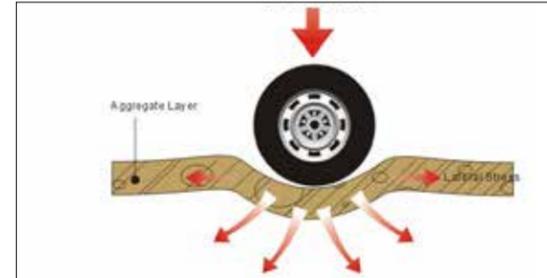
**Urban Forestry Planning and Development Programs –**

Development of urban forestry and neighborhood tree programs can be invaluable in storm water management and suppression of other storms including heat periods within urban neighborhoods.

*Wildfire Mitigation Actions -  
Public Education & Awareness:*



**Neighborhood and Community Safe Rooms**  
Neighborhood and community safe rooms are “freestanding, single purpose community storm shelters or safe rooms within buildings used for other purposes to provide temporary shelter from hurricanes, tornadoes, and severe storms.”

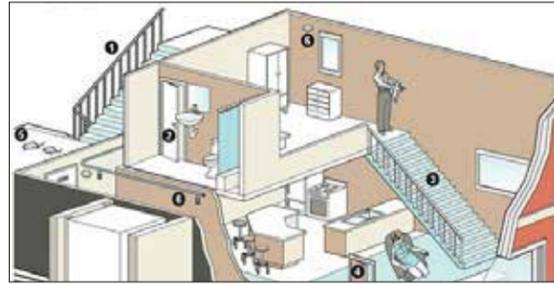


**Ground Stabilization –**  
Ground stabilization techniques mitigate hazards of undesirable soils that are not good for road construction or development. These soils and their underlying geologic formations require stabilization techniques ranging from large stone placement, asphalt reclamation geotechnical pavers and concrete additives.





*Winter Storm Mitigation Actions - Prevention:*



**Building Codes and Construction Req's –**  
A building code is a set of rules that specify the minimum acceptable level of safety for constructed objects. The main purpose of the building code is to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures. Building codes are enforced by jurisdictions and become local building construction laws.



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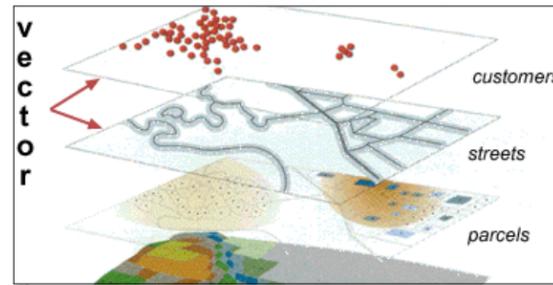
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A subdivision ordinance controls the division of a tract of land for building and development purposes. Subdivision regulations determine the layout and design standards that must be met by the proposed subdivision. These standards help to insure that future owners get safe neighborhoods and sound construction.



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Geographic information system (GIS) is a tool that connects databases to maps. It combines layers of information about where things are located with descriptive data about those things and their surroundings. Information such as where a point is located on a map, the length of a road, or the size of a parcel of property. This information can be stored in digital format in layers and used to generate detailed and exact maps of communities.



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**Mitigation Planning Technology Support –**  
Mitigation technologies come in a variety of forms that include warning sirens, flood warning systems, automatic icing indicators on critical bridges, telephone based flood warning system, cell phone warning applications, 911 service back up site, and communication re-routing in emergency response.

Winter Storm Mitigation Actions -  
Property Protection:



**Flood Prone Building Proofing and Retrofitting –**

Redesigning and modification of structures to allows a building to remain in the floodplain where necessary. Although long term plans should be to remove the building from the floodplain.



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Winter Storm Mitigation Actions -  
Public Education & Awareness:



**Outreach Projects –**

Identification of outreach and community projects that provide publicity and support in achieving hazard mitigation goals identified in the plan. Projects should be identified in each of the participating jurisdictions and promoted in achieving hazard mitigation goals and objectives.



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Promoting the Lawrence County Hazard Mitigation Policy Committee agenda throughout Lawrence County. This can be done through providing lectures, speakers and information for county and municipal events that discuss existing mitigation and planning efforts within Lawrence County.



**School Age Education Programs –**

Provide a methodology and curriculum to introduce students to mitigation strategies and land planning efforts within the planning jurisdiction. The program should be promoted by the - Lawrence Hazard Mitigation Policy Committee and developed in conjunction with school systems within the mitigation planning jurisdictions.



**Adult and Community Education Programs**

Mitigation and land use workshops can be conducted to inform individuals of different hazards within the planning jurisdictions and methods of mitigation those hazards.





*Winter Storm Mitigation Actions - Public Education & Awareness (Continued):*



**Hazard Mitigation Plan and Pamphlet Distribution –**

Publish and distribute the adopted Lawrence County Multi-Hazard Mitigation Plan in full. In addition there should be distribution of specific mitigation efforts taking place within Lawrence County and its municipal jurisdictions.



**NOAA Weather Radio Programs –**

“Promote the use of weather radios in critical facilities, institutions, businesses, and homes as a means for advance warning to implement mitigation measures and to increase public awareness of hazard risks.”



**Press and Media Mitigation Releases and Training Sessions –**

Utilization of mass media outlets like newspapers, television, cable access, Internet blogs, podcasts, video sharing, and online social networking to increase public awareness of hazard mitigation efforts.

*Winter Storm Mitigation Actions - Natural Resource Protection:*



**Watershed Management –**

Watershed management is “broadly defined as a suite of zoning and land-use management techniques applied to help align compatible land uses with resource quality.” The management style is based on basins, sub-basins, watersheds, sub-watersheds, and catchments.



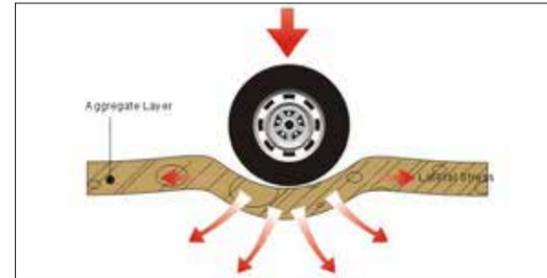
**Press and Media Mitigation Releases and Training Sessions –**

Informing media representatives about mitigation efforts allows for accurate information to be distributed on long-term mitigation projects. This training begins with a sound understanding of the overall mitigation plan and the mitigation efforts underway within the community. Targeted representatives include newspapers, television reporters and radio correspondents.

*Winter Storm Mitigation Actions -  
Natural Resource Protection:*



**Neighborhood and Community Safe Rooms**  
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**Ground Stabilization –**  
Ground stabilization techniques mitigate hazards of undesirable soils that are not good for road construction or development. These soils and their underlying geologic formations require stabilization techniques ranging from large stone placement, asphalt reclamation geotechnical pavers and concrete additives.



*MS.3 NFIP Implementation Strategy*

All of the jurisdictions within the planning area participate in the FEMA’s National Flood Insurance Program and are in good standing with program requirements and implementation. Digital Flood Insurance Rate Maps (FIRMS), last updated September 11, 2009, are available for all jurisdictions at FEMA’s Flood Map Service Center online.

All of the jurisdictions within the planning area have continued to enforce and maintain updated floodplain ordinances since entering the flood insurance program. The jurisdictions are implementing the following strategies for the NFIP program:

- Maintaining enforcement records of floodplain ordinances
- Educational assistance to local floodplain administrators
- Outreach and public education to construction managers and property owners about the floodplain management requirements
- Maintain and update FIRM data in the planning jurisdictions GIS data system Document and monitor flood event occurrence through local EMA
- Discussion and future planning to enter the Community Rating System (CRS) standards through the hazard mitigation planning process.
- Lawrence County EMA to maintain NFIP publications in support of local floodplain administrators within each participating jurisdiction.

*MS.4 Mitigation Action Implementation*

The jurisdictions within the planning area are responsible for implementing the identified mitigation strategies for that jurisdiction. This responsibility is often shared with academic institutions, utility systems, and health care facilities. Policy Committee representatives from each of the incorporated jurisdictions, as well as Lawrence County, have recommended mitigation strategies that they would like to pursue over the five year planning implementation period.

Each jurisdiction has defined the mitigation actions they will adopt and implement. Due to local differences in mitigating natural disasters, each jurisdiction selected mitigation strategies that it felt it had the capacity and political support to implement. The listed strategies were selected from each jurisdiction’s responses to the online hazard mitigation survey. Within each jurisdiction’s selected mitigation strategies, there are identified partners, priority ranking, lead responsibility designation, estimated cost, potential funding sources, and the hazards that may be mitigated. The implementation time line for each of the listed mitigation strategies is within the planning study period. Mitigation measures reference prior and future actions as well as on-going efforts. All references are for this planning period only.

NFIP Community Status for Lawrence County Jurisdictions			
Community ID	Jurisdiction	Current Effective Map	Status
010324	Lawrence County	9-11-09	Participating
010305	Hillsboro	9-11-09	Participating
010141	Courtland	9-11-09	Participating
010444	North Courtland	9-11-09	Participating
010142	Moulton	9-11-09	Participating
010143	Town Creek	9-11-09	Participating

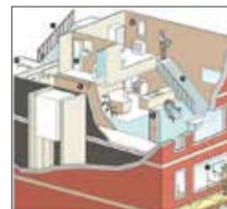
*Source: <http://www.fema.gov/cis/AL.html>; Community Status Source Book Report*

# LAWRENCE COUNTY MITIGATION STRATEGIES - PREVENTION:



### Comprehensive Planning

*Partners:* Lawrence County EMA, AEMA, County Engineer, Co. Commissioners  
*Priority:* Low  
*Lead Responsibility:* County Engineer  
*Estimated Cost:* \$80,000.00 to \$100,000.00  
*Funding Sources:* AEMA, Local Match, ADECA, HMGP, Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance (FMA)  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* County reviewed and continues preliminary discussion for a county comprehensive plan.  
*Status:* Completed  
*Future Actions:* Continue to seek support for county wide planning through mitigation planning awareness. Estimated timeframe for completion: 3-5 years



### Building Codes & Construction Requirements

*Partners:* County Engineer, Co. Commissioners  
*Priority:* Medium  
*Lead Responsibility:* Lawrence County EMA, County Engineer  
*Estimated Cost:* No Additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued efforts from last plan update.  
*Status:* Completed  
*Future Actions:* Evaluate existing codes being applied in Lawrence County and review for additional action. Estimated timeframe for completion: 2-4 years

### Capital Improvements Programs



### Capital Improvements Programs

*Partners:* County Engineer, County Commissioners, Lawrence County EMA  
*Priority:* Medium  
*Lead Responsibility:* County Engineer  
*Estimated Cost:* No Additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued effort from last plan adopted.  
*Status:* Completed  
*Future Actions:* Seek countywide support for establishing a five year improvements plan to include capital projects that are identified in the hazard mitigation planning process. Estimated timeframe for completion: 2-4 years



### Open Space Preservation

*Partners:* County Commission, AL Land Conservancy, Landowners, Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* County Commission  
*Estimated Cost:* \$10,000.00 to \$20,000.00 per donation.  
*Funding Sources:* AL Land Conservancy, Local Match, ALEMA, ADECA  
*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Landslides, Sinkholes  
*Prior Actions:* Continued effort from last plan adopted.  
*Status:* Completed  
*Future Actions:* Identify potential funding sources, partners and prioritize areas of needed open space within the county. Estimated timeframe for completion: 3-5 years



### Storm Water Management

*Partners:* ADEM, Lawrence County EMA, AEMA, ADECA, County Eng.  
*Priority:* Low  
*Lead Responsibility:* County Engineer  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* ADEM, Local Match, HMGP, PDM, ADECA  
*Mitigating Hazards:* Flooding, Severe Storms, Dam/Levee Failure  
*Prior Actions:* Continued effort from last plan adopted.  
*Status:* Completed  
*Future Actions:* Lawrence County EMA evaluation of storm water management actions to be taken. Best management practices for storm water management implemented during site plan review of subdivision regulations. Estimated timeframe for completion: 3-5 years



### Subdivision Regulations

*Partners:* Lawrence County EMA, County Engineer, County Commissioners  
*Priority:* Low  
*Lead Responsibility:* County Engineer  
*Estimated Cost:* No Additional Cost  
*Funding Sources:* ADECA, Local Match, PDM  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued effort from last plan adopted.  
*Status:* Completed  
*Future Actions:* Further discussion about regulating subdivisions within the county should occur. Currently this prevention method is not viable and needs community support through community education and information distribution. Estimated timeframe for completion: 3-5 years



### Flood Plain Management Programs

*Partners:* Lawrence County EMA, County Engineer, TVA, Co. Commission  
*Priority:* High  
*Lead Responsibility:* Not Determined  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* ADECA, ADEM, PDM, AEMA  
*Mitigating Hazards:* Flooding, Severe Storms, Dam/Levee Failures  
*Prior Actions:* Previous actions consist of NFIP local administration guidance and working with state NFIP coordinator.  
*Status:* Completed  
*Future Actions:* Evaluate methodologies for strengthening the NFIP program through flood plain management. Estimated timeframe for completion: 1-3 years



### Safe Shelter Site Planning

*Partners:* Lawrence County EMA, County Engineer, County Commissioners, Incorporated Areas  
*Priority:* Low  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* \$20,000.00 to \$50,000.00  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued effort from last plan adopted.  
*Status:* Completed  
*Future Actions:* Identify funding sources to complete an existing needs assessment and site selection process for safe shelters in the county and incorporated areas. Estimated timeframe for completion: 3-5 years





## LAWRENCE COUNTY MITIGATION STRATEGIES - PREVENTION (CONTINUED):



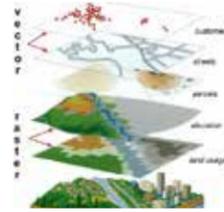
### Public Right-of-Way Maintenance Regulations

*Partners:* County Engineer, County Commission, Lawrence County EMA, ALDOT  
*Priority:* High  
*Lead Responsibility:* County Engineer, ALDOT  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* ALDOT, HMGP, PDM  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Previous actions include ongoing maintenance.  
*Status:* Completed  
*Future Actions:* Continue to monitor and document needed right-of-way maintenance and sharing information to the correct and corresponding entities. Estimated timeframe for completion: 1-3 years



### Critical Facility Assessments

*Partners:* AEMA, Lawrence County EMA, Co. Commission, Hospitals, School Districts.  
*Priority:* Low  
*Lead Responsibility:* Not Determined  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Not determined at this time.  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous action taken.  
*Status:* Completed  
*Future Actions:* Establish critical facility minimum standards for Lawrence County. The assessment should address building and site vulnerabilities to hazards. Estimated timeframe for completion: 3-5 years



### Geographic Information Systems

*Partners:* County Engineer, Lawrence County EMA, Jurisdictions  
*Priority:* Medium  
*Lead Responsibility:* County Engineer  
*Estimated Cost:* \$15,000.00 annually  
*Funding Sources:* Local match, ADEM, ADECA  
*Mitigating Hazards:* All hazards are mitigated.  
*Prior Actions:* GIS data has been gathered through a collective agreement of participating jurisdictions.  
*Status:* Completed  
*Future Actions:* Ongoing data gathering that is added to the county wide GIS system. Estimated timeframe for completion: 2-4 years



### Planning & Land Use Studies

*Partners:* Lawrence County EMA, County Engineer, Co. Commissioners  
*Priority:* Low  
*Lead Responsibility:* Depend on study type.  
*Estimated Cost:* Undetermined  
*Funding Sources:* ADECA, HUD, ALEMA, ADEM  
*Mitigating Hazards:* All hazards are mitigated.  
*Prior Actions:* 2010 Hazard Mitigation Plan  
*Status:* Completed  
*Future Actions:* Identify needed plans and studies within the county such as the Hazard Mitigation Plan, watershed management plans, fire hydrant inventory, and flood prone roadways. Estimated timeframe for completion: 3-5 years



### Mitigation Planning Technology Support

*Partners:* Co. Engineer, Co. Commission, Local jurisdictions, Lawrence County EMA  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* Undetermined  
*Funding Sources:* ALEMA, ADECA, ADEM, local match  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Previous actions include installing warning sirens throughout the county.  
*Status:* Completed  
*Future Actions:* Continue implementation of warning sirens as requested by local jurisdictions and update existing ones. Evaluation of installing a telephone or cell phone app-based warning system. Estimated timeframe for completion: 1-3 years

## LAWRENCE COUNTY MITIGATION STRATEGIES - PROPERTY PROTECTION:



### Property Protection:

#### Critical Facilities Protection

*Partners:* County Commissioners, Lawrence County EMA, County Engineer  
*Priority:* Medium  
*Lead Responsibility:* County Engineer  
*Estimated Cost:* Undetermined  
*Funding Sources:* ALDOT, County Match, HMGP  
*Mitigating Hazards:* All hazards are mitigated.  
*Prior Actions:* Continued efforts from last plan update.  
*Status:* Completed  
*Future Actions:* Perform infrastructure assessments of public schools and universities for hazard retrofitting. Identify critical facilities that need additional retrofitting for mitigating identified natural disasters. Review bridges that are vulnerable to flood damage and complete infrastructure retrofitting for them. Estimated timeframe for completion: 2-4 years

#### Emergency Power Generation

*Partners:* Co. Engineer, Co. Commission, Local jurisdictions, Lawrence County EMA  
*Priority:* High  
*Lead Responsibility:* Not Determined  
*Estimated Cost:* Undetermined  
*Funding Sources:* HMGP, ALAEMA, PDM  
*Mitigating Hazards:* All hazards may be mitigated  
*Prior Actions:* Assisting entities with critical facilities in receiving power within the planning study area.  
*Status:* Completed  
*Future Actions:* Establish emergency generator power to all critical facilities that do not have emergency systems. Annual evaluation should document critical facility needs. Estimated timeframe for completion: 1-3 years



## LAWRENCE COUNTY MITIGATION STRATEGIES - PUBLIC EDUCATION & AWARENESS:



### Public Education and Awareness: Outreach Projects

*Partners:* Lawrence County EMA, participating jurisdictions in the planning area.  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* \$5,000.00 to \$7,000.00 annually  
*Funding Sources:* AEMA, PDM, Local Funds  
*Mitigating Hazards:* May assist in mitigating all hazards.  
*Prior Actions:* No previous actions taken.  
 Status: Completed  
*Future Actions:* Select the greatest impacting hazard to the county and initiate an educational program to mitigate that hazard. Quantitative data indicates that floods are the most costly hazard in Lawrence County and the region. Estimated timeframe for completion: 1-3 years



### Real Estate Disclosure Requirements

*Partners:* NFIP Coordinator, Co. Engineer, AEMA, Lawrence County EMA  
*Priority:* Medium  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* Undetermined  
*Funding Sources:* No additional cost.  
*Mitigating Hazards:* Floods  
*Prior Actions:* Assisting and encouraging jurisdictions to participate in the NFIP program.  
 Status: Completed  
*Future Actions:* Establish an annual education & awareness strategy that also discusses flood map information in Lawrence County. Estimated timeframe for completion: 2-4 years



### School Age Education Programs

*Partners:* Lawrence County EMA, ALEMA, PDM, School Districts, Lawrence County EMA  
*Priority:* Medium  
*Lead Responsibility:* County School District  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ADEM, ALEMA, PDM, ADECA  
*Mitigating Hazards:* Mitigates all identified hazards.  
*Prior Actions:* Public input and mitigation discussions.  
 Status: Completed  
*Future Actions:* Develop annual strategies and prioritize hazards to be mitigated that need focus on public education and awareness. The Policy Committee indicated that floods are a very important hazard that can be mitigated through education and awareness over time. Estimated timeframe for completion: 2-4 years



### Adult & Community Education Programs

*Partners:* ALEMA, Co. Commissioners, Academic Institutions, Lawrence County EMA  
*Priority:* High  
*Lead Responsibility:* Not Determined  
*Estimated Cost:* \$5,000.00 annually  
*Funding Sources:* ALEMA, Local Match  
*Mitigating Hazards:* All hazards may be mitigated  
*Prior Actions:* Previous actions include citizen & stakeholder hazard mitigation meetings and local workshops.  
 Status: Completed  
*Future Actions:* Conduct public hazard mitigation education booths in conjunction with civic celebrations. Complete annual mitigation education awareness workshops that are interesting, fun and well attended. Estimated timeframe for completion: 1-3 years



### Hazard Mitigation Plan & Pamphlet Distribution

*Partners:* School Dist., Academic Institutions, Local Jurisdictions, Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* \$3,000.00 annually  
*Funding Sources:* HMGP, PDM, ADECA, Local Match  
*Mitigating Hazards:* All hazards potentially mitigated.  
*Prior Actions:* Distribution of the 2010 Hazard Mitigation Plan  
 Status: Completed  
*Future Actions:* Develop a hazard mitigation pamphlet that covers the most common hazards within the county. This should be distributed based on population and be image driven to achieve the desired message. Estimated timeframe for completion: 3-5 years



### NOAA Weather Radio Programs

*Partners:* Critical Facility Entities, School Districts, Local Jurisdictions, County Commissioners, Lawrence County EMA  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* Undetermined  
*Funding Sources:* ALEMA, ADECA, ADEM, local match  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Ongoing weather radio use is actively promoted.  
 Status: Completed  
*Future Actions:* Continue placement of NOAA weather radios within the community. Use local sponsorship to place radios in areas of consistent hazard danger. Placement should continue to focus on distribution to critical facilities as a priority. Estimated timeframe for completion: 1-3 years

### Press & Media Mitigation Releases

*Partners:* Co. Engineer, Co. Commission, local jurisdictions, Lawrence County EMA  
*Priority:* Medium  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* No additional cost.  
*Funding Sources:* n/a  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Previous actions include ongoing briefings with local media outlets.  
 Status: Completed  
*Future Actions:* Establish advertising or communication campaigns that are image driven and share methods for mitigating natural hazards within Lawrence County. Estimated timeframe for completion: 2-4 years





## LAWRENCE COUNTY MITIGATION STRATEGIES - NATURAL RESOURCE PROTECTION:



### **Sediment & Erosion Control**

*Partners:* County Engineer, County Commission, Lawrence County EMA  
*Priority:* High  
*Lead Responsibility:* County Engineer  
*Estimated Cost:* No additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Flooding & Landslides  
*Prior Actions:* Implementation through subdivision regulations and building codes.  
*Status:* Completed  
*Future Actions:* Clarify that additional erosion control methods should be put in place that go beyond the erosion caused by new construction. Estimated timeframe for completion: 1-3 years



### **Press and Media Mitigation Training Releases and Training Sessions**

*Partners:* Media Outlets, Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* County Engineer  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* PDM, ALEMA  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Scheduled media interview after hazard occurrence.  
*Status:* Completed  
*Future Actions:* Develop in conjunction with media entities a workshop program for staff to learn about mitigation efforts. Estimated timeframe for completion: 3-5 years



### **Open Space Easements & Acquisition**

*Partners:* County Commission, Urban Forestry, Planning Dept., Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* County Commission  
*Estimated Cost:* Undetermined  
*Funding Sources:* Local and Regional Land Trusts  
*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Landslides, Sinkholes  
*Prior Actions:* No previous actions taken.  
*Status:* Completed  
*Future Actions:* Establish open space and passive recreation as a priority within the county as a hazard mitigation strategy. Estimated timeframe for completion: 3-5 years

## LAWRENCE COUNTY MITIGATION STRATEGIES - STRUCTURAL PROJECTS:



### Storm Water Diversion Culverts

*Partners:* County Engineer, ALDOT

*Priority:* High

*Lead Responsibility:* Not Determined

*Estimated Cost:* Not determined at this time.

*Funding Sources:* Local Funds, ALDOT

*Mitigating Hazards:* Floods

*Status:* Completed

*Future Actions:* Identify in conjunction with the county engineer specific sites for storm water diversion projects. Identification should take place in conjunction with community participants and local leadership. Estimated timeframe for completion: 1-3 years



### Neighborhood & Community Safe Rooms

*Partners:* Co. Engineer, Co. Commission, Church & Community Centers.

*Priority:* High

*Lead Responsibility:* Lawrence County EMA

*Estimated Cost:* Not determined at this time.

*Funding Sources:* ALEMA, PDM, ADECA, Local Funds

*Mitigating Hazards:* All hazards may be mitigated.

*Prior Actions:* Continued efforts from last plan update.

*Status:* Completed

*Future Actions:* Continue to support development of and seek funds for community safe rooms within Lawrence County. Estimated timeframe for completion: 1-3 years



### Retaining Walls

*Partners:* County Commission, County Engineer, Lawrence County EMA

*Priority:* Low

*Lead Responsibility:* County Engineer

*Estimated Cost:* Not determined at this time.

*Funding Sources:* Local Funds

*Mitigating Hazards:* Landslides, Technical Hazards

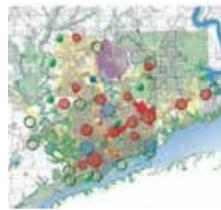
*Prior Actions:* Continued efforts from last plan update

*Status:* Not completed

*Future Actions:* Identify maintenance areas and needed retaining walls as they arise. Estimated timeframe for completion: 3 to 5 years



TOWN OF HILLSBORO  
MITIGATION STRATEGIES -  
PREVENTION:



**Comprehensive Planning**

*Partners:* Lawrence County EMA, AEMA, NARCOG, Town Planning Commission, Town Council  
*Priority:* Low  
*Lead Responsibility:* Town Planning Commission  
*Estimated Cost:* \$15,000.00 to \$25,0000.00  
*Funding Sources:* Local Match, ADECA, PDM  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued effort from last plan update.  
*Status:* Completed  
*Future Actions:* Update Town of Hillsboro comprehensive plan. Estimated timeframe for completion: 3-5 years



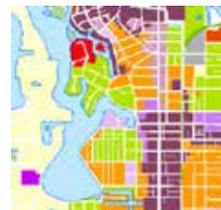
**Capital Improvements Programs**

*Partners:* County Engineer, Lawrence County EMA, Town Planning Commission, Town Council  
*Priority:* Medium  
*Lead Responsibility:* County Engineer  
*Estimated Cost:* No Additional Cost.  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous action.  
*Status:* Not completed  
*Future Actions:* Seek support for establishing a five year improvements plan to include capital projects that are identified in the hazard mitigation planning process. Estimated timeframe for completion: 2 to 4 years



**Open Space Preservation**

*Partners:* Town Planning Commission, Town Council, AL Land Conservancy, Landowners, Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* Town Planning Commission, Town Council  
*Estimated Cost:* \$10,000.00 to \$20,000.00 per donation  
*Funding Sources:* AL Land Conservancy, Local Match, ALEMA, ADECA  
*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Landslides, Sinkholes  
*Prior Actions:* No previous effort  
*Status:* Completed  
*Future Actions:* Identify potential funding sources and partners and prioritize areas of needed open space within the jurisdiction. Estimated timeframe for completion: 3-5 years



**Subdivision Regulations**

*Partners:* Town Planning Commission, Town Council Lawrence County EMA, County Engineer,  
*Priority:* Low  
*Lead Responsibility:* Town Planning Commission, Town Council  
*Estimated Cost:* No Additional Cost.  
*Funding Sources:* ADECA, Local Match, PDM  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous actions  
*Status:* Completed  
*Future Actions:* The town should evaluate and implement their adopted subdivision regulations. Estimated timeframe for completion: 3-5 years



**Flood Plain Management Programs**

*Partners:* Town Planning Commission, Town Council, Lawrence County EMA, County Engineer, TVA,  
*Priority:* High  
*Lead Responsibility:* Town Planning Commission, Town Council  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ADECA, ADEM, PDM, AEMA  
*Mitigating Hazards:* Flooding, Severe Storms, Dam/Levee Failures  
*Prior Actions:* Previous actions consist of NFIP local administration guidance and working with state NFIP coordinator.  
*Status:* Completed  
*Future Actions:* Evaluate methodologies for strengthening the NFIP program through flood plain management. Estimated timeframe for completion: 1-3 years



## TOWN OF HILLSBORO MITIGATION STRATEGIES - PREVENTION (CONTINUED):



### Safe Shelter Site Planning

*Partners:* Lawrence County EMA, County Engineer, Mayor and Town Council

*Priority:* High

*Lead Responsibility:* Mayor & Council

*Estimated Cost:* \$8,000.00

*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* Continued efforts from previous plan update.

*Status:* Not completed

*Future Actions:* Evaluate a scope of work and funding sources to identify current safe shelters and future needs for safe shelters. Planning should identify appropriate sites for appropriately locating the safe shelter. Estimated timeframe for completion: 1 to 3 years



### Mitigation Planning Technology Support

*Partners:* Lawrence County EMA, FEMA, ALEMA, Mayor and Town Council

*Priority:* High

*Lead Responsibility:* Mayor and Council

*Estimated Cost:* Undetermined

*Funding Sources:* PDM, Local Funds, County Funds

*Mitigating Hazards:* All hazards may be mitigated.

*Prior Actions:* Continued efforts from last plan update.

*Status:* Completed

*Future Actions:* Continuing to oversee future installation of additional warning sirens in the community of Hillsboro. Evaluation of installing a telephone or cell phone app-based warning system. Estimated timeframe for completion: 1-3 years

## TOWN OF HILLSBORO MITIGATION STRATEGIES - PROPERTY PROTECTION:



### Emergency Power Generation

*Partners:* Co. Engineer, Lawrence County EMA, AEMA, ADECA, Mayor and Council

*Priority:* Medium

*Lead Responsibility:* Mayor & Council

*Estimated Cost:* Undetermined

*Funding Sources:* HMGP, ALEMA, PDM

*Mitigating Hazards:* All hazards may be mitigated.

*Prior Actions:* Continued effort from last plan update.

*Status:* Completed

*Future Actions:* Identify critical facilities in Hillsboro that do not have emergency power and pursue funds within the planning period to provide emergency power. Estimated timeframe for completion: 2-4 years

CITY OF MOULTON  
MITIGATION STRATEGIES -  
NATURAL RESOURCE PROTECTION:



**Wetland Restoration and Wetland Preservation**

*Partners:* Town Council, Lawrence County EMA, ADEM, EPA

*Priority:* Low

*Lead Responsibility:* Mayor & Council

*Estimated Cost:* Undetermined

*Funding Sources:* ADEM, EPA

*Mitigating Hazards:* Flooding

*Prior Actions:* No previous actions.

*Status:* Not completed

*Future Actions:* Identify areas within the planning jurisdiction appropriate for wetland restoration and preservation. Estimated timeframe for completion: 3-5 years

CITY OF MOULTON  
MITIGATION STRATEGIES -  
STRUCTURAL PROJECTS:



**Neighborhood & Community Safe Rooms**

*Partners:* Mayor & Council, Lawrence County EMA, Local Churches and Community Centers.

*Priority:* High

*Lead Responsibility:* Lawrence County EMA, Town Council

*Estimated Cost:* Not determined at this time

*Funding Sources:* ALEMA, PDM, ADECA, Local Funds

*Mitigating Hazards:* All hazards may be mitigated.

*Prior Actions:* No previous action taken.

*Status:* Completed

*Future Actions:* Identify any future needs for safe centers within the town and update existing safe centers. Attempt to use multi-use facilities that are occupied at other times than during storm periods. Estimated timeframe for completion: 1-3 years

# CITY OF MOULTON MITIGATION STRATEGIES - PREVENTION:



### Comprehensive Planning

*Partners:* Lawrence County EMA, AEMA, Utilities Department, ALDOT, Port Authority, NARCOG

*Priority:* Low

*Lead Responsibility:* Planning Department

*Estimated Cost:* \$80,000.00 to \$120,000.00

*Funding Sources:* ADECA, PDM, Local Match, HUD

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* No previous actions taken

*Status:* Not completed

*Future Actions:* Continue to gauge support for and identify funding for comprehensive plan.

*Estimated timeframe for completion:* 3-5 years



### Building Codes & Construction Requirements

*Partners:* Lawrence County EMA, Planning Department

*Priority:* Medium

*Lead Responsibility:* Building Department

*Estimated Cost:* No Additional Cost

*Funding Sources:* n/a

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* Yearly review and evaluation of updates.

*Status:* Completed

*Future Actions:* Evaluate future needs to meet identified hazard risks and any identified mitigation strategies related to updating local building codes within the city. Estimated timeframe for completion: 2-4 years



### Capital Improvements Programs

*Partners:* Mayor/Council, City Engineer, Planning, Parks and Recreation, General Fund Accounting

*Priority:* Medium

*Lead Responsibility:* Mayor/Council

*Estimated Cost:* No Additional Cost

*Funding Sources:* n/a

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* No previous actions taken

*Status:* Not completed

*Future Actions:* Gauge support for capital improvements program, Estimated timeframe for completion: 2-4 years



### Open Space Preservation

*Partners:* Lawrence County EMA, AEMA, City Engineer, Parks and Recreation, Planning Department

*Priority:* Low

*Lead Responsibility:* Parks and Recreation

*Estimated Cost:* Undetermined

*Funding Sources:* AEMA, Local Match, ADECA, HMGP, Pre-Disaster Mitigation (PDM), Flood Mitigation Ass. (FMA), AL Land Trusts

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* Continued efforts to establish passive recreational facilities.

*Status:* Completed

*Future Actions:* Update map and prioritize needed open space lands within the City of . Once generalized areas have been identified there should be selection of potential properties and cost estimates assigned to each. Estimated timeframe for completion: 3-5 years



### Storm Water Management

*Partners:* Lawrence County EMA, ADEM, AEMA, Planning Dept. Building Dept.

*Priority:* Low

*Lead Responsibility:* City Engineer

*Estimated Cost:* Not estimated

*Funding Sources:* AEMA, Local Match, ADECA, HMGP, Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance. (FMA), ADEM

*Mitigating Hazards:* Flooding, Severe Storms, Dam/Levee Failures

*Prior Actions:* City has storm water management ordinance in place.

*Status:* Completed

*Future Actions:* Seek contemporary methods to mitigate storm water runoff through constructed wetlands and road side containment methods. Estimated timeframe for completion: 3-5 years



### Land Use Development Regulations

*Partners:* ADECA, HUD, NARCOG, Building Dept., City Engineer, Planning Commission

*Priority:* Low

*Lead Responsibility:* Planning Department

*Estimated Cost:* No additional cost at this time

*Funding Sources:* Local Match

*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Dam/Levee Failures, Technical Hazards

*Prior Actions:* Land use development regulations are in place for the City of Moulton.

*Status:* Completed

*Future Actions:* The city will continue to evaluate and implement the development regulations daily. Estimated timeframe for completion: 3-5 years



### Subdivision Regulations

*Partners:* City Engineer, Utilities, Building Department, Planning Department

*Priority:* Low

*Lead Responsibility:* City Engineer/ Planning Dept.

*Estimated Cost:* No additional cost

*Funding Sources:* Not applicable

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* The City of Moulton has subdivision regulations in place

*Status:* Completed

*Future Actions:* Continue to monitor the current subdivision regulations for potential updates and opportunities to mitigate identified hazard risks. Estimated timeframe for completion: 3-5 years



*Partners:* Lawrence County EMA, ADEM, TVA, Port Authority, City Engineer

*Priority:* Low

*Lead Responsibility:* Engineering Dept., Building Dept.

*Estimated Cost:* \$20,000.00

*Funding Sources:* AEMA, Local Match, ADECA, HMGP, Pre-Disaster Mitigation (PDM), Flood Mitigation Ass. (FMA)

*Mitigating Hazards:* Flooding, Severe Storms, Dam/Levee Failures

*Prior Actions:* City of Moulton currently relies on TVA and their storm water management program to implement flood plain management. Status: Completed

*Future Actions:* Continue support for existing programs and identify two to three improvements that need to be made. Estimated timeframe for completion: 3-5 years

CITY OF MOULTON  
MITIGATION STRATEGIES -  
PREVENTION (CONTINUED):



**Levee & Dam Management**

*Partners:* Lawrence County EMA, AEMA, TVA, City Engineer  
*Priority:* Low  
*Lead Responsibility:* City Engineer  
*Estimated Cost:* No additional cost  
*Funding Sources:* Not applicable  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Ongoing coordination with TVA and its dam management program. This includes coordinating road closing within the city with the department of transportation.  
*Status:* Completed  
*Future Actions:* Continue municipal coordination with TVA and Lawrence County EMA. The city has no municipal dams or levees to manage within its jurisdiction. Estimated timeframe for completion: 3-5 years



**Burn Permits**

*Partners:* Police Dept., Urban Forestry Dept., Building Department  
*Priority:* High  
*Lead Responsibility:* Building Department  
*Estimated Cost:* No Additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Wildfires, Landslides  
*Prior Actions:* Burn permits are in place and enforced.  
*Status:* Completed  
*Future Actions:* Continue public awareness through public outreach programs. Estimated timeframe for completion: 1-3 years



**Safe Shelter Site Planning**

*Partners:* Lawrence County EMA, City Engineer, AEMA, ADECA, Planning Dept.  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* \$20,000.00 to \$35,000.00  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued efforts from last plan update.  
*Status:* complete  
*Future Actions:* Initiate planning study for sectors within the city that are in need of safe shelters. Criteria for this study should be established that include use of existing or multifunctional structures like churches. Estimated timeframe for completion: 1-3 years



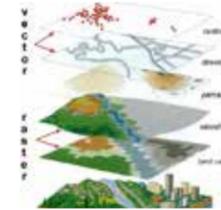
**Public Right-of-Way Maintenance Regulations**

*Partners:* County Engineer, Lawrence County EMA, ALDOT  
*Priority:* High  
*Lead Responsibility:* City Engineer, ALDOT  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* ALDOT, HMGP, PDM, Local Match  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Previous actions include ongoing maintenance.  
*Status:* Completed  
*Future Actions:* Continue to monitor and document needed right-of-way maintenance and sharing information to the correct entities. Estimated timeframe for completion: 1-3 years



**Critical Facility Assessments**

*Partners:* Lawrence County EMA, City Schools, Planning Dept., Building Department.  
*Priority:* Low  
*Lead Responsibility:* City Engineer  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Not determined at this time.  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous action taken.  
*Status:* Completed  
*Future Actions:* Establish critical facility minimum standards for the City of Moulton and its school system. The assessment should address building and site vulnerabilities to hazards. Estimated timeframe for completion: 3-5 years



**Geographic Information Systems**

*Partners:* Planning Dept., Building Dept; Lawrence County EMA, Jurisdiction  
*Priority:* Medium  
*Lead Responsibility:* Planning Department  
*Estimated Cost:* No additional cost.  
*Funding Sources:* Not applicable  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* GIS data has been gathered  
*Status:* complete  
*Future Actions:* Completion of the current land use update. Estimated timeframe for completion: 2-4 years



**Planning & Land Use Studies**

*Partners:* Lawrence County EMA, City Engineer, Municipal Departments  
*Priority:* Low  
*Lead Responsibility:* Planning Department  
*Estimated Cost:* Undetermined  
*Funding Sources:* ADECA, HUD, ALEMA, ADEM, USDA  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Zoning and land use map in place  
*Status:* Completed  
*Future Actions:* Evaluate plans for update to include hazard mitigation components. Identify two to three mitigation land use components to include in the next municipal planning document. Estimated timeframe for completion: 3-5 years



**Mitigation Planning Technology Support**

*Partners:* Lawrence County EMA, AEMA, FEMA  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* Undetermined  
*Funding Sources:* ALEMA, ADECA, ADEM, local match  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Previous actions include installing warning sirens within identified points in the city.  
*Status:* Completed  
*Future Actions:* Continue implementation of warning sirens as requested by communities and update existing ones. Evaluation of installing a telephone or cell phone app-based warning system. Estimated timeframe for completion: 1-3 years

## CITY OF MOULTON MITIGATION STRATEGIES - PROPERTY PROTECTION:



### Real-Estate Flood Prone Property Acquisition

*Partners:* Lawrence County EMA, Planning Department, AEMA, ADECA  
*Priority:* High  
*Lead Responsibility:* City Engineer  
*Estimated Cost:* Not determined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, NFIP, Local Funds  
*Mitigating Hazards:* Floods  
*Prior Actions:* Property purchases have occurred in previous years.  
*Status:* Completed

*Future Actions:* Continue public education and discussions with potential property owners in need of purchase. Specifically evaluate repetitive loss properties in the City of Moulton. Estimated timeframe for completion: 1-3 years

### Flood Prone Building Proofing and Retrofitting

*Partners:* Lawrence County EMA, Planning Department, AEMA, ADECA  
*Priority:* Low  
*Lead Responsibility:* City Engineer  
*Estimated Cost:* Not determined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, NFIP, Local Funds  
*Mitigating Hazards:* Floods  
*Prior Actions:* No previous actions.  
*Status:* Not completed  
*Future Actions:* Identify buildings in floodplain areas that cannot be moved in the near future but could benefit from redesign or modifications to lessen adverse impacts from flooding events. Estimated timeframe for completion: 3-5 years



### Critical Facilities Protection

*Partners:* Lawrence County EMA, County Engineer, County Commissioners, Incorporated Areas  
*Priority:* High  
*Lead Responsibility:* City Engineer/ Building Department  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FEMA  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued efforts from last plan update.  
*Status:* Completed  
*Future Actions:* Target funding sources to complete redesign of critical facilities if identified in the critical facility analysis. Estimated timeframe for completion: 1-3 years



### Freeboard Requirements for Building Elevations

*Partners:* Lawrence County EMA, Planning Department, AEMA, ADECA  
*Priority:* Low  
*Lead Responsibility:* City Engineer  
*Estimated Cost:* Not determined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, NFIP, Local Funds  
*Mitigating Hazards:* Floods  
*Prior Actions:* No previous actions.  
*Status:* Not completed

*Future Actions:* Identify areas in floodplains where freeboard elevations might be applicable and determine if local guidelines and codes should be developed and enforced. Estimated timeframe for completion: 3-5 years

### Emergency Power Generation

*Partners:* Lawrence County EMA, City Engineer, Building Department  
*Priority:* High  
*Lead Responsibility:* Utilities Department  
*Estimated Cost:* Undetermined  
*Funding Sources:* Funding determined on a project by project basis.  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Ongoing emergency power generation efforts  
*Status:* Completed  
*Future Actions:* Clarify specific entities that need emergency power generation and document them. Then complete the power generation projects once funds have been identified. Estimated timeframe for completion: 1-3 years



### Separate Sewer System Collection & Protection

*Partners:* Planning Department Areas  
*Priority:* Low  
*Lead Responsibility:* Utility Department  
*Estimated Cost:* Undetermined  
*Funding Sources:* Determined upon project clarification.  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Evaluation and cost estimates have been reviewed for specific projects.  
*Status:* Completed  
*Future Actions:* Clarify time table and funding sources for completing separate sewer and storm water collection. Estimated timeframe for completion: 3-5 years



### Storm Shutter Programs and Installation

*Partners:* City Engineer  
*Priority:* Low  
*Lead Responsibility:* Building Department  
*Estimated Cost:* Determined on project by project basis  
*Funding Sources:* Undetermined  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous actions taken.  
*Status:* Not completed  
*Future Actions:* Determine what locations and building in the City would benefit from storm shutter installation and explore funding options for interested entities. Estimated timeframe for completion: 3-5 years



### Installation of Shatter Resistant Glass and Building Retrofit

*Partners:* City Engineer  
*Priority:* Low  
*Lead Responsibility:* Building Department  
*Estimated Cost:* Determined on project by project basis  
*Funding Sources:* Undetermined  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued efforts from previous plan update.  
*Status:* Completed  
*Future Actions:* Clarify that shatter resistant glass is required within municipal building codes within the city for all commercial properties. Evaluate further implementation of the requirement on a cost benefit analysis. Estimated timeframe for completion: 3-5 years

CITY OF MOULTON  
MITIGATION STRATEGIES -  
PUBLIC EDUCATION & AWARENESS:



**Public Education and Awareness:**

**Outreach Projects**

*Partners:* Lawrence County EMA, City Engineer, Planning Department

*Priority:* High

*Lead Responsibility:* Lawrence County EMA

*Estimated Cost:* \$5,000.00 to \$7,000.00 annually

*Funding Sources:* AEMA, PDM, Local Funds

*Mitigating Hazards:* May assists in mitigating all hazards.

*Prior Actions:* Continued efforts from previous plan update.

*Status:* Completed

*Future Actions:* Select the greatest impacting hazard to the City of and initiate an educational program to mitigate that hazard. Quantitative data indicates that floods are the most costly hazard in and the region. Estimated timeframe for completion: 1-3 years

**Real-Estate Disclosure Requirements**

*Partners:* Lawrence County EMA, Local and regional legislative delegation, Municipal Attorney.

*Priority:* Low

*Lead Responsibility:* Mayor & Council

*Estimated Cost:* Not estimated

*Funding Sources:* n/a

*Mitigating Hazards:* Flooding

*Prior Actions:* Continued efforts from last plan update.

*Status:* Completed

*Future Actions:* Initiate discussions within the council to decide whether further real-estate disclosure is necessary to prevent repetitive loss properties from continued development. Estimated timeframe for completion: 3-5 years



**Hazard Information Kiosk and Centers**

*Partners:* Planning Dept., County Engineer, City Engineer, Commissioners, Mayor & Council

*Priority:* Low

*Lead Responsibility:* Lawrence County EMA

*Estimated Cost:* Undetermined

*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA

*Mitigating Hazards:* May assists in mitigating all hazards.

*Prior Actions:* Continued efforts from last plan update.

*Status:* Not completed

*Future Actions:* Establish with department representatives the type and location for a hazard mitigation kiosk. The kiosk should be developed in a way to encourage interactive learning.

Estimated timeframe for completion: 3-5 years



**School Age Education Programs**

*Partners:* Lawrence County EMA, Mayor & Council

*Priority:* Medium

*Lead Responsibility:* City Schools

*Estimated Cost:* \$10,000.0 to 15,000.00

*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* Continued efforts from last plan update.

*Status:* Completed

*Future Actions:* Clarify partners and scope of educational program to be implemented within the school system. FEMA should be able to recommend specific school age programs for the School District. Estimated timeframe for completion: 2-4 years



**Adult & Community Education Programs**

*Partners:* GED Programs, Mayor & Council

*Priority:* High

*Lead Responsibility:* Lawrence County EMA

*Estimated Cost:* \$10,000.00 to \$15,000.00

*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* No previous actions taken.

*Status:* Completed

*Future Actions:* Educational program should be clarified for types of hazards to be discussed as well as method for reaching the desired audience. This program could come as a public service announcement with a second component of discussing hazards with local civic clubs and groups. Estimated timeframe for completion: 1-3 years



**Hazard Mitigation Plan & Pamphlet Distribution**

*Partners:* Lawrence County EMA, AEMA, ADEM

*Priority:* High

*Lead Responsibility:* City Engineer

*Estimated Cost:* \$3,000.00 to \$5,000.00

*Funding Sources:* AEMA, ADECA, HMGP, PDM

*Mitigating Hazards:* Assists in mitigating hazards discussed.

*Prior Actions:* Publication of the 2010 Mitigation Plan.

*Status:* Completed

*Future Actions:* Clarify funding sources and specify hazard to be discussed in the pamphlet and its strategy for mitigating the specific hazard. This hazard can occur heavily within the city or be part of a broad county wide initiative with other jurisdictions. Estimated timeframe for completion: 1-3 years

**Flood Map Information Distribution**

*Partners:* Lawrence County EMA, Mayor & Council, FEMA, NFIP State Coordinator

*Priority:* High

*Lead Responsibility:* Building Dept., Engineering Dept.

*Estimated Cost:* Undetermined

*Funding Sources:* AEMA, ADECA, HUD

*Mitigating Hazards:* Floods

*Prior Actions:* Continued effort from previous plan update.

*Status:* Completed

*Future Actions:* Initiate discussion with NFIP Coordinator and AEMA to acquire current methods of distributing flood map information to the general public. These methods should be evaluated for use in the City of Moulton and modified accordingly. Estimated timeframe for completion: 1-3 years

**NOAA Weather Radio Programs**

*Partners:* Lawrence County EMA, Mayor & Council

*Priority:* Low

*Lead Responsibility:* Lawrence County EMA

*Estimated Cost:* Undetermined

*Funding Sources:* AEMA, FMA, PDM Local Non-Profits

*Mitigating Hazards:* Tornadoes, Flooding, Severe, Storms, Hurricanes, Winter Freezes, Earthquakes, Drought

*Prior Actions:* Distribution of weather radios to critical facilities.

*Status:* Completed

*Future Actions:* Develop NOAA weather radio public and private partners. Local companies can contribute to a fund to distribute NOAA weather radio's to low income and identified families and entities. Estimated timeframe for completion: 3-5 years



## CITY OF MOULTON MITIGATION STRATEGIES - PUBLIC EDUCATION & AWARENESS (CONT'D):



### Press & Media Mitigation Releases

*Partners:* Lawrence County EMA, Mayor & Council, Municipal Departments  
*Priority:* Low  
*Lead Responsibility:* City Clerk, Lawrence County EMA  
*Estimated Cost:* No additional cost.  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued efforts from previous plan.  
*Status:* Completed  
*Future Actions:* Identify funding sources to complete an existing needs assessment and site selection process for safe shelters in the county and incorporated areas. Estimated timeframe for completion: 3-5 years

## CITY OF MOULTON MITIGATION STRATEGIES - NATURAL RESOURCE PROTECTION:



### Sediment & Erosion Control

*Partners:* Mayor & Council  
*Priority:* High  
*Lead Responsibility:* City Engineer  
*Estimated Cost:* No additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Flooding & Landslides  
*Prior Actions:* Ordinance for Erosion Control and Sediments is in place.  
*Status:* Completed  
*Future Actions:* Clarify that additional erosion control methods should be put in place that go beyond the erosion caused by new construction. Estimated timeframe for completion: 1-3 years



### Stream / River Corridor Restoration

*Partners:* Mayor & Council, Lawrence County EMA, Recreational Dept., Planning Dept., Urban Forestry Dept.  
*Priority:* Low  
*Lead Responsibility:* City Engineer  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* ADEM, AEMA, Local Funds, HUD, EPA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Municipal cleanup programs have occurred.  
*Status:* Completed  
*Future Actions:* Evaluation of current stream and tributary inventory for future restoration. Estimated timeframe for completion: 3-5 years



### Watershed Management Programs

*Partners:* Lawrence County EMA, Mayor & Council, City Engineer, TVA  
*Priority:* Low  
*Lead Responsibility:* Undetermined  
*Estimated Cost:* Undetermined  
*Funding Sources:* TVA  
*Mitigating Hazards:* Flooding, Severe Storms, Hurricanes, Sinkholes, Landslides, Drought, Technical Hazards  
*Prior Actions:* Continued efforts from previous plan  
*Status:* Not completed  
*Future Actions:* Clarify need for expansion of local watershed management in and potential for cooperating with a county wide initiative. Estimated timeframe for completion: 3-5 years



### Forest and Vegetation Management

*Partners:* Alabama Forest Commission (AFC), AL Cooperative Extension Service  
*Priority:* Low  
*Lead Responsibility:* City of Planning Dept.  
*Estimated Cost:* Not determined  
*Funding Sources:* Not determined  
*Mitigating Hazards:* Wildfires, Landslides, Sinkholes  
*Prior Actions:* Ongoing support of the AFC  
*Status:* Completed  
*Future Actions:* Continue to develop and promote best management practices for forests in conjunction with the AFC. This information needs to be further disseminated to local landowners by extension service providers. Estimated timeframe for completion: 3-5 years



### Wetland Restoration and Preservation

*Partners:* Mayor & Council, City Engineer, Building Dep.  
*Priority:* Low  
*Lead Responsibility:* Engineering Dept.  
*Estimated Cost:* No additional cost  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Ordinances protecting existing wetlands.  
*Status:* Completed  
*Future Actions:* Section 404 Permitting requires a permit from the Army Corps of Engineers when modifying a wetland area. Evaluation of existing wetlands within the city should be reevaluated and determined whether further action should be taken. Estimated timeframe for completion: 3-5 years

CITY OF MOULTON  
MITIGATION STRATEGIES - NATURAL  
RESOURCE PROTECTION (CONT'D):



**Open Space Easements and Acquisition**

*Partners:* Mayor & Council, Urban Forestry, Planning Dept.  
*Priority:* Low  
*Lead Responsibility:* Recreation Department  
*Estimated Cost:* Undetermined  
*Funding Sources:* Local and Regional Land Trusts  
*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Landslides, Sinkholes  
*Prior Actions:* Continued efforts from previous plan update.

*Status:* Completed  
*Future Actions:* Establish open space and passive recreation as a priority within recreational planning as a hazard mitigation strategy. This strategy should be weighed against the available density requirements within the city. Estimated timeframe for completion: 3-5 years



**Urban Forestry Planning Programs**

*Partners:* Mayor & Council, City Engineer, Utility Department, Planning Dept. Recreational Dept.  
*Priority:* Medium  
*Lead Responsibility:* Urban Forestry Department  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* need to be clarified  
*Mitigating Hazards:* Flooding, Drought, Heat and Wildfires

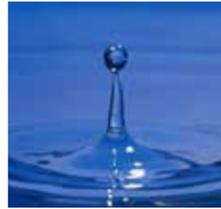
*Prior Actions:* Ongoing urban forestry efforts include analysis and daily installation and maintenance programs.  
*Status:* Completed  
*Future Actions:* Clarification for future actions for mitigating specific natural hazards needs to be completed. Estimated timeframe for completion: 2-4 years



**Media Mitigation Training Sessions**

*Partners:* City Engineer, Mayor & Council, Planning Department  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* No additional cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* May mitigate all hazards.  
*Prior Actions:* Continued efforts from last plan update.

*Status:* Completed  
*Future Actions:* Establish biannual training sessions for local and regional media to be briefed on hazard mitigation and natural disasters. Combining this event with other training sessions or adjacent EMA entities may be of benefit. Estimated timeframe for completion: 1-3 years



**Water Resource Conservation Programs**

*Partners:* TVA, National Resource Conservation Service (NRCS),  
*Priority:* Low  
*Lead Responsibility:* Lawrence County EMA, Utilities  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* NRCS, EPA, ADEM, FEMA  
*Mitigating Hazards:* Flooding, Drought, Heat, Wildfires, Dam/Levee Failure, Landslides, Sinkholes, Technical Hazards.  
*Prior Actions:* Land use and land planning strategies.

*Status:* Completed  
*Future Actions:* Host a roundtable discussion involving sustainable methods of development for the jurisdiction. This should include a breakout session on water resource protection headed by the NRCS. Estimated timeframe for completion: 3-5 years

CITY OF MOULTON  
MITIGATION STRATEGIES -  
STRUCTURAL PROJECTS:



**Storm Water Flood Walls**

*Partners:* Mayor & Council, Lawrence County EMA, Planning Department  
*Priority:* Low  
*Lead Responsibility:* Street Department/City Engineer  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* Not determined use on an emergency basis.

*Mitigating Hazards:* Flooding  
*Prior Actions:* Ongoing efforts to mitigate flooding have been underway.  
*Status:* Completed  
*Future Actions:* Evaluate and identify specific areas that need storm water flood walls that will redirect storm water from undesirable areas until long term mitigation projects can be undertaken. Estimated timeframe for completion: 3-5 years



**Storm Water Diversion Culverts**

*Partners:* ALDOT, Mayor & Council  
*Priority:* High  
*Lead Responsibility:* Street Department  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Local Match, ADEM, AEMA, FEMA

*Mitigating Hazards:* Flooding  
*Prior Actions:* Continued efforts from previous plan update.  
*Status:* Completed  
*Future Actions:* Identify and document specific areas needing storm water diversion culverts and those that are in need of repair. Each should be mapped for planning purposes and placed in a long range implementation list. Estimated timeframe for completion: 1-3 years

## CITY OF MOULTON MITIGATION STRATEGIES - STRUCTURAL PROJECTS (CONT'D):



### Seawalls

*Partners:* Mayor & Council, Lawrence County EMA, Planning Dept.  
*Priority:* Low  
*Lead Responsibility:* Street Department, City Engineer  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Local, TVA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* No previous actions.  
*Status:* Not completed  
*Future Actions:* Identify and document specific areas needing seawalls. Each should be mapped for planning purposes and placed in a long range implementation list. Estimated timeframe for completion: 3-5 years



### Retaining Walls

*Partners:* Mayor & Council  
*Priority:* Low  
*Lead Responsibility:* City Engineer  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* Local Funds  
*Mitigating Hazards:* Landslides, Technical Hazards  
*Prior Actions:* Ongoing efforts to construct any needed retaining walls along municipal rights-of-way continues.  
*Status:* Completed  
*Future Actions:* Continue to identify maintenance areas and needed retaining walls as they arise. Estimated timeframe for completion: 3-5 years



### Neighborhood & Community Safe Rooms

*Partners:* Mayor & Council, Lawrence County EMA, Local Churches and Community Centers.  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ALEMA, PDM, ADECA, Local Funds  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Continued efforts from previous plan update.  
*Status:* Completed  
*Future Actions:* Clarify any future needs for additional safe centers within the city and update existing safe centers. Attempt to use multi-use facilities that are occupied at other times than during storm periods. Estimated timeframe for completion: 1-3 years



### Storm Sewer System Construction

*Partners:* Mayor & Council, City Engineer,  
*Priority:* High  
*Lead Responsibility:* Utility Department  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ADECA, ADEM, PDM, AEMA  
*Mitigating Hazards:* Flooding, Landslides, Sinkhole, Technical Hazards  
*Prior Actions:* Ongoing improvements to the storm sewer system within the city.  
*Status:* Completed  
*Future Actions:* Evaluate current repetitive flood areas and determine whether storm sewer improvements will assist in reducing the flood damage. This should be evaluated in conjunction with real-estate purchase programs as a cost benefit analysis. Estimated timeframe for completion: 1-3 years



### Ground Stabilization

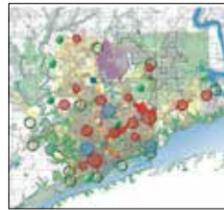
*Partners:* Mayor & Council, Lawrence County EMA, Planning Dept.  
*Priority:* Medium  
*Lead Responsibility:* Street Department, City Engineer  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Local,  
*Mitigating Hazards:* Most all identified hazards.  
*Prior Actions:* No previous actions.  
*Status:* Completed  
*Future Actions:* Identify areas within the planning area where soils are unstable and not favorable to new construction without utilizing soil stabilization methods prior to construction. Estimated timeframe for completion: 2-4 years



### Reservoir Construction

*Partners:* TVA, Lawrence County EMA, Planning Dept.  
*Priority:* Low  
*Lead Responsibility:* TVA, Lawrence County EMA  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Local, FEMA, TVA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* No previous actions.  
*Status:* Not completed  
*Future Actions:* Ongoing communication and coordination between partners to determine if reservoir construction is needed. Estimated timeframe for completion: 3-5 years

TOWN OF COURTLAND  
MITIGATION STRATEGIES -  
PREVENTION:



**Comprehensive Planning**

*Partners:* Mayor & Council, Lawrence County EMA, NARCOG

*Priority:* Low

*Lead Responsibility:* Courtland Planning Commission

*Estimated Cost:* \$15,000.00 to \$30,000.00

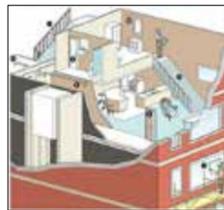
*Funding Sources:* Local Funds

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* Completion of Courtland Comprehensive Plan

*Status:* Completed

*Future Actions:* Ongoing implementation of current plan with evaluation for inclusion of identified hazard mitigation principles. Preparation for future planning updates in three to five years from prior plan completion date. Estimated timeframe for completion: 3-5 years



**Building Codes & Construction Requirements**

*Partners:* Mayor & Council, Lawrence County EMA

*Priority:* Medium

*Lead Responsibility:* Codes Enforcement, Town Hall

*Estimated Cost:* No Additional Cost

*Funding Sources:* n/a

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* Yearly review and evaluation of updates.

*Status:* Completed

*Future Actions:* Evaluate current building code for achieving identified mitigation strategies and identified risks within the risk assessment of this document. Estimated timeframe for completion: 2-4 years



**Capital Improvements Programs**

*Partners:* Municipal Departments

*Priority:* Medium

*Lead Responsibility:* Mayor & Council

*Estimated Cost:* No Additional Cost

*Funding Sources:* n/a

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* No previous actions taken.

*Status:* Not completed

*Future Actions:* Evaluate the use of a capital improvements program within the planning period of this plan for the Town of Courtland. Implementation should include funding for specific mitigation strategies for reducing overall risk in the community. Estimated timeframe for completion: 2-4 years



**Subdivision Regulations**

*Partners:* Local Developers, NARCOG, ADECA

*Priority:* Low

*Lead Responsibility:* Mayor & Council

*Estimated Cost:* No additional cost

*Funding Sources:* Not applicable

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* Town currently uses subdivision regulations to reduce risk to citizens of the community.

*Status:* Completed

*Future Actions:* Evaluate the need for updates to the subdivision regulations in regards to the risk assessment and the updated comprehensive plan. Estimated timeframe for completion: 3-5 years



**Land Use Development Regulations**

*Partners:* ADECA, NARCOG

*Priority:* Low

*Lead Responsibility:* Courtland Planning Commission

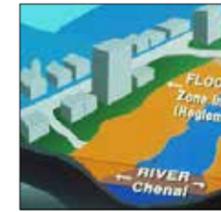
*Estimated Cost:* No additional cost at this time

*Funding Sources:* Local Funds

*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Dam/Levee Failures, Technical Hazards  
*Prior Actions:* The town currently does not land use development regulations.

*Status:* Not completed

*Future Actions:* Evaluate the need for regulations for mitigating risk in relation to identified hazards within the town. Adopt any needed updates to the regulations. Estimated timeframe for completion: 3-5 years



**Flood Plain Management Programs**

*Partners:* Lawrence County EMA, ADEM, TVA, Mayor and Town Council, County Engineer

*Priority:* Low

*Lead Responsibility:* Courtland Planning Commission, Mayor and Town Council

*Estimated Cost:* Undetermined

*Funding Sources:* AEMA, Local Match, ADECA, HMGP, Pre-Disaster Mitigation (PDM), Flood Mitigation Ass. (FMA)

*Mitigating Hazards:* Flooding, Severe Storms, Dam/Levee Failures

*Prior Actions:* Participation in the NFIP program with good standing.

*Status:* Completed

*Future Actions:* Continue support for NFIP program and implement program's goals and objectives. Estimated timeframe for completion: 3-5 years



**Burn Permits**

*Partners:* Mayor and Town Council, Sheriff's Dept., Urban Forestry

*Priority:* High

*Lead Responsibility:* Mayor and Town Council

*Estimated Cost:* No Additional Cost

*Funding Sources:* n/a

*Mitigating Hazards:* Wildfires, Landslides

*Prior Actions:* No previous actions.

*Status:* Not completed

*Future Actions:* Continue public awareness through public outreach programs. Estimated timeframe for completion: 1-3 years



**Safe Shelter Site Planning**

*Partners:* Lawrence County EMA, AEMA, ADECA

*Priority:* High

*Lead Responsibility:* Mayor & Council

*Estimated Cost:* No additional cost

*Funding Sources:* n/a

*Mitigating Hazards:* Assists in mitigating all hazards.

*Prior Actions:* Evaluated current shelters during mitigation planning efforts.

*Status:* Completed

*Future Actions:* Evaluate the need for additional shelters and analyze the appropriate site placement prior to seeking property. Estimated timeframe for completion: 1-3 years

## TOWN OF COURTLAND MITIGATION STRATEGIES - PREVENTION (CONTINUED):



### Public Right-of-Way Maintenance Regulations

*Partners:* Mayor and Town Council, County Engineer, Lawrence County EMA, ALDOT  
*Priority:* Medium  
*Lead Responsibility:* Mayor and Town Council, County Engineer, ALDOT  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ALDOT, HMGP, PDM, Local Match  
*Mitigating Hazards:* Flooding  
*Prior Actions:* No previous actions.  
 Status: Not completed  
*Future Actions:* Monitor and document needed right-of-way maintenance and sharing information to the correct entities. Estimated timeframe for completion: 2-4 years



### Planning & Land Use Studies

*Partners:* Mayor and Town Council, Lawrence County EMA, County Engineer  
*Priority:* Low  
*Lead Responsibility:* Mayor and Town Council, Planning Commission  
*Estimated Cost:* Undetermined  
*Funding Sources:* ADECA, HUD, ALEMA, ADEM, USDA  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Continued efforts from previous plan update  
 Status: Not completed  
*Future Actions:* Evaluate Need for plans to include hazard mitigation components. Estimated timeframe for completion: 3-5 years

## TOWN OF COURTLAND MITIGATION STRATEGIES - PROPERTY PROTECTION:



### Real-Estate Flood Prone Property Acquisition

*Partners:* Mayor and Town Council, Lawrence County EMA, AEMA, ADECA  
*Priority:* Medium  
*Lead Responsibility:* Mayor and Town Council, County Engineer  
*Estimated Cost:* Not determined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, NFIP, Local Funds  
*Mitigating Hazards:* Floods  
*Prior Actions:* No previous actions.  
 Status: Not completed  
*Future Actions:* Provide public education and discussions with potential property owners in need of purchase. Specifically evaluate repetitive loss properties in municipal limits. Estimated timeframe for completion: 2 to 4 years

## TOWN OF COURTLAND MITIGATION STRATEGIES - PUBLIC EDUCATION & AWARENESS:



### Real-Estate Disclosure Requirements

*Partners:* Lawrence County EMA, Local and regional legislative delegation, Municipal Attorney.  
*Priority:* Low  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* Not estimated  
*Funding Sources:* n/a  
*Mitigating Hazards:* Floods  
*Prior Actions:* Continued efforts from previous plan update.  
 Status: Not completed  
*Future Actions:* Initiate discussions within the council to decide whether real-estate disclosure is necessary to prevent repetitive loss properties from continued development. Estimated timeframe for completion: 3 to 5 years



### Hazard Information Kiosk

*Partners:* Mayor & Council  
*Priority:* Low  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* May assists in mitigating all hazards  
*Prior Actions:* Continued efforts from last plan update.  
 Status: Not completed  
*Future Actions:* Install an informative kiosk to promote hazard mitigation within the Town of Courtland as well as within the county. Estimated timeframe for completion: 3 to 5 years

TOWN OF COURTLAND  
MITIGATION STRATEGIES - PUBLIC  
EDUCATION & AWARENESS (CONT'D):



**Hazard Mitigation Plan & Pamphlet Distribution**

*Partners:* Lawrence County EMA, AEMA, ADEM  
*Priority:* High  
*Lead Responsibility:* Planning Commission, County Engineer  
*Estimated Cost:* \$3,000.00 to \$5,000.00  
*Funding Sources:* AEMA, ADECA, HMGP, PDM  
*Mitigating Hazards:* Assists in mitigating hazards discussed.  
*Prior Actions:* Publication of the 2010 MHMP  
*Status:* Completed  
*Future Actions:* Clarify funding sources and specify hazard to be discussed in the pamphlet and its strategy for mitigating the specific hazard. This hazard can occur heavily within the town or be part of a broad county wide initiative with other jurisdictions. Estimated timeframe for completion: 1-3 years



**Flood Map Information Distribution**

*Partners:* Lawrence County EMA, Mayor & Council, FEMA, NFIP State Coordinator  
*Priority:* High  
*Lead Responsibility:* Planning Commission, Town Council, County Engineer  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, ADECA, HUD  
*Mitigating Hazards:* Floods  
*Prior Actions:* No previous actions.  
*Status:* Not completed  
*Future Actions:* Initiate discussion with NFIP Coordinator and AEMA to acquire current methods of distributing flood map information to the general public. These methods should be evaluated for use in the Town of Courtland and modified accordingly. Estimated timeframe for completion: 1-3 years



**NOAA Weather Radio Programs**

*Partners:* Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, FMA, PDM Local Non-Profits  
*Mitigating Hazards:* Tornadoes, Flooding, Severe, Storms, Hurricanes, Winter Freezes, Earthquakes, Drought  
*Prior Actions:* Distribution of weather radios to critical facilities in Courtland  
*Status:* Completed  
*Future Actions:* Develop NOAA weather radio public and private partners. Continue to distribute weather radios to local entities in need. Estimated timeframe for completion: 3 to 5 years



**Press & Media Mitigation Releases**

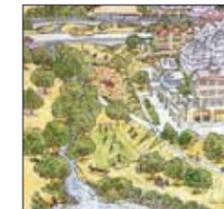
*Partners:* Lawrence County EMA, Mayor & Council, Municipal Departments  
*Priority:* Low  
*Lead Responsibility:* Mayor, Commission, and Council, Lawrence County EMA  
*Estimated Cost:* No additional cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous actions taken.  
*Status:* Not completed  
*Future Actions:* Identify funding sources to complete an existing needs assessment and site selection process for safe shelters in the county and incorporated areas. Estimated timeframe for completion: 3 to 5 years

TOWN OF COURTLAND  
MITIGATION STRATEGIES -  
NATURAL RESOURCE PROTECTION:



**Stream / River Corridor Restoration**

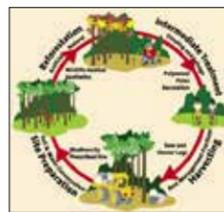
*Partners:* Mayor & Council, Lawrence County EMA,  
*Priority:* Low  
*Lead Responsibility:* Planning Commission, Mayor and Council  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* ADEM, AEMA, Local Funds, HUD, EPA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* No previous actions have occurred.  
*Status:* Not completed  
*Future Actions:* Evaluation of current stream and tributary inventory for future restoration. Estimated timeframe for completion: 3 to 5 years



**Watershed Management Programs**

*Partners:* Lawrence County EMA, Mayor & Council, County Engineer, TVA  
*Priority:* Low  
*Lead Responsibility:* Undetermined  
*Estimated Cost:* Undetermined  
*Funding Sources:* TVA  
*Mitigating Hazards:* Flooding, Severe Storms, Hurricanes, Sinkholes, Landslides, Drought, Technical Hazards  
*Prior Actions:* No previous actions.  
*Status:* Not completed  
*Future Actions:* Clarify need for expansion of local watershed management in Courtland and potential for cooperating with a county wide initiative. Estimated timeframe for completion: 3 to 5 years

## TOWN OF COURTLAND MITIGATION STRATEGIES - NATURAL RESOURCE PROTECTION (CONT'D):



### Forest and Vegetation Management

*Partners:* Alabama Forest Commission (AFC), AL Cooperative Extension Service  
*Priority:* Low  
*Lead Responsibility:* Mayor and Council, Planning Commission  
*Estimated Cost:* Not determined  
*Funding Sources:* Not determined  
*Mitigating Hazards:* Wildfires, Landslides, Sinkholes  
*Prior Actions:* No previous action.  
*Status:* Not completed  
*Future Actions:* Develop and promote best management practices for forests in conjunction with the AFC. Estimated timeframe for completion: 3 to 5 years



### Open Space Easements and Acquisition

*Partners:* Mayor & Council, Planning Commission  
*Priority:* Low  
*Lead Responsibility:* Planning Commission  
*Estimated Cost:* Undetermined  
*Funding Sources:* Local and Regional Land Trusts  
*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Landslides, Sinkholes  
*Prior Actions:* No previous actions.  
*Status:* Completed  
*Future Actions:* Establish open space and passive recreation as a priority within recreational planning as a hazard mitigation strategy. This strategy should be weighed against the available density requirements within the town. Estimated timeframe for completion: 3-5 years



### Media Mitigation Training Sessions

*Partners:* Mayor & Council, Lawrence County EMA  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* No additional cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* May mitigate all hazards.  
*Prior Actions:* No previous actions.  
*Status:* Not completed  
*Future Actions:* Establish biannual training sessions for local media to be briefed on hazard mitigation and natural disasters. Combining this event with other training sessions or adjacent EMA entities may be of benefit. Estimated timeframe for completion: 1 to 3 years



### Wetland Restoration and Preservation

*Partners:* Mayor & Council, ADEM  
*Priority:* Low  
*Lead Responsibility:* Mayor and Council, Planning Commission  
*Estimated Cost:* No additional cost  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Continued efforts from last plan update  
*Status:* Not completed  
*Future Actions:* Section 404 Permitting requires a permit from the Army Corps of Engineers when modifying a wetland area. Evaluation of existing wetlands within the town should be reevaluated and determined whether further action should be taken. Estimated timeframe for completion: 3 to 5 years



### Urban Forestry Planning Programs

*Partners:* Mayor & Council, Planning Commission  
*Priority:* Medium  
*Lead Responsibility:* Planning Commission  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Need to be clarified  
*Mitigating Hazards:* Flooding, Drought, Heat and Wildfires  
*Prior Actions:* No previous actions.  
*Status:* Not completed  
*Future Actions:* Clarification for future actions for mitigating specific natural hazards needs to be completed. Estimated timeframe for completion: 2 to 4 years



### Water Resource Conservation Programs

*Partners:* TVA, National Resource Conservation Service (NRCS),  
*Priority:* Low  
*Lead Responsibility:* Lawrence County EMA, Mayor and Council, Planning Commission  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* NRCS, EPA, ADEM, FEMA  
*Mitigating Hazards:* Flooding, Drought, Heat, Wildfires, Dam/Levee Failure, Landslides, Sinkholes, Technical Hazards.  
*Prior Actions:* No previous actions.  
*Status:* Not completed  
*Future Actions:* Host a roundtable discussion involving sustainable methods of development for the jurisdiction. This should include discussion on water resource protection headed by the NRCS. Estimated timeframe for completion: 3 to 5 years

**TOWN OF COURTLAND  
MITIGATION STRATEGIES -  
STRUCTURAL PROJECTS:**



**Neighborhood & Community Safe Rooms**

*Partners:* Mayor & Council, Lawrence County EMA, Local Churches and Community Centers.

*Priority:* High

*Lead Responsibility:* Lawrence County EMA

*Estimated Cost:* Not determined at this time.

*Funding Sources:* ALEMA, PDM, ADECA, Local Funds

*Mitigating Hazards:* All hazards may be mitigated.

*Prior Actions:* Continued efforts from last plan update

*Status:* Completed

*Future Actions:* Clarify any future needs for additional safe centers within the town and update existing safe centers. Attempt to use multi-use facilities that are occupied at other times than during storm periods. Estimated timeframe for completion: 1-3 years



**Storm Sewer System Construction**

*Partners:* Mayor & Council, County Engineer,

*Priority:* High

*Lead Responsibility:* Mayor and Town Council, Planning Commission

*Estimated Cost:* Not determined at this time.

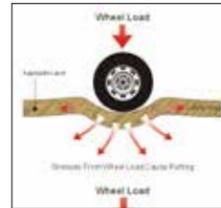
*Funding Sources:* ADECA, ADEM, PDM, AEMA

*Mitigating Hazards:* Flooding, Landslides, Sinkhole, Technical Hazards

*Prior Actions:* Continued efforts from last plan update

*Status:* Completed

*Future Actions:* Evaluate current repetitive flood areas and determine whether storm sewer improvements will assist in reducing the flood damage. This should be evaluated in conjunction with real-estate purchase programs as a cost benefit analysis. Estimated timeframe for completion: 1-3 years



**Ground Stabilization**

*Partners:* Mayor & Council, Lawrence County EMA

*Priority:* Medium

*Lead Responsibility:* Mayor and Council, Planning Commission, County Engineer

*Estimated Cost:* Not determined at this time.

*Funding Sources:* Local

*Mitigating Hazards:* Most all identified hazards.

*Prior Actions:* No previous actions.

*Status:* Not completed

*Future Actions:* Identify areas within the planning area where soils are unstable and not favorable to new construction without utilizing soil stabilization methods prior to construction.

*Estimated timeframe for completion:* 2 to 4 years



**Reservoir Construction**

*Partners:* TVA, Lawrence County EMA, Mayor and Council

*Priority:* Low

*Lead Responsibility:* Mayor and Council, Planning Commission, TVA, Lawrence County EMA

*Estimated Cost:* Not determined at this time.

*Funding Sources:* Local, FEMA, TVA

*Mitigating Hazards:* Flooding

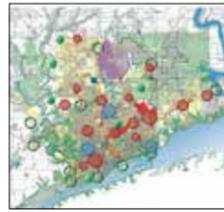
*Prior Actions:* No previous actions.

*Status:* Not completed

*Future Actions:* Ongoing communication and coordination between partners to determine if reservoir construction is needed. Estimated timeframe for completion: 3 to 5 years

# TOWN OF NORTH COURTLAND

## MITIGATION STRATEGIES - PREVENTION:



### Comprehensive Planning

*Partners:* Mayor & Council, Lawrence County EMA, NARCOG  
*Priority:* Low  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* \$15,000.00 to \$30,000.00  
*Funding Sources:* Local Funds  
*Mitigating Hazards:* Assists in mitigating all hazards  
*Prior Actions:* Continued efforts from previous plan update.  
*Status:* Not completed  
*Future Actions:* Continue to gauge support for the development of comprehensive plan developed and adopted by the planning commission.  
 Estimated timeframe for completion: 3 to 5 years



### Safe Shelter Site Planning

*Partners:* Lawrence County EMA, AEMA, ADECA  
*Priority:* High  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* \$3,000.00 to \$5,000.00  
*Funding Sources:* Local Funds, AEMA, FEMA, ADECA  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Evaluated current shelters during mitigation planning efforts.  
*Status:* Completed  
*Future Actions:* Continue to evaluate the need for additional shelters and analyze the appropriate site placement prior to seeking property.  
 Estimated timeframe for completion: 1-3 years



### Mitigation Planning Technology Support

*Partners:* Mayor & Council, AEMA, FEMA,  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* Undetermined  
*Funding Sources:* ALEMA, ADECA, ADEM, local match  
*Mitigating Hazards:* All hazards may be mitigated  
*Prior Actions:* Town of North Courtland continues to work with the county EMA to implement mitigation technologies.  
*Status:* completed  
*Future Actions:* Continue implementation of warning sirens as identified and update existing ones. Evaluate the need for installing a telephone or cell phone app-based warning system.  
 Estimated timeframe for completion: 1-3 years



### Flood Plain Management Programs

*Partners:* Lawrence County EMA, ADEM, TVA, County Engineer  
*Priority:* Low  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* Not determined  
*Funding Sources:* AEMA, Local Match, ADECA, HMGP, Pre-Disaster Mitigation (PDM), Flood Mitigation Ass. (FMA)  
*Mitigating Hazards:* Flooding, Severe Storms, Dam/Levee Failures  
*Prior Actions:* Participates in the NFIP and is in good standing.  
*Status:* Completed  
*Future Actions:* Continued participation and implementation of NFIP policies and objectives.  
 Estimated timeframe for completion: 3 to 5 years



### Public Right-of-Way Maintenance Regulations

*Partners:* County Engineer, County Commission, Lawrence County EMA, ALDOT  
*Priority:* High  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ALDOT, HMGP, PDM  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Previous actions include ongoing maintenance.  
*Status:* Completed  
*Future Actions:* Continue to monitor and document needed right-of-way maintenance and sharing information to the correct and corresponding entities. Estimated timeframe for completion: 1-3 years



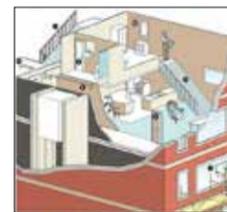
### Subdivision Regulations

*Partners:* Local Developers, NARCOG, ADECA  
*Priority:* Low  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* No additional cost  
*Funding Sources:* Not applicable  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Town currently uses subdivision regulations to reduce risk to citizens of the community.  
*Status:* completed  
*Future Actions:* Evaluate the need for updates to the subdivision regulations in regards to the risk assessment and the updated comprehensive plan.  
 Estimated timeframe for completion: 3-5 years



### Capital Improvements Programs

*Partners:* Municipal Departments  
*Priority:* Medium  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* No Additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous actions taken.  
*Status:* Not completed  
*Future Actions:* Evaluate the use of a capital improvements program within the planning period of this plan for the Town of Courtland. Implementation should include funding for specific mitigation strategies for reducing overall risk in the community. Estimated timeframe for completion: 2 to 4 years



### Building Codes & Construction Requirements

*Partners:* Mayor & Council, Lawrence County EMA  
*Priority:* Medium  
*Lead Responsibility:* Codes Enforcement, Town Hall  
*Estimated Cost:* No Additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Yearly review and evaluation of updates.  
*Status:* Completed  
*Future Actions:* Evaluate current building code for achieving identified mitigation strategies and identified risks within the risk assessment of this document. Estimated timeframe for completion: 2-4 years



### Land Use Development Regulations

*Partners:* ADECA, NARCOG  
*Priority:* Low  
*Lead Responsibility:* Courtland Planning Commission  
*Estimated Cost:* No additional cost at this time  
*Funding Sources:* Local Funds  
*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Dam/Levee Failures, Technical Hazards  
*Prior Actions:* The town currently does not have land use development regulations.  
*Status:* not completed  
*Future Actions:* Evaluate the need for regulations for mitigating risk in relation to identified hazards within the town. Adopt any needed updates to the regulations. Estimated timeframe for completion: 3 to 5 years

**TOWN OF NORTH COURTLAND  
MITIGATION STRATEGIES -  
PROPERTY PROTECTION:**



**Emergency Power Generation**

*Partners:* Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* Undetermined  
*Funding Sources:* Funding determined on a project by project basis  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Ongoing emergency power generation efforts in conjunction with the county EMA.  
*Status:* completed

*Future Actions:* Evaluate further emergency power generation needs within the town in conjunction with the County EMA. Estimated timeframe for completion: 3-5 years



**Burn Permits**

*Partners:* Mayor and Town Council, Sheriff's Dept., Urban Forestry  
*Priority:* High  
*Lead Responsibility:* Mayor and Town Council  
*Estimated Cost:* No Additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Wildfires, Landslides  
*Prior Actions:* No previous actions.  
*Status:* not completed  
*Future Actions:* Continue public awareness through public outreach programs. Estimated timeframe for completion: 1 to 3 years

**TOWN OF NORTH COURTLAND  
MITIGATION STRATEGIES -  
PUBLIC EDUCATION & AWARENESS:**



**Hazard Information Kiosk**

*Partners:* Mayor & Council  
*Priority:* Low  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* May assists in mitigating all hazards.  
*Prior Actions:* Continued efforts from previous plan update.  
*Status:* not completed  
*Future Actions:* In conjunction with the Lawrence County EMA there should be a kiosk type and location selected to promote hazard mitigation within the Town of North Courtland. In addition, the town supports all outreach and media development projects. Estimated timeframe for completion: 3 to 5 years

**TOWN OF NORTH COURTLAND  
MITIGATION STRATEGIES -  
STRUCTURAL PROJECTS:**



**Neighborhood & Community Safe Rooms**

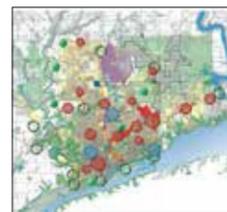
*Partners:* Lawrence County EMA, Local Churches and Community Centers.  
*Priority:* High  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ALEMA, PDM, ADECA, Local Funds  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Continued efforts from previous plan update.  
*Status:* completed  
*Future Actions:* Clarify any future needs for additional safe centers within the city and update existing safe center facilities. Attempt to use multi-use facilities that are occupied at other times than only during storm periods. Estimated timeframe for completion: 1-3 years



**Storm Water Flood Walls**

*Partners:* Lawrence County EMA, County Engineer  
*Priority:* Low  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Undetermined, case-by-case basis.  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Ongoing efforts to mitigate flooding have been underway.  
*Status:* completed  
*Future Actions:* Evaluate and identify specific areas that need storm water floodwalls that will redirect storm water from undesirable areas until long-term mitigation projects can be undertaken. Estimated timeframe for completion: 3-5 years

## TOWN OF TOWN CREEK MITIGATION STRATEGIES - PREVENTION:



### Comprehensive Planning

*Partners:* Mayor & Council, Lawrence County EMA, NARCOG  
*Priority:* Low  
*Lead Responsibility:* St Florian Planning Commission  
*Estimated Cost:* \$15,000.00 to \$30,000.00  
*Funding Sources:* Local Funds, ADECA  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Continued efforts from last plan update  
 Status: not completed  
*Future Actions:* Gauge community support for comprehensive plan with evaluation for inclusion of identified hazard mitigation principles.  
 Estimated timeframe for completion: 3 to 5 years



### Building Codes & Construction Requirements

*Partners:* Mayor & Council, Lawrence County EMA  
*Priority:* Medium  
*Lead Responsibility:* Planning Commission, Mayor and Council, County Engineer  
*Estimated Cost:* No Additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Yearly review and evaluation of updates.  
 Status: completed  
*Future Actions:* Evaluate current building code for achieving identified mitigation strategies and identified risks within the risk assessment of this document. Estimated timeframe for completion: 2-4 years



### Storm Water Management

*Partners:* Lawrence County EMA, ADEM, AEMA, Mayor and Council  
*Priority:* Low  
*Lead Responsibility:* Planning Commission, Mayor and Council  
*Estimated Cost:* Not estimated  
*Funding Sources:* AEMA, Local Match, ADECA, HMGP, Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance. (FMA), ADEM  
*Mitigating Hazards:* Flooding, Severe Storms, Dam/Levee Failures  
*Prior Actions:* Town has subdivision ordinance in place that could be updated to reflect any storm water management practices..  
 Status: completed  
*Future Actions:* Seek contemporary methods to mitigate storm water runoff through best management practices. Estimated timeframe for completion: 3-5 years



### Land Use Development Regulations

*Partners:* ADECA, NARCOG  
*Priority:* Low  
*Lead Responsibility:* Town Creek Planning Commission  
*Estimated Cost:* No additional cost at this time  
*Funding Sources:* Local Funds  
*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Dam/Levee Failures, Technical Hazards  
*Prior Actions:* The town currently does not use land use development regulations.  
 Status: not completed  
*Future Actions:* Evaluate the need for regulations to include identified hazards within the town.  
 Estimated timeframe for completion: 3 to 5 years



### Subdivision Regulations

*Partners:* Local Developers, NARCOG, ADECA  
*Priority:* Low  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* No additional cost  
*Funding Sources:* Not applicable  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Town currently does not use subdivision regulations  
 Status: not completed  
*Future Actions:* Evaluate the need for subdivision regulations to include risk assessment. Estimated timeframe for completion: 3 to 5 years



### Flood Plain Management Programs

*Partners:* Lawrence County EMA, ADEM, TVA, Mayor and Town Council, County Engineer  
*Priority:* Low  
*Lead Responsibility:* Planning Commission, Mayor and Town Council  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, Local Match, ADECA, HMGP, Pre-Disaster Mitigation (PDM), Flood Mitigation Ass. (FMA)  
*Mitigating Hazards:* Flooding, Severe Storms, Dam/Levee Failures  
*Prior Actions:* Participation in the NFIP program with good standing.  
 Status: completed  
*Future Actions:* Continue support for NFIP program and implement program's goals and objectives. Estimated timeframe for completion: 3-5 years



### Burn Permits

*Partners:* Mayor and Town Council, Sheriff's Dept., Urban Forestry  
*Priority:* High  
*Lead Responsibility:* Mayor and Town Council  
*Estimated Cost:* No Additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Wildfires, Landslides  
*Prior Actions:* No previous actions.  
 Status: completed  
*Future Actions:* Continue public awareness through public outreach programs. Estimated timeframe for completion: 1-3 years



### Safe Shelter Site Planning

*Partners:* Lawrence County EMA, AEMA, ADECA  
*Priority:* High  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* No additional cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Evaluated current shelters during mitigation planning efforts.  
 Status: completed  
*Future Actions:* Evaluate the need for additional shelters and analyze the appropriate site placement prior to seeking property. Estimated timeframe for completion: 1-3 years

TOWN OF TOWN CREEK  
MITIGATION STRATEGIES -  
PREVENTION (CONTINUED):



**Public Right-of-Way Maintenance Regulations**

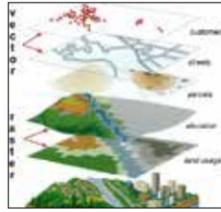
*Partners:* Mayor and Town Council, County Engineer, Lawrence County EMA, ALDOT  
*Priority:* Medium  
*Lead Responsibility:* Mayor and Town Council, County Engineer, ALDOT  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ALDOT, HMGP, PDM, Local Match  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Ongoing efforts from last plan update  
*Status:* completed

*Future Actions:* Monitor and document needed right-of-way maintenance and sharing information to the correct entities. Estimated timeframe for completion: 2-4 years



**Critical Facility Assessments**

*Partners:* Lawrence County EMA, Mayor and Council  
*Priority:* Low  
*Lead Responsibility:* Planning Commission, Mayor and Council  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Not determined at this time.  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous action taken.  
*Status:* not completed  
*Future Actions:* Establish critical facility minimum standards for the Town of Town Creek. The assessment should address building and site vulnerabilities to hazards. Estimated timeframe for completion: 3 to 5 years



**Geographic Information Systems**

*Partners:* Lawrence County EMA, Mayor and Council  
*Priority:* Medium  
*Lead Responsibility:* Planning Commission, Mayor and Council  
*Estimated Cost:* No additional cost.  
*Funding Sources:* Not applicable  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* No previous actions taken  
*Status:* not completed  
*Future Actions:* Completion of land use map for the Town of Town Creek. Estimated timeframe for completion: 2-4 years



**Planning & Land Use Studies**

*Partners:* Mayor and Town Council, Lawrence County EMA, County Engineer  
*Priority:* Low  
*Lead Responsibility:* Mayor and Town Council, Planning Commission  
*Estimated Cost:* Undetermined  
*Funding Sources:* ADECA, HUD, ALEMA, ADEM, USDA  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* No previous actions taken  
*Status:* not completed  
*Future Actions:* Evaluate need for plans to include hazard mitigation components. Estimated timeframe for completion: 3 to 5 years



**Mitigation Planning Technology Support**

*Partners:* Lawrence County EMA, FEMA, ALEMA, Mayor and Town Council  
*Priority:* High  
*Lead Responsibility:* Mayor and Council  
*Estimated Cost:* Undetermined  
*Funding Sources:* PDM, Local Funds, County Funds  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* No previous action.  
*Status:* completed  
*Future Actions:* Continuing to oversee future installation of additional warning sirens in the Town of Town Creek. Evaluation of installing a telephone or cell phone app-based warning system. Estimated timeframe for completion: 1-3 years

TOWN OF TOWN CREEK  
MITIGATION STRATEGIES -  
PROPERTY PROTECTION:



**Real-Estate Flood Prone Property Acquisition**

*Partners:* Lawrence County EMA, AEMA, ADECA, Mayor and Council  
*Priority:* High  
*Lead Responsibility:* Mayor and Council, County Engineer  
*Estimated Cost:* Not determined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, NFIP, Local Funds  
*Mitigating Hazards:* Floods  
*Prior Actions:* No previous actions.  
*Status:* not completed  
*Future Actions:* Initiate public education and discussions with potential property owners in need of purchase. Specifically evaluate repetitive loss properties in the town. Estimated timeframe for completion: 1 to 3 years



**Flood Prone Building Proofing and Retrofitting**

*Partners:* Lawrence County EMA, AEMA, ADECA, Mayor and Council  
*Priority:* Low  
*Lead Responsibility:* Mayor and Council, County Engineer  
*Estimated Cost:* Not determined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, NFIP, Local Funds  
*Mitigating Hazards:* Floods  
*Prior Actions:* No previous actions.  
*Status:* not completed  
*Future Actions:* Identify buildings in floodplain areas that cannot be moved in the near future but could benefit from redesign or modifications to lessen adverse impacts from flooding events. Estimated timeframe for completion: 3 to 5 years

## TOWN OF TOWN CREEK MITIGATION STRATEGIES - PROPERTY PROTECTION:



### Critical Facilities Protection

*Partners:* Lawrence County EMA, County Engineer, Mayor and Council  
*Priority:* High  
*Lead Responsibility:* Mayor and Council, Planning Commission, County Engineer  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FEMA  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous action  
 Status: not completed  
*Future Actions:* Target funding sources to complete redesign of critical facilities if identified in the critical facility analysis. Estimated timeframe for completion: 1 to 3 years



### Emergency Power Generation

*Partners:* Lawrence County EMA, County Engineer, Mayor and Council  
*Priority:* High  
*Lead Responsibility:* Mayor and Council  
*Estimated Cost:* Undetermined  
*Funding Sources:* Funding determined on a project by project basis.  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Ongoing emergency power generation efforts.  
 Status: completed  
*Future Actions:* Clarify specific entities that need emergency power generation and document them. Then complete the power generation projects once funds have been identified. Estimated timeframe for completion: 1-3 years



### Separate Sewer System Collection & Protection

*Partners:* Mayor and Council  
*Priority:* Low  
*Lead Responsibility:* Mayor and Council  
*Estimated Cost:* Undetermined  
*Funding Sources:* Determined upon project clarification.  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* Ongoing efforts  
 Status: completed  
*Future Actions:* Ongoing evaluation and maintenance or upgrades for separate sewer and storm water system. Estimated timeframe for completion: 3-5 years



### Storm Shutter Programs and Installation

*Partners:* Mayor and Council  
*Priority:* Low  
*Lead Responsibility:* Planning Commission, Mayor and Council  
*Estimated Cost:* Determined on project by project basis  
*Funding Sources:* Undetermined  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous actions taken.  
 Status: not completed  
*Future Actions:* Determine what locations and building in the town would benefit from storm shutter installation and explore funding options for interested entities. Estimated timeframe for completion: 3 to 5 years



### Installation of Shatter Resistant Glass and Building Retrofit

*Partners:* Mayor and Council  
*Priority:* Low  
*Lead Responsibility:* Planning Commission, Mayor and Council  
*Estimated Cost:* Determined on project by project basis.  
*Funding Sources:* Undetermined  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous actions.  
 Status: not completed  
*Future Actions:* Clarify that shatter resistant glass is required within municipal building codes within the town for all commercial properties. Evaluate further implementation of the requirement on a cost benefit analysis. Estimated timeframe for completion: 3 to 5 years

## TOWN OF TOWN CREEK MITIGATION STRATEGIES - PUBLIC EDUCATION & AWARENESS:



### Outreach Projects

*Partners:* Lawrence County EMA, Mayor and Council  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA, Mayor and Council  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, PDM, Local Funds  
*Mitigating Hazards:* May assists in mitigating all hazards.  
*Prior Actions:* No previous actions.  
 Status: not completed  
*Future Actions:* Select the greatest impacting hazard to the town and initiate an educational program to mitigate that hazard. Quantitative data indicates that floods are the most costly hazard in Town Creek and the region. Estimated timeframe for completion: 1 to 3 years



### Real-Estate Disclosure Requirements

*Partners:* Lawrence County EMA, Local and regional legislative delegation, Municipal Attorney.  
*Priority:* Low  
*Lead Responsibility:* Mayor & Council  
*Estimated Cost:* Not estimated  
*Funding Sources:* n/a  
*Mitigating Hazards:* Flooding  
*Prior Actions:* No previous action.  
 Status: not completed  
*Future Actions:* Initiate discussions within the council to decide whether further real-estate disclosure is necessary to prevent repetitive loss properties from continued development. Estimated timeframe for completion: 3 to 5 years

TOWN OF TOWN CREEK  
MITIGATION STRATEGIES - PUBLIC  
EDUCATION & AWARENESS (CONT'D):



**Hazard Information Kiosk and Centers**

*Partners:* Mayor and Council, County Engineer, Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* Lawrence County EMA, Mayor and Council  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* May assists in mitigating all hazards.  
*Prior Actions:* No previous actions.  
*Status:* completed  
*Future Actions:* The kiosk was developed in a way to encourage interactive learning. Estimated timeframe for completion: 3-5 years



**School Age Education Programs**

*Partners:* Lawrence County EMA, Mayor & Council  
*Priority:* Medium  
*Lead Responsibility:* County Schools, Lawrence County EMA  
*Estimated Cost:* \$10,000.0 to 15,000.00  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous action.  
*Status:* not completed  
*Future Actions:* Clarify partners and scope of educational program to be implemented within the school system. FEMA should be able to recommend specific school age programs for the city and county school districts. Estimated timeframe for completion: 2 to 4 years



**Adult & Community Education Programs**

*Partners:* Mayor & Council, Lawrence County EMA  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA, Mayor and Council  
*Estimated Cost:* \$10,000.00 to \$15,000.00  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous actions taken.  
*Status:* completed  
*Future Actions:* Educational program should be clarified for types of hazards to be discussed as well as method for reaching the desired audience. This program could come as a public service announcement with a second component of discussing hazards with local civic clubs and groups. Estimated timeframe for completion: 3-5 years



**Hazard Mitigation Plan & Pamphlet Distribution**

*Partners:* Lawrence County EMA, AEMA, ADEM, Mayor and Council  
*Priority:* High  
*Lead Responsibility:* Mayor and Council, Lawrence County EMA  
*Estimated Cost:* \$3,000.00 to \$5,000.00  
*Funding Sources:* AEMA, ADECA, HMGP, PDM  
*Mitigating Hazards:* Assists in mitigating hazards discussed.  
*Prior Actions:* Publication of the 2010 MHMP  
*Status:* completed  
*Future Actions:* Clarify funding sources and specify hazard to be discussed in the pamphlet and its strategy for mitigating the specific hazard. This hazard can occur heavily within the city or be part of a broad county wide initiative with other jurisdictions. Estimated timeframe for completion: 1-3 years



**Flood Map Information Distribution**

*Partners:* Lawrence County EMA, Mayor & Council, FEMA, NFIP State Coordinator  
*Priority:* High  
*Lead Responsibility:* Mayor and Council, County Engineer  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, ADECA, HUD  
*Mitigating Hazards:* Floods  
*Prior Actions:* No previous action.  
*Status:* completed  
*Future Actions:* Initiate discussion with NFIP Coordinator and AEMA to acquire current methods of distributing flood map information to the general public. These methods should be evaluated for use in the Town of Town Creek and modified accordingly. Estimated timeframe for completion: 1-3 years



**NOAA Weather Radio Programs**

*Partners:* Lawrence County EMA, Mayor & Council  
*Priority:* Low  
*Lead Responsibility:* Lawrence County EMA  
*Estimated Cost:* Undetermined  
*Funding Sources:* AEMA, FMA, PDM Local Non-Profits  
*Mitigating Hazards:* Tornadoes, Flooding, Severe, Storms, Hurricanes, Winter Freezes, Earthquakes, Drought  
*Prior Actions:* Distribution of weather radios to critical facilities.  
*Status:* completed  
*Future Actions:* Develop NOAA weather radio public and private partners. Local companies can contribute to a fund to distribute NOAA weather radio's to low income and identified families and entities. Estimated timeframe for completion: 3-5 years



**Press & Media Mitigation Releases**

*Partners:* Lawrence County EMA, Mayor & Council  
*Priority:* Low  
*Lead Responsibility:* Council and Mayor, Lawrence County EMA  
*Estimated Cost:* No additional cost.  
*Funding Sources:* n/a  
*Mitigating Hazards:* Assists in mitigating all hazards.  
*Prior Actions:* No previous actions.  
*Status:* completed  
*Future Actions:* Continue in efforts to notify public regarding mitigation. Estimated timeframe for completion: 3-5 years

## TOWN OF TOWN CREEK MITIGATION STRATEGIES - NATURAL RESOURCE PROTECTION:



### Sediment & Erosion Control

*Partners:* Mayor & Council  
*Priority:* High  
*Lead Responsibility:* Planning Commission, County Engineer  
*Estimated Cost:* No additional Cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* Flooding & Landslides  
*Prior Actions:* No previous action.  
Status: not completed  
*Future Actions:* Clarify that additional erosion control methods should be put in place that go beyond the erosion caused by new construction. Estimated timeframe for completion: 1 to 3 years



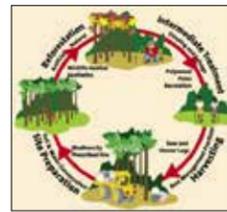
### Stream / River Corridor Restoration

*Partners:* Mayor & Council, Lawrence County EMA, Urban Forestry  
*Priority:* Low  
*Lead Responsibility:* Planning Commission, Mayor and Council, County Engineer  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* ADEM, AEMA, Local Funds, HUD, EPA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Municipal cleanup programs have occurred.  
Status: completed  
*Future Actions:* Evaluation of current stream and tributary inventory for future restoration. Estimated timeframe for completion: 1-3 years



### Watershed Management Programs

*Partners:* Lawrence County EMA, Mayor & Council, County Engineer, TVA  
*Priority:* Low  
*Lead Responsibility:* Undetermined  
*Estimated Cost:* Undetermined  
*Funding Sources:* TVA  
*Mitigating Hazards:* Flooding, Severe Storms, Hurricanes, Sinkholes, Landslides, Drought, Technical Hazards  
*Prior Actions:* No previous actions.  
Status: Not completed  
*Future Actions:* Clarify need for expansion of local watershed management in Town Creek and potential for cooperating with a county wide initiative. Estimated timeframe for completion: 3 to 5 years



### Forest and Vegetation Management

*Partners:* Alabama Forest Commission (AFC), AL Cooperative Extension Service  
*Priority:* Low  
*Lead Responsibility:* Mayor and Council, Planning Commission  
*Estimated Cost:* Not determined  
*Funding Sources:* Not determined  
*Mitigating Hazards:* Wildfires, Landslides, Sinkholes  
*Prior Actions:* Ongoing support of the AFC  
Status: not completed  
*Future Actions:* Continue to develop and promote best management practices for forests in conjunction with the AFC. This information needs to be further disseminated to local landowners by extension service providers. Estimated timeframe for completion: 3 to 5 years



### Wetland Restoration and Preservation

*Partners:* Mayor & Council, County Engineer  
*Priority:* Low  
*Lead Responsibility:* Mayor and Council, Planning Commission  
*Estimated Cost:* No additional cost  
*Funding Sources:* AEMA, ADECA, HMGP, PDM, FMA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* No previous action.  
Status: not completed  
*Future Actions:* Section 404 Permitting requires a permit from the Army Corps of Engineers when modifying a wetland area. Evaluation of existing wetlands within the city should be reevaluated and determined whether further action should be taken. Estimated timeframe for completion: 3-5 years



### Open Space Easements and Acquisition

*Partners:* Mayor & Council, Urban Forestry  
*Priority:* Low  
*Lead Responsibility:* Planning Commission, Mayor and Council  
*Estimated Cost:* Undetermined  
*Funding Sources:* Local and Regional Land Trusts  
*Mitigating Hazards:* Flooding, Hurricanes, Wildfires, Landslides, Sinkholes  
*Prior Actions:* No previous action.  
Status: not completed  
*Future Actions:* Establish open space and passive recreation as a priority within recreational planning as a hazard mitigation strategy. This strategy should be weighed against the available density requirements within the town. Estimated timeframe for completion: 3 to 5 years



### Urban Forestry Planning Programs

*Partners:* Mayor & Council, County Engineer  
*Priority:* Medium  
*Lead Responsibility:* Planning Commission, Mayor and Council  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Need to be clarified  
*Mitigating Hazards:* Flooding, Drought, Heat and Wildfires  
*Prior Actions:* No previous actions.  
Status: not completed  
*Future Actions:* Clarification for future actions for mitigating specific natural hazards needs to be completed. Estimated timeframe for completion: 2 to 4 years



### Media Mitigation Training Sessions

*Partners:* County Engineer, Mayor & Council, Planning Department  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA, Mayor and Council  
*Estimated Cost:* No additional cost  
*Funding Sources:* n/a  
*Mitigating Hazards:* May mitigate all hazards.  
*Prior Actions:* No previous action.  
Status: completed  
*Future Actions:* Establish biannual training sessions for local and regional media to be briefed on hazard mitigation and natural disasters. Combining this event with other training sessions or adjacent EMA entities may be of benefit. Estimated timeframe for completion: 1-3 years

**TOWN OF TOWN CREEK  
MITIGATION STRATEGIES - NATURAL  
RESOURCE PROTECTION (CONT'D):**



**Water Resource Conservation Programs**

*Partners:* Mayor and Council, TVA, National Resource Conservation Service (NRCS),  
*Priority:* Low  
*Lead Responsibility:* Lawrence County EMA, Mayor and Council  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* NRCS, EPA, ADEM, FEMA  
*Mitigating Hazards:* Flooding, Drought, Heat, Wildfires, Dam/Levee Failure, Landslides, Sinkholes, Technical Hazards.  
*Prior Actions:* Continued efforts from last plan update  
Status: not completed  
*Future Actions:* Host a roundtable discussion involving sustainable methods of development for the jurisdiction. This should include discussion on water resource protection headed by the NRCS. Estimated timeframe for completion: 3 to 5 years

**TOWN OF TOWN CREEK  
MITIGATION STRATEGIES -  
STRUCTURAL PROJECTS:**



**Storm Water Flood Walls**

*Partners:* Mayor & Council, Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* Mayor and Council, Planning Commission  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* Not determined use on an emergency basis.  
*Mitigating Hazards:* Flooding  
*Prior Actions:* No previous action  
Status: not completed  
*Future Actions:* Evaluate and identify specific areas that need storm water flood walls that will redirect storm water from undesirable areas until long term mitigation projects can be undertaken. Estimated timeframe for completion: 3 to 5 years



**Storm Water Diversion Culverts**

*Partners:* ALDOT, Mayor & Council  
*Priority:* High  
*Lead Responsibility:* County Engineer, Mayor and Council  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Local Match, ADEM, AEMA, FEMA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* Continued efforts from previous plan update.  
Status: completed  
*Future Actions:* Identify and document specific areas needing storm water diversion culverts and those that are in need of repair. Each should be mapped for planning purposes and placed in a long range implementation list. Estimated timeframe for completion: 1-3 years



**Seawalls**

*Partners:* Mayor & Council, Lawrence County EMA  
*Priority:* Low  
*Lead Responsibility:* Mayor and Council, County Engineer  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Local, TVA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* No previous actions.  
Status: not completed  
*Future Actions:* Identify and document specific areas needing seawalls. Each should be mapped for planning purposes and placed in a long range implementation list. Estimated timeframe for completion: 3-5 years



**Retaining Walls**

*Partners:* Mayor & Council  
*Priority:* Low  
*Lead Responsibility:* County Engineer, Mayor and Council  
*Estimated Cost:* Not determined at this time  
*Funding Sources:* Local Funds  
*Mitigating Hazards:* Landslides, Technical Hazards  
*Prior Actions:* No previous action.  
Status: not completed  
*Future Actions:* Continue to identify maintenance areas and needed retaining walls as they arise. Estimated timeframe for completion: 3 to 5 years



**Neighborhood & Community Safe Rooms**

*Partners:* Mayor & Council, Lawrence County EMA, Local Churches and Community Centers.  
*Priority:* High  
*Lead Responsibility:* Lawrence County EMA, Mayor and Council, Planning Commission  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ALEMA, PDM, ADECA, Local Funds  
*Mitigating Hazards:* All hazards may be mitigated.  
*Prior Actions:* Continued efforts from previous plan update.  
Status: completed  
*Future Actions:* Clarify any future needs for additional safe centers within the town and update existing safe centers. Attempt to use multi-use facilities that are occupied at other times than during storm periods. Estimated timeframe for completion: 1-3 years

## TOWN OF TOWN CREEK MITIGATION STRATEGIES - STRUCTURAL PROJECTS (CONT'D):



### Storm Sewer System Construction

*Partners:* Mayor & Council, County Engineer,  
*Priority:* High  
*Lead Responsibility:* Mayor and Council  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* ADECA, ADEM, PDM, AEMA  
*Mitigating Hazards:* Flooding, Landslides, Sinkhole, Technical Hazards  
*Prior Actions:* No previous action.  
*Status:* not completed  
*Future Actions:* Evaluate current repetitive flood areas and determine whether storm sewer improvements will assist in reducing the flood damage. This should be evaluated in conjunction with real-estate purchase programs as a cost benefit analysis. Estimated timeframe for completion: 1 to 3 years



### Ground Stabilization

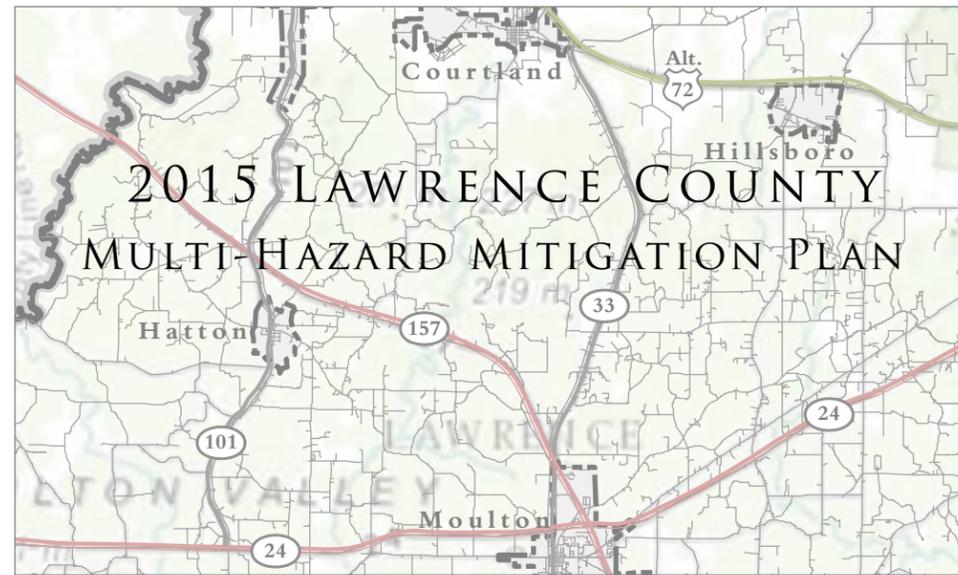
*Partners:* Mayor & Council, Lawrence County EMA  
*Priority:* Medium  
*Lead Responsibility:* Mayor and Council, County Engineer  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Local  
*Mitigating Hazards:* Most all identified hazards.  
*Prior Actions:* No previous actions.  
*Status:* not completed  
*Future Actions:* Identify areas within the planning area where soils are unstable and not favorable to new construction without utilizing soil stabilization methods prior to construction. Estimated timeframe for completion: 2 to 4 years



### Reservoir Construction

*Partners:* TVA, Lawrence County EMA, Mayor and Council  
*Priority:* Low  
*Lead Responsibility:* TVA, Lawrence County EMA, Mayor and Council, Planning Commission  
*Estimated Cost:* Not determined at this time.  
*Funding Sources:* Local, FEMA, TVA  
*Mitigating Hazards:* Flooding  
*Prior Actions:* No previous actions.  
*Status:* not completed  
*Future Actions:* On-going communication and coordination between partners to determine if reservoir construction is needed. Estimated timeframe for completion: 3 to 5 years





Section **H**  
Plan Maintenance

**44 CFR § 201.6 Local Mitigation Plans: Local Mitigation Plans**

(c) Plan content. The plan shall include the following:

(4) A plan maintenance process that includes:

(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

(iii) Discussion on how the community will continue public participation in the plan maintenance process.

**PLAN MAINTENANCE**

**PM.1 PLAN MONITORING & IMPLEMENTATION**

**PM.2 ACTIVE PLANNING & MITIGATION INCORPORATION**

**PM.3 MULTI-JURISDICTIONAL PUBLIC INVOLVEMENT**

*PM.1 Plan Monitoring & Implementation*

This section outlines the continuous cycle for monitoring, evaluating and updating the Lawrence County Multi-Jurisdictional Hazard Mitigation Plan. It also outlines the process for incorporating mitigation strategies into other planning activities and methods for continuing public involvement. This process ensures an active and relevant hazard mitigation planning process.

The Policy Committee will oversee plan maintenance during the five-year framework. The Lawrence County EMA staff will continue to serve as the plan facilitator. The Lawrence County EMA is responsible for hosting quarterly scheduled meetings, assigning specific project tasks for implementing mitigation strategies and for monitoring and updating the mitigation efforts put forth by the policy committee members. The local EMA also serves as the Policy Committee’s liaison to entities assigned implementation responsibilities. Additional Policy Committee members may be nominated by the - Lawrence EMA Director and then approved by the entire committee

With adoption of this plan, the Policy Committee, along with all participating jurisdictions and agencies, and led by the Lawrence County EMA, agree to:

- Policy Committee members will be contacted thirty days in advance for meeting notification. If unable to attend a meeting, committee members will be contacted by phone calls and personal visits necessary.
- In the event of an unexpected disaster emergency, the mitigation plan will be updated to include measures to address the event. Updates are the responsibility of the Lawrence County EMA.
- A list of active and completed mitigation projects will be reviewed at each meeting.

- Previous implemented mitigation actions will be evaluated for effectiveness.
- Any modifications and changes in land use patterns and new development trends will be addressed at the meeting and then updated in the planning document.
- Modifications to the risk assessment and/or the risk vulnerability will be identified and updated in the plan.
- Future mitigation activities should be discussed and any new projects will be adopted and signed by resolution by the policy committee.

The Lawrence County EMA will schedule policy committee meetings at a time and location convenient for its members. In the event that the quarterly reviews require modifications to the plan, the Policy Committee will oversee and approve all revisions to the planning document. The Policy Committee will then submit all revisions for adoption by each participating jurisdiction. A copy of the plan revisions will be posted on the EMA website as well as distributed to all participating jurisdictions for insertion into their mitigation document.

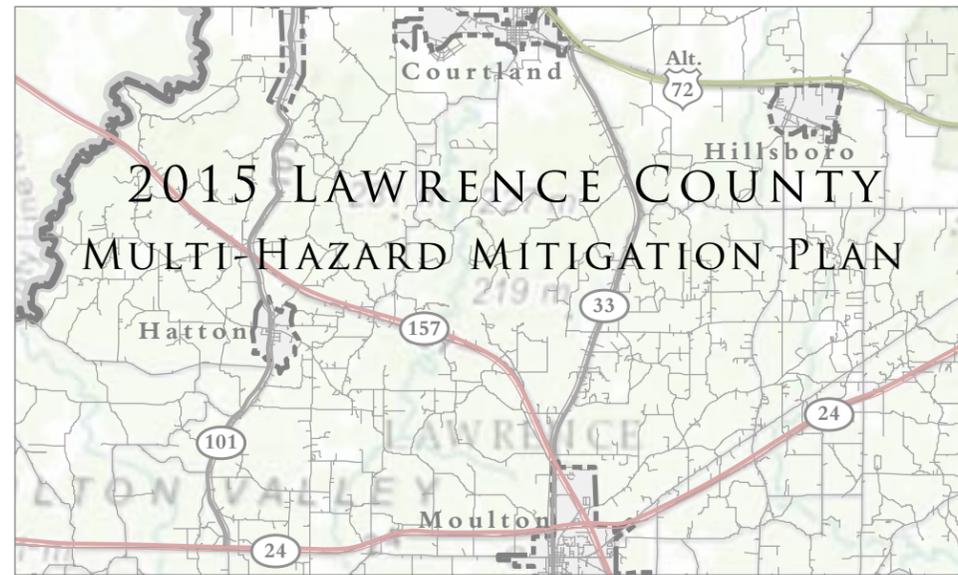
At the end of the five-year planning cycle, the Policy Committee will oversee the update to the plan. This update must follow the local mitigation plan guidelines as defined in this document and within the Code of Federal Regulations. The updated document will then be submitted for review and approval by the AEMA and FEMA.

*PM.2 Active Planning & Mitigation Incorporation*

The Lawrence County Multi-Jurisdictional Hazard Mitigation Plan is adopted as a separate but equal document to the Lawrence County Emergency Operations Plan. This plan is administered through the local EMA. Upon approval by AEMA and FEMA, the plan will be adopted by each of the participating jurisdictions within the planning study area. This plan supplements the Lawrence County Emergency Operations Plan as well as the Lawrence County Transportation Plan for Hazardous Incident Response. Each governmental entity is responsible for implementing the identified mitigation strategies identified in the previous section. Implementation will be based on community priorities, available funding, staff capabilities and technical expertise.

*PM.3 Multi-Jurisdictional Public Involvement*

Ongoing public participation, review, and comment are a critical part of maintaining an effective and useful hazard mitigation plan. To ensure the success of the plan, there will be ongoing public outreach and comment periods within the five-year planning cycle. A hard copy of the plan will be available at appropriate entities as well as via individual request and on the web. Public meetings will be held when significant modifications to the plan are required or requested by the Policy Committee.



Section I  
Appendices



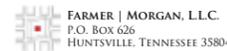
# STAKEHOLDER MEETING - 7-8-14

## TOWN CREEK CITY HALL

Evidence of Public Involvement:

- Advertisement Flyer (posted in public offices and on web)
- Agenda for Policy Committee Meetings (sent via email to participants)
- Sign-In Sheets (distributed at meetings)
- Public Notice Advertisement (posted in regional newspaper)
- Stakeholder Meeting Hazard Identification sheet

Name	Entity/Agency	Phone	E-Mail
WILL HARGROVE	FARMER   MORGAN	(256) 777-6225	whargrove@farmermorgan.com
Thomas Whitten	TCFD	256-487-2093	whitten.thomas@tcfd.com
Donna Whitten	TCFD	256-702-7640	whitten.thomas@tcfd.com
Mike Parker	Town Creek City Hall	256-685-3344	mikeparker0031@tcfd.com
Steve Ball	Resident - Town Creek	256 685 3055	towncreekindustries@gmail.com
Johnny Cantrell	L.C. EMA	256 214 1660	jcantrel@lawcoema.com
William C "Bill" King	Lawson Co. Retired Educator	256 714 5898	wcking111@gmail.com



LAWRENCE COUNTY MULTI-HAZARD MITIGATION PLAN  
STAKEHOLDER MEETING HAZARD IDENTIFICATION

NAME OF JURISDICTION: Town Creek  
NAME OF RESPONDENT: Mike Parker

Hazard Type	Possible	Most Likely
Avalanche		
Dam/Levee Failure		X
Drought		X
Earthquake	X	
Expansive Soils	X	
Extreme Heat		X
Flood		X
Hailstorm		X
Hurricane	X	
Land Subsidence		X
Severe Winter Storm Freeze		X
Tornado/Severe Storm		X
Wildfire		X
Windstorm		X
Other		
Other	<u>Rail Road</u>	X
Other	<u>Wastewater Plant</u>	X
Other		

**Lawrence County Hazard Mitigation Planning Policy Committee**  
June 18, 2014  
2:00 p.m. – 3:15 p.m.

Meeting called by Lawrence County EMA

**Attendees:** Policy committee members consist of mayors and administrators within Lawrence County  
**Please read:** The 2010 Multi-Jurisdictional Hazard Mitigation Plan  
**Please bring:** Policy member copy of the 2010 Multi-Jurisdictional Hazard Mitigation Plan

**2:00 p.m. – 2:05 p.m. Introduction & Review of Role of the Policy Committee.**  
Welcome: Johnny Cantrell, Lawrence County EMA  
Farmer | Morgan, LLC  
\*Review of hazard Mitigation Policy Committee Role  
\*Previously identified hazards in the community 2010  
\*Hazard identification worksheet  
\*Priority of hazard mitigation issues  
EMA Board Room

**2:05 p.m. – 2:20 p.m. Review of Lawrence County Multi-Hazard Mitigation Planning**  
Farmer | Morgan, LLC  
\*Components and requirements of plan update  
EMA Board Room

**2:20 p.m. – 2:50 p.m. Review of Planning Components for the 2010 Plan**  
Farmer | Morgan, LLC / All Participants  
\*Tables and chapters included in the 2010 plan  
\*Additional critical facilities within Lawrence County  
EMA Board Room

**2:50 p.m. – 3:15 p.m. Schedule of Plan Development and Citizen Input Meetings**  
Farmer | Morgan, LLC / All Participants  
\*Review of public input meeting locations and times  
EMA Board Room

**Additional Instructions:**  
Identified hazards include: Dam/Levee Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flood, Hailstorm, Hurricane, Land Subsidence (sink hole), Severe Winter Storm Freeze, Tornado, Severe Storm, Wildfire, Windstorms and Manmade Hazards.

## Lawrence County Emergency Management Agency Stake Holder Meeting Dates

Stake Holder Involvement meetings are being held throughout Lawrence County in order to involve citizens, leadership, agencies, industry and non-profits in the identification of natural, technical and human made hazards. In addition, your input is needed in determining the best method for mitigating local hazards in your community. All meetings are held at 6:00 p.m.

**Stake Holder Meeting Date & Location:**

- Lawrence County EMA Office (555 Walnut Street, Moulton, AL) : 7 July 2014
- Town Creek City Hall (1600 Main Street, Town Creek, AL) : 8 July 2014
- Hillsboro Fire Hall (17577 AL Highway, Hillsboro, AL) : 9 July 2014

Public Notice

This is a notice of Public Hearing for input into the Lawrence County Multi-Hazard Mitigation Plan for Lawrence County. This plan is required by the Disaster Mitigation Act of 2000. The plan includes the identification of natural hazards, the probability of occurrence, the potential impact both economically and/or the potential for the loss of life, the methods to eliminate or reduce the impact, and methods to warn and respond to the incidents. The plan addresses the following natural hazards: flooding, severe storms, tornadoes, winter storms, wildfires, earthquakes, landslides, drought, and dam/levee failure. The public may provide input between the hours of 6:00 to 8:00 p.m. on: July 7, 2014, at the Lawrence County EMA office (555 Walnut St, Moulton, AL); July 8, 2014, at Town Creek City Hall (1600 Main St, Town Creek, AL); and July 9, 2014, at Hillsboro Fire Hall (17577 Alabama Hwy, Hillsboro, AL)



# POLICY COMMITTEE MEETINGS - 6-18-14 LAWRENCE COUNTY EMA BOARD ROOM

## Evidence of Public Involvement:

- Advertisement Flyer (posted in public offices and on web)
- Agenda for Policy Committee Meetings (sent via email to participants)
- Sign-In Sheets (distributed at meetings)
- Public Notice Advertisement (posted in regional newspaper)
- Stakeholder Meeting Hazard Identification sheet

Lawrence County Multi-Hazard Mitigation Policy Committee Meeting No. 1 6/18/2014			
Name	Entity/Agency	Phone	E-Mail
Benjamin B Farmer	Farmer-Morgan, LLC	334-444-2893	bfarmer@farmermorgan.com
Ronald S Jones	Town of N. Courtland	256-476-5370	ronald.jones@northcourtland.com
Joshua Horton	Town of Town Creek	256-685-3344	jhorton@towncreek.net
Danny Wilson	Law Co. #11 FEMA	256-974-7641	dwilson@lawcoema.com
Robby Cantrell	NARCOG	256-375-4515	robby.cantrell@adss.alabama.gov
Mose Jones Jr	Lawrence County Commissioner	256-810-6546	mose.jones@lawcoema.com
Robby Cantrell	Lawrence County Commissioner	256-375-4515	robby.cantrell@adss.alabama.gov
Kevin Collier	Mayor of Moulton	256-965-2204	kevin.collier@moultonal.com
William J. Kelly	City of Moulton	256-965-2204	jkelly@cityofmoulton.com
Ryan Kelly	City of Moulton	256-965-2204	rkelly@cityofmoulton.com
Prentis Davis	Lawrence County Commissioner	256-810-6546	prentis.davis@lawcoema.com
Johnny Cantrell	L.C. EMA	256-974-7641	jcantrell@lawcoema.com



## LAWRENCE COUNTY MULTI-HAZARD MITIGATION PLAN POLICY COMMITTEE HAZARD IDENTIFICATION

NAME OF JURISDICTION: City of Moulton

NAME OF RESPONDENT: Ryan Kelly

Hazard Type	Possible	Most Likely
Avalanche		
Dam/Levee Failure (Failure of levee or other water control structure)	X	
Drought		X
Earthquake (Failure of pipe, bridge, or other structure)	X	
Expansive Soils	X	
Extreme Heat		X
Flood		X
Hailstorm		X
Hurricane (Effects of wind, rain, storm surge, and coastal flooding)	X	
Land Subsidence	X	
Severe Winter Storm Freeze	X	
Tornado/Severe Storm		X
Wildfire	X	
Windstorm		X
Other		

PLANNING • DESIGN • CONSTRUCTION

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\*Additional critical facilities within Lawrence County

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Farmer | Morgan, LLC / All Participants  
EMA Board Room  
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Images: Multi-Hazard Mitigation Stakeholder Meeting PowerPoint Presentation Slides (Presentation, 2014: Multi-Hazard Mitigation Planning Team)



**MULTI-HAZARD MITIGATION POLICY COMMITTEE**

July 7, 2014 | Lawrence County Multi-Hazard Mitigation Plan 2015



### Agenda

- Discussion of Policy Committee Members & The Planning Team
- Role of the Policy Committee
- Basis for Hazard Mitigation Planning
- Review of Lawrence County Multi-Hazard Mitigation Planning (MHMP) Components & Requirements
- Review of the 2010 Multi-Hazard Mitigation Plan
- Hazard Mitigation Survey & Questionnaire
- Additional Critical Facilities within Lawrence County
- Schedule of Policy and Citizen Input Meetings

### Introduction of Policy Committee & Planning Team

### Basis for Hazard Mitigation Planning

- Robert T. Stafford Disaster Relief and Emergency Assistance Act, Title 44 Code of Federal Regulations (CFR)
- What is Natural Hazard & Man Made Hazard Mitigation
- Sources for Mitigation Information

Robert T. Stafford Disaster Relief and Emergency Assistance Act, Title 44 Code of Federal Regulations (CFR)

The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Title 44 CFR, requires that all states and local governments evaluate and mitigate all natural hazards as a condition of receiving Federal disaster assistance. **FEMA will not provide any assistance to any entities that do not have an approved Natural Hazard Mitigation Plan.**

### What is Natural Hazard & Man Made Hazard Mitigation

Natural Hazard Mitigation Planning is the process of reducing or eliminating the loss of life and property damage resulting from natural hazards such as floods, tornadoes, earthquakes and other events. Man Made Hazard Mitigation is the process of reducing or eliminating the loss of life and property damage resulting from man made hazards.

- ### Four Phases of Mitigation Planning
- Organization of Resources
  - Assessing the Risks
  - Developing a Mitigation Plan
  - Implementation and Monitoring of the Plan

### Sources for Successful Mitigation

From the beginning, a community should focus on the resources needed for a successful mitigation planning process. Identification and organization of interested members of the community, in conjunction with those with technical expertise, is critical to the success of the plan. The information gathered by the sources and the planning team will provide the tools necessary for a comprehensive plan.

Images: Multi-Hazard Mitigation Stakeholder Meeting PowerPoint Presentation Slides (Presentation, 2014: Multi-Hazard Mitigation Planning Team)

### Role of the Lawrence County HMPL Policy Committee

The policy committee is composed of local government leadership or their representative. A local government is defined "as any county, municipality, public authority, school district, special district . . . ." 44 CFR §201.2

The policy committee is to guide the planning, development and implementation of the Lawrence County Multi-Hazard Mitigation Plan.

## Planning & the Policy Committee

- The policy committee should guide the planning process and the appropriate public and governmental involvement in order to develop and then achieve the plan.
- The policy committee should assist the planning team in development of the plans meeting schedule, public involvement and adoption by resolution of each jurisdiction.

## Implementation of the Plan Can Include

- Comprehensive Planning & Smart Growth
- Land Use Planning by Ordinance
- Five Year Capital Improvement Plans for Schools and Municipalities
- Subdivision Regulations
- Flood Plain Management Program
- Active Participation in the NFIP
- Public Right-Of-Way Maintenance Regulations
- Critical Facilities Assessments
- Update & Maintain GIS Systems
- Annually Inspect Public Buildings, Dams, and Bridges for Structural Safety

## Plan Update Requirements

- A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within the five (5) years in order to continue to be eligible for mitigation project grant funding. 44 CFR §201.6(d)(3)

## Development & the Policy Committee

- The policy committee should guide the content and identification of potential and actual hazards. This includes identifying existing structures in hazardous areas, which include new development, redeveloped areas or structures located in annexed areas.
- Potential impacts of future land development, including areas that may be annexed in the future.

## Project Grant Funds Affected by the Plan

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)

## Implementation & the Policy Committee

- The policy committee should oversee the implementation of the plans goals to reduce long-term vulnerabilities to the identified hazards.
- This includes potential impacts of future land development, including areas that may be annexed in the future.
- Establishing & enforcing safety issues as well as structural inspections.

### Table of Contents for the Lawrence County Multi-Hazard Mitigation Plan

- Executive Summary
- Chapter 1, Introduction
- Chapter 2, Prerequisites
- Chapter 3, Community Profile
- Chapter 4, Planning Process
- Chapter 5, Risk Assessment
- Chapter 6, Mitigation Strategy
- Chapter 7, Plan Maintenance & Updates
- Appendices

### 2015 Multi-Hazard Plan Components

The following components are required by FEMA as identified in the Local Multi-Hazard Mitigation Planning Guidance and the Local Mitigation Plan regulation found at 44 CFR Part 201.

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## Executive Summary

- This chapter summarizes the entire document and the planning process, public involvement as well as the overall risks from natural and manmade hazards.

## Introduction

- Background
- Authority for Planning
- Funding for Development of Plan
- Eligibility of FEMA Hazard Mitigation Assistance Grants
- Lawrence County Multi-Hazard Mitigation Plan 2010 Review
- 2015 Lawrence County Multi-Hazard Mitigation Plan

## Prerequisites

- Federal Prerequisites
- Plan Approval Required for Mitigation Grant Eligibility
- Multi-Jurisdictional Participation
- Multi-Jurisdictional Plan Adoption

## Community Profiles

- Federal Advisory Guidance for Community Profiles
- Geographic Setting & History
- Government
- Demographics
- Economy
- Utilities
- Media
- Transportation
- Climate

## Planning Process

- Federal Requirements for the Planning Process
- Summary of Plan Updates
- Opportunities for Public Comment on the Plan
- Opportunities for Involvement in the Planning Process
- Review & Incorporation of Applicable Plans & Documents
- How the Plan Was Developed
- Who Was Involved in the Planning Process
- How the Public Was Involved in the Planning Process
- The Plan Review and Update Process

## Risk Assessment

- Federal Requirements for the Risk Assessment
- Identify & Prioritize Natural Hazards
- Identify & Prioritize Man Made Hazards
- Profile/Description of Each Hazard and its Elements
- Assessing Vulnerability: Overview
- Assessing Vulnerability: Identifying Structures
- Assessing Vulnerability: Addressing Repetitive Loss Properties
- Assessing Vulnerability: Estimating Potential Losses
- Assessing Vulnerability: Analyzing Development Trends
- NFIP & Repetitive Flood Damaged Properties
- Strategy for Community and Municipal Compliance with NFIP
- Integration of Community Rating System (CRS) in the Hazard Plan

## Mitigation Strategy

- Federal Requirements for the Mitigation Strategy
- Summary of Plan Updates
- Goals for Hazard Mitigation
- Identification and Analysis of Mitigation Actions & Projects
- Participation & Compliance with the NFIP
- Implementation of Mitigation Actions
- Multi-Jurisdictional Community Mitigation Action Programs

## Plan Maintenance & Updates

- Federal Requirements for the Plan Maintenance & Updates
- Summary of Plan Updates
- Monitoring, Evaluating and Updating the Mitigation Plan
- Incorporation of the Mitigation Plan into Other Planning Mechanisms
- Continuing Public Participation in the Plan Maintenance Process

## Appendices

- Federal Requirements for Local Mitigation Plans
- Community Mitigation Capabilities
- 2015 Plan Implementation Status
- HMPC Hazard Identification and Ratings
- Hazard Profiles
- Alternative Mitigation Measures
- Committee Meeting Documentation
- Community Involvement Documentation
- Multi-Jurisdictional Participation Activities
- Adopting Resolutions

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## Types of Natural Hazards

- Atmospheric Hazards
- Geologic Hazards
- Hydrologic Hazards
- Seismic Hazards
- Other Natural Hazards
- Human Made Hazards
- Technological Hazards

## Atmospheric Hazards

- Tropical Cyclones
- Thunderstorms and Lightning
- Tornadoes
- Windstorms
- Hailstorms
- Snow Avalanches
- Severe Winter Storms
- Extreme Summer Weather

## Geologic Hazards

- Landslides
- Land Subsidence
- Expansive Soils

## Hydrologic Hazards

- Floods
- Storm Surges
- Coastal Erosion
- Droughts

## Seismic Hazards

- Earthquakes
- Tsunami Events

## Other Natural Hazards

- Volcanic Hazards
- Wildfire Hazards

## Human Made Hazards

- Explosion
- Chemical
- Biological
- Radiological
- Hazardous Material Release

## Technological Hazards

- Dam Failure
- Fire
- Hazardous Materials
- Nuclear Accidents



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## Mitigation Strategies

Multi-hazard mitigation strategies must account for a broad range of hazards. Major goals and objectives of multi-hazard mitigation strategies are to: protect structures, people, and ecological systems from hazard risks; manage land use and growth so as to guide development to safe locations; plan public expenditures to reinforce hazard mitigation goals; and provide public information on hazard locations, mitigation techniques and evacuation routes.

## How Do We Mitigate Our Local Hazards

## Mitigation Strategies 1 of 4

- Protect structures from hazards risks.
- Strengthen and configure buildings to resist hazards impact.
- Relocate or elevate buildings in hazards areas.
- Protect people from hazards risks.
- Provide safe havens and evacuation routes for at-risk populations

## Mitigation Strategies Continued 2 of 4

- Design buildings and public spaces in accordance with security standards.
- Protect ecological systems from hazards risks.
- Conserve protective environmental features (e.g. vegetation, slopes).
- Protect food and water supplies from hazard threats.

## Mitigation Strategies Continued 3 of 4

- Manage land use and growth for safe development practices.
- Use future land-use plans and growth management programs to guide growth to safe locations.
- Incorporate hazard mitigation standards in development and building regulations.
- Plan public expenditures to reinforce mitigation goals.

## Mitigation Strategies Continued 4 of 4

- Design and locate infrastructure to be resilient to multi-hazards.
- Acquire hazard areas land for public open space.
- Provide public information on multi-hazard mitigation.
- Disseminate hazards maps and guidance on mitigation techniques.
- Publicize evacuation routes and shelter locations.

## Compatibility of Mitigation Techniques

The compatibility of mitigation techniques must be assessed in light of local area and site conditions. Experience from past disasters can shed light on the effects of local conditions on potential effectiveness of various multi-hazards mitigation strategies.

## Review of the 2010 Multi-Hazard Mitigation Plan

- Components of the 2010 Plan
- Risk Assessment of the 2010 Plan

## 2010 Plan Components

- General Review of the 2010 Planning Document in pdf form

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### Hazard Mitigation Survey & Questionnaire

- Review of Possible Hazards & Hazards Survey by Handout

### Additional Critical Facilities in Lawrence County

- Review Handout for Lawrence County Critical Facilities

### Policy and Public Involvement Schedule

- June 18, 2014 Policy Committee Meets, 2:00 p.m.
- July 7, 2014 Moulton Area Public Involvement Meeting, 6:00 p.m.
- July 8, 2014 Town Creek Area Public Involvement Meeting, 6:00 p.m.
- July 9, 2014 Hillsboro Area Public Involvement Meeting, 6:00 p.m.
- August 4, 2014 Policy Committee Meeting No. 2, 2:00 p.m.
- August 11, 2014 Receive final mitigation strategies sheet
- September 18, 2014 Draft Plan sent to Policy Committee by email.
- September 23, 2014 Policy Committee Meeting No. 3, 2:00 p.m.
- October 7, 2014 Citizen & Stakeholder distribution of draft plan to local gov.

