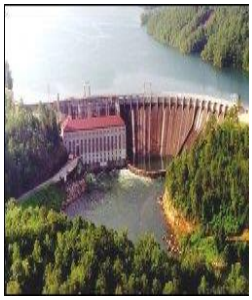
ELMORE COUNTY, ALABAMA

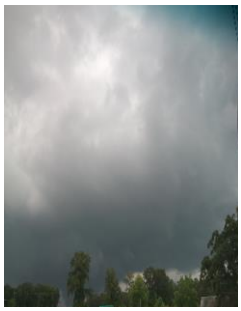
MULTI-JURISDICTIONAL

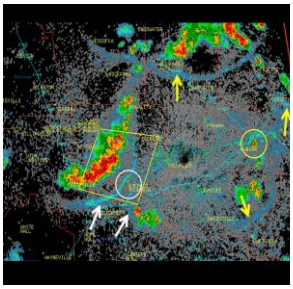
ALL-HAZARDS

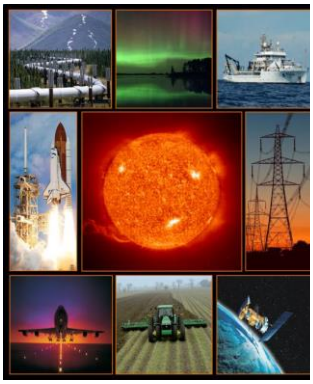
MITIGATION PLAN

DECEMBER 2014









Prepared By: Elmore County Emergency Management Agency

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Section 1. Executive Summary and Introduction to the Plan:

This section of the Plan provides both an executive summary and an overall introduction to the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*.

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What has been updated?

The 2010 *Elmore County Natural Hazard Mitigation Plan* was completely revised during the 2015 plan update process. For the update, the Plan underwent a *major* re-write, was completely restructured and reformatted, and was vastly broadened to include *all* hazards relative to Elmore County--natural, technological/accidental, and human-related (man-made)--thus warranting the new title: *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*.

Certain informational elements of the 2010 Plan were retained and carried forward into the 2015 plan update, like various maps, storm events data, census data, facilities, methodologies, strategies, action items, etc. All retained informational elements were refreshed and updated as appropriate and expanded where applicable. Numerous informational elements were added to the Plan to support the newly incorporated technological/accidental and human-related (man-made) threats and hazards, as well as additional natural hazards not previously covered, such as fog, sinkholes, and land subsidence.

Given the broad scope of changes resulting from this update, users are highly encouraged to read this plan "cover to cover," expecting numerous differences between the *2010* and *2015* editions. The scope of change contained herein extends far beyond the typical, minor, or expected changes one might see in a standard plan update.

The primary driving factors behind the complete "over-haul" of this Plan include:

- ✓ The desire to standardize its structure to more closely align it with that of the governing Final Rule (FR), thus improving its organization, cohesiveness, and flow;
- ✓ The desire to incorporate a number of threats and hazards not previously addressed in the Elmore County HMP; and
- ✓ The desire to more closely mirror the Alabama State Hazard Mitigation Plan, Updated April 2013.

1.1 Executive Summary Background

On October 30, 2000, the United States Congress passed the Disaster Mitigation Act of 2000, also known as DMA2K. A copy of the Act is included as **Appendix A**. Among its other features, DMA2K established a requirement that in order to remain eligible for federal disaster assistance and grant funds, localities must develop and adopt hazard mitigation plans as a condition of receiving mitigation project grants under the Pre-Disaster Mitigation (PDM) Program and the "post-disaster" Hazard Mitigation Grant Program (HMGP). On February 26, 2002 (updated October 1, 2002 and October 28, 2003), the Federal Emergency Management Agency (FEMA) published an Interim Final Rule (the Rule) that provided the guidance and regulations under which such plans must be developed. The Rule provides detailed descriptions of both the planning process that localities are required to observe, as well as the contents of the plan that emerges. The Final Rule (FR) is included as **Appendix B**.

Elmore County officially adopted the initial *Elmore County Natural Hazards Mitigation Plan* in response to the requirements of DMA2K and the Rule Section 201.6(a). FEMA also approved this plan. In addition Section 201.6(3) mandates that a county update its plan every five years "to reflect changes in development, progress in local mitigation efforts, and changes in priorities." This Plan update is in response to those requirements.

The initial *Elmore County Hazard Mitigation Plan* was adopted by the county and all municipalities and approved in September 2004. In December 2008, Elmore County in cooperation with its seven municipalities, began preparation of an update of the initial *Natural Hazards Mitigation Plan*. In preparing the updated plan, the county involved all appropriate county departments as needed, all municipalities, the Elmore County Board of Education, Tallassee City Board of Education, Elmore County Firefighters' Association, water authorities, and neighboring regional planning offices. In addition, the planning was coordinated with the related activities of other concerned units and agencies of government (municipal planning commissions, non-profits, and interest groups) and was developed under the guidance of the Elmore County officials. In addition, information and data were obtained from elected and appointed officials and representatives of law enforcement agencies, fire departments, public health departments, public works departments, engineering departments, private sector firms, and nonprofit organizations.

The City of Prattville, through cooperative agreement, is served by the Autauga County Emergency Management Agency. Through the agreement of the parties involved, the Autauga

County Emergency Management Agency addressed mitigation planning for the entire City of Prattville to include the portion of the city that is located in Elmore County. The City of Prattville is not referenced in this plan, but is referenced in the Autauga County Hazard Mitigation Plan. The City of Millbrook also is located in Elmore County and also in a portion of Autauga County. The Elmore County Emergency Management Agency worked with the City of Millbrook to incorporate all mitigation activities for the portion of the City of Millbrook that is located in Autauga County into the *Elmore County Natural Hazards Mitigation Plan (*now known as the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014)*. Likewise, portions of the City of Tallassee are located in both Elmore and Tallapoosa County's. Elmore County Emergency Management Agency worked with the City of Tallassee to incorporate all mitigation activities into the *Elmore County Natural Hazards Mitigation Plan (*now known as the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014)*.

The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan*'s *Goals and Objectives* have been implemented by various projects by each local jurisdiction. These activities have been carried out either individually or through the collective efforts of multiple jurisdictions. These mitigation activities (projects) have included:

- Education & Awareness Outreach Activities: Scores have been conducted throughout Elmore County for the general public, various schools, civic groups, faith-based organizations, private sector, businesses, first responder agencies, and other organizations.
- Training Exercises: Based on historical records, a total of 35 have been conducted in Elmore County to date, ranging from tabletops to full-scale exercises, completing 15 exercises from the date of the plan's last update.
- Individual Safe Rooms: Four (4) additional HMGP grant applications were approved, awarding funds for an additional 91 individual safe rooms to be installed, resulting in a total of 121 "FEMA funded" individual safe rooms installed in Elmore County. Currently, there are nearly 160 interested citizens on EMA's "Individual Safe Room Waitlist," pending notification of the availability of new HMGP funding for potential individual safe room applications.
- Community Safe Rooms: A total of four (4) additional HMGP grant applications were approved in Elmore County--three (3) for the Town of Elmore, resulting in the installation of three (3) 100-person community safe rooms, and one (1) for the City of Tallassee, in which the bid process is underway as of the writing of this update.
- Outdoor Warning Sirens - All-Hazards: A total of 63 sirens have been installed in the County to date, 21 under HMGP and 42 under other funding sources.
- Backup Power Generators: Two (2) HMGP grant applications were approved, awarding funds to procure backup power generation for three water treatment facilities in Elmore County.
- Polygon Warning System: Funding was awarded under the HMGP to procure an updated system that allows for "storm-based" vs. "county-based" warnings.
- *SWIFTReach Swift911* Emergency Alerting System: HMPG funding was awarded for an initial 3-year contract on this emergency alerting and notification system.
- Mobile Command Post: Purchased, equipped, maintained, and operational.
- Weather Radios: Single HMGP grant awarded for the purchase and delivery of 80 NOAA Weather Radios for county dispatch offices, hospitals, schools, nursing homes, fire stations, police stations, and city halls.

- First Responder Equipment: Funds awarded for the purchase of equipment to enhance the response capabilities of county law enforcement and fire service agencies.

1.2 Organization of the Plan

The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* is organized to parallel the structure provided in the Final Rule. The plan has a Table of Contents and nine sections:

Table of Contents
Section 1 Executive Summary and Introduction to the Plan
Section 2 Plan Approval, Adoption and Assurances
Section 3 County/Community Profiles
Section 4 The Planning Process
Section 5 Hazard Identification and Risk Assessment
Section 6 Mitigation Strategy
Section 7 Coordinating Local Planning
Section 8 Plan Maintenance
Section 9 List of Appendices
There are references to the Rule throughout the plan; where possible these provide specific section and subsection notations for the convenience of reviewers.

> The Plan's update reflects Elmore County's commitment to recognize, address, and mitigate the risks of natural disasters, acts of terrorism, and other manmade disasters, as mandated by the ***Post Katrina Emergency Management Reform Act of 2006***, which calls for a coordinated risk-based, all-hazards mitigation strategy. Therefore, this plan update expands beyond addressing certain natural hazards only and incorporates technological/accidental and human-caused threats/hazards into the Plan as well. Accordingly, the Plan name has been changed from the *Elmore County Natural Hazards Mitigation Plan* to the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* (the Plan).

1.3 Highlights of the Plan

The purpose of the Plan is to rationalize the process of identifying and implementing appropriate hazard mitigation actions located in Elmore County. The document includes a detailed characterization of hazards county-wide; a risk assessment that describes potential losses to physical assets, people and operations; a set of goals, objectives, strategies and actions that will guide Elmore County's mitigation activities, and a detailed plan for implementing and monitoring the required aspects of the Plan. Following are brief summaries of each section within the Plan.

1.3.1 Plan Approval, Adoption and Assurances (Section 2)

Section 2 describes the Plan approval and adoption process and provides assurances as required by the Rule. It also includes documents related to Plan adoption. The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* was adopted by the jurisdictions through the authority delegated to the Elmore County EMA and the Elmore County Commission. As noted elsewhere in the Plan (See: **Section 4**), the County Hazard Mitigation Planning Committee (HMPC), otherwise known as the Elmore County Multi-Agency Coordination (MAC)

Group, was provided a full draft copy of the Plan for review, comment and endorsement prior to adoption by the jurisdictions. The Elmore County EMA retains the comments and changes.

The Plan was approved by the Director of the Elmore County Emergency Management Agency, through authority delegated by the Elmore County Commission. Upon completion, this Plan update will be approved and adopted through the same mechanism as the 2005 & 2010 Plans.

1.3.2 County/Community Profiles (Section 3)

Deemed relevant and beneficial for local use, Elmore County and Community Profile information was retained and expanded in the Plan update. Formerly located in Section 2, **Section 3** of this updated plan contains information on the following topics: Geography and the Environment; History; Major Rivers; Climate; Minerals and Soils; Population and Demographics; Land and Development; Housing and Community Development; Employment and Industry; Education; and County/City/Town Profiles.

1.3.3 The Planning Process (Section 4)

Section 4 of the Plan is designed to more closely parallel the structure of the FR and includes a detailed description of the process and the individuals and agencies who were involved. The process used to develop the initial Plan was closely modeled on the State EMA Hazard Mitigation Plan and FEMA's "How-To" series for hazard mitigation planning. The ***Local Mitigation Planning Handbook, March 2013, Appendix A: Local Mitigation Plan Review Tool***, was used to determine the Plan's compliance with the regulatory requirements found in 44 CFR §201.6.

As the process of developing the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* began, the Elmore County Commission delegated responsibility for overseeing development of the plan, in conjunction with the Hazard Mitigation Planning Committee (HMPC), later known as the Multi-Agency Coordination (MAC) Group, to the Elmore County EMA. The Elmore County EMA, in coordination with the Committee, put together the HMPC that served as the core group responsible for all decisions about the planning process and content. Members of the HMPC/MAC Group met several times as a group, and in many cases, met on an individual basis during development phase to consider and approve/amend aspects of Plan. A list of the HMPC/MAC Group members and other agencies involved in the planning process is provided in **Appendix C, Figures 4.1 - 4.15 and Table 4.1.**

The Elmore County EMA developed a strategy for updating each section of the Plan under a very constricted schedule. This strategy was discussed by the HMPC/MAC Group at its first meeting. EMA led the update of all sections of the Plan. Subject matter experts on the HMPC/MAC Group were solicited for specific information regarding hazards, risks, capabilities and strategies. HMPC/MAC Group members were also asked to review mitigation strategies from the 2009 Plan for which they were responsible and asked to provide new actions that they may pursue in the future. Certain HMPC/MAC Group members also provided interim reviews of draft sections as appropriate throughout the update process. After all sections were completed and comments incorporated, the Plan was submitted to AEMA and the FEMA for review. Another meeting will be held following the FEMA approval of the plan pending adoption.

1.3.4 Hazard Identification and Risk Assessment (Section 5)

Section 5 includes a detailed description of the process that was used to identify, assess and prioritize Elmore County's natural, technological/accidental, and human-related (man-made) hazards/risks. The initial part of **Section 5.2** provides hazard profiles for 21 categories of natural, technological/accidental, and human-related (man-made) hazards. **Section 5.3** then describes a ranking system that was used to reduce the list of significant hazards to those that would be afforded a detailed risk assessment. **Section 5.5** provides detailed risk assessments for selected hazards, and **Section 5.6** follows with a summary of the jurisdictions that are most at risk from these hazards.

As part of the Plan update process, the committee re-evaluated its hazards based on new and current information and modified its risk assessments based on newly available data. The initial list of hazards was revised to reflect a more appropriate/applicable "*all-hazards" approach*, as mandated in the ***Post Katrina Emergency Management Reform Act of 2006***, and an improved understanding of the hazards and risks. These hazards/risks were then evaluated based on newly acquired data, and risk assessments were performed on the most threatening hazards/risks to incorporate into the current plan. Jurisdictions were then ranked based on their level of vulnerability and risk.

1.3.5 Mitigation Strategy (Section 6)

Section 6 is a description of the Elmore County's mitigation strategy, goals, actions and capabilities. Elmore County's hazard mitigation strategy is straightforward--Reduce risks through actions and policies that limit the effects of *all* identified hazards herein (not just natural hazards but now including identified technological/accidental and human-related ((mad-made)) hazards), upon the physical assets and citizens of the county.

In support of this general strategy, the HMPC/MAC Group and Elmore County EMA reviewed the previously adopted hazard mitigation goals from the 2005/2009 Plan updates. Those goals are as follows:

Goal 1. Increase Elmore County's capabilities in order to mitigate the effects of a natural hazard in the County.
Goal 2. Design, enhance, or amend County policies that will work to reduce the impact a natural hazard has on Elmore County.
Goal 3. Protect the County's most valuable assets and vulnerable populations through cost effective and feasible mitigation projects whenever financially possible.
Goal 4. Increase the public awareness of natural hazards in Elmore County in order to make the public a partner in hazard mitigation.
Goal 5. Ensure that future development in the County is as "hazard proof" as possible by contributing to the sustainability of the community.

In light of recent disasters that have impacted the county and moving from a natural-hazards-only to an *all-hazards* mitigation plan for the 2015 update, the HMPC/MAC Group determined that the current goals are still valid and would remain relatively unchanged, except for a revision in wording to reflect the new *all-hazards* mitigation planning approach. These newly revised goals are discussed in great detail in **Section 6**, but for the purpose of convenience, contrast and comparison, they're provided below:

Goal 1. Increase Elmore County's capabilities in order to mitigate the effects of all hazards --natural, technological, and human-related (man-made)--identified in the Plan, occurring in or impacting Elmore County.
Goal 2. Design, enhance, or amend County policies aimed at reducing the impact the identified hazards could have on Elmore County.
Goal 3. Protect the County's most valuable assets and vulnerable populations through cost effective and feasible mitigation activities and projects whenever financially possible.
Goal 4. Increase the public's awareness of all hazards in Elmore County in order to make the public a partner in hazard mitigation.
Goal 5. Ensure that future development in the County is as "hazard proof" as possible by contributing to the sustainability of the community.

Where applicable, the revised *all-hazards* wording has also been incorporated into the mitigation activities in Section 6 of the updated Plan, as well.

1.3.6 Coordinating Local Planning (Section 7)

Section 7 describes how Elmore County EMA provides assistance and guidance to local jurisdictions for developing their hazard mitigation strategies, actions items and goals and on how to incorporate those elements into the Elmore County Hazard Mitigation Plan. Elmore County EMA shows the local jurisdictions how information from the state and local plans is linked and integrated, and how the county prioritizes funding opportunities for local projects. EMA also works with each jurisdiction on the plan adoption process. This update discusses how the county facilitated the completion of the local plan, the current status of the local plan update process, and a summary of how the county has prioritized funding for local mitigation projects over the past five years.

1.3.7 Plan Maintenance (Section 8)

Section 8 describes how the Plan will be periodically evaluated and updated. The Rule requires that the County Hazard Mitigation Plan be updated and re-submitted to the Alabama EMA and the FEMA for re-approval every five years. In addition to meeting this requirement, Elmore County, under the direction of the Elmore County EMA, will review the plan annually, based on criteria described in **Section 8.2**. The criteria are:

1. The relevance and appropriateness of the plan goals and objectives in relation to current conditions;
2. The nature, scope and magnitude of hazard-related problems in the county, state and country;
3. The type and amount of resources available to implement the plan;
4. The current and projected capabilities of the assigned implementing agencies;
5. Relevant deadlines, priorities, and other consideration of the scarcity of available resources;
6. Plan implementation problems that have occurred or that may occur, such as technical, political, legal, social, or coordination issues;
7. The overall success of actions that have been implemented;
8. Progress on mitigation actions (including project closeouts) and/or new mitigation actions that the county is considering;
9. Changes in the composition of the Hazard Mitigation Committee (HMC)/Multi-Agency

Coordination (MAC) Group; and
10. Major changes to the multi-jurisdictional hazard mitigation plan

In addition, the Elmore County EMA may initiate the review process under any of the following conditions:

- After a major disaster declaration
- At the request of the Elmore County Commission or Alabama EMA (AEMA)
- When significant new risks or vulnerabilities are identified

Section 8.2 describes the process that Elmore County EMA will use to initiate and complete the periodic reviews and updates. It is expected that the HMPC/MAC Group will be re-convened periodically to consider any draft updates to the Plan that are identified and developed by EMA. The interim reviews may be relatively simple, but the five-year update is expected to comprise a comprehensive update and multi-stage process similar to the initial development of the Plan. Other parts of **Section 8** describe how the county will monitor mitigation activities and activities and measure progress toward achieving the goals that are described in **Section 6**.

1.3.8 Introduction to the Plan

Citizens, whether residing in, working in, visiting, or traversing Elmore County, have dealt with various natural, technological/accidental, and human-related (man-made) threats and hazards affecting the area, throughout its history. Various sources of historical documentation record many of those events including, but not limited to: EMA files & archived records—incident reports & photos; National Weather Service **(NWS)** and National Climatic Data Center **(NCDC)** events reports; other state and national-level databases; and media coverage, including print and on-line news reports. Documentation shows Elmore County has encountered a number of types of hazards first-hand over the years and is vulnerable/susceptible to several others.

The 2010 *Elmore County Natural Hazard Mitigation Plan* contains nine natural hazards: Flooding, Thunderstorms, Tornados, High Winds, Lightning, Wildfires, Drought and Heat Wave, Hurricanes/Tropical Storms, and Winter Storms. For the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* update, the following list of identified natural, technological, and human-related (man-made) threats and hazards is included in **Section 5**, Hazard Identification and Risk Assessment, of the *Plan*:

1. Thunderstorms/Severe Thunderstorms
2. Lightning
3. Hail
4. Tornadoes and High Wind Events
5. Flooding (includes Flash Flooding, River Flooding)
6. Hurricanes and Tropical Storms
7. Extreme Temperatures – Heat and Cold
8. Winter Storms
9. Drought
10. Wildfire
11. Landslides
12. Sinkholes and Land Subsidence
13. Earthquakes
14. Dam Failure

15. Dense Fog
16. Celestial Impact (Includes Space Weather)
17. Hazardous Materials
18. Transportation System Failures
19. Epidemiological/Public Health
20. Civil Unrest
21. Adversarial Threats (Includes: Terrorism, Radiological Dispersal Device/Nuclear Attack, Biological Attack-Non-Food, Biological/Chemical Food Contamination, Chemical Attack-Non-Food, Aircraft Accident/as Weapons, Explosive Devices, Armed Assault, Cyber Attack).

As Elmore County's population increases, the exposure to all of the above hazards creates even higher risk and greater vulnerability than was previously, historically experienced.

1.3.8.1 Summary of Plan Updates (Introduction)

1.1 Overview:

- Modifications to hazards addressed in the Plan—transitioned from natural hazards only to *all-hazards*, including technological/accidental and human-caused/related (man-made) hazards, as mandated in the *Post Katrina Emergency Management Reform Act of 2006*.
- Identified additional organizations and civic groups that were consulted in the plan developmental process.

1.3 Whom Does the Mitigation Plan Affect?

- The planning process was modified to address increased citizen input and involvement of other organizations.

1.5 Plan Methodology

- The planning process was modified to address increased citizen input and involvement of other organizations.

It is impossible to predict exactly when these disasters will occur or the extent to which they will affect Elmore County. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from emergencies and natural disasters.

1.3.8.2 Why Develop a Mitigation Plan?

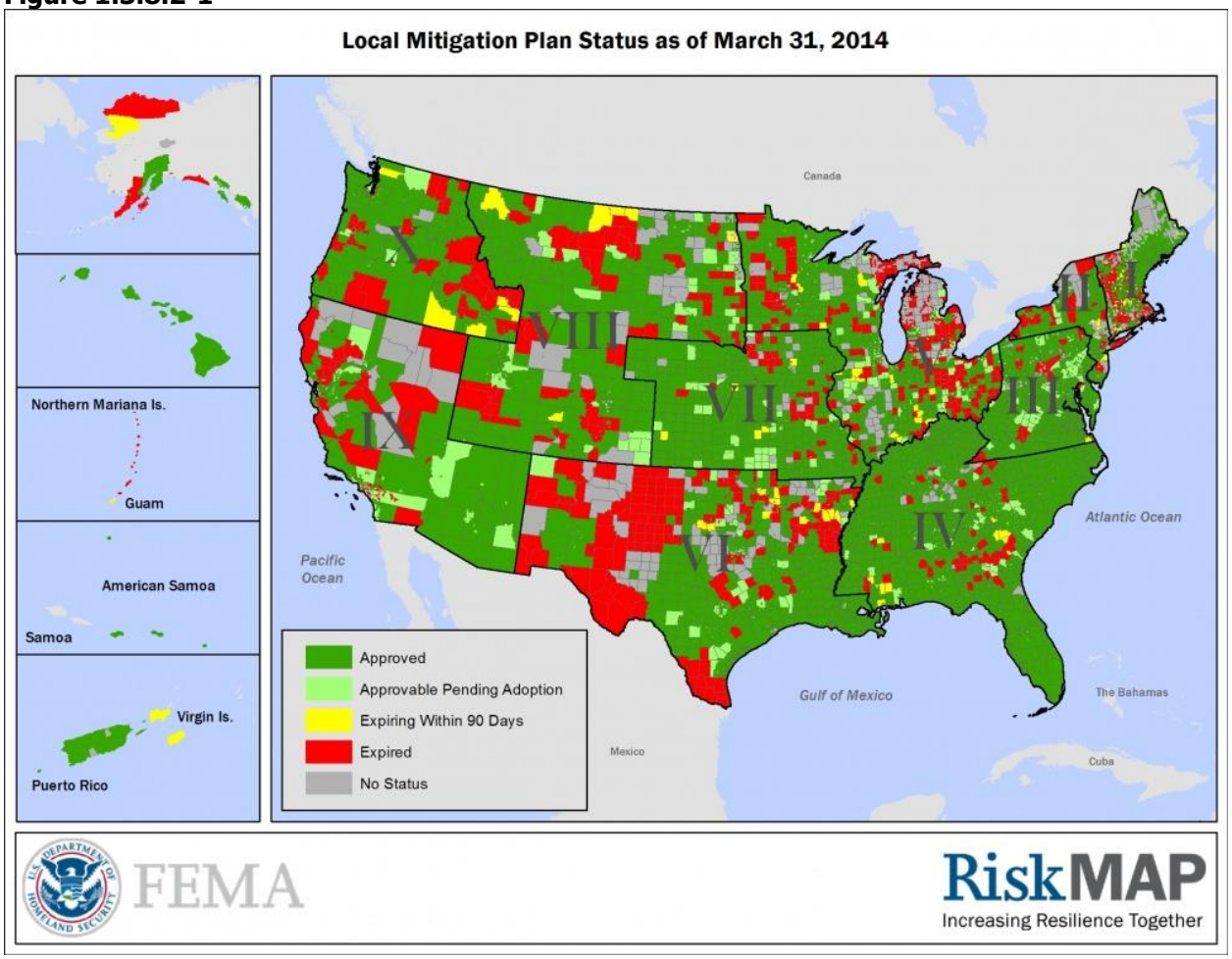
As stated in the ***Department of Homeland Security Office of Inspector General, FEMA's Progress in All-Hazards Mitigation, October 2009***, "According to FEMA regulations, the purpose of mitigation planning is for state, tribal, and local governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources.[5] Hazard mitigation planning is the process of identifying risk and vulnerabilities to hazards, followed by a strategy that will reduce or prevent the effects of a hazard from developing into a disaster. The final product is a mitigation plan that provides the framework for implementing mitigation projects that can also attract federal mitigation assistance and grants to mitigate the hazard. The following process for hazard mitigation planning is the same for natural, technological, and manmade hazards:

- Identify and organize (create a planning team with representatives from the public and private sectors, citizen groups, higher education institutions, and nonprofits);
- Assess risk (identify hazards and assess losses);
- Develop a mitigation plan (identify mitigation actions that will reduce the effects of the hazard and create a strategy to prioritize them);
- Implement mitigation actions, evaluate results, and update the mitigation plan accordingly."

[5] Code of Federal Regulations, Title 44, Part 201, §201.1, Purpose

Figure 1.3.8.2-1 below is FEMA's most current Risk Map showing the status of local mitigation plans as of March 31, 2014:

Figure 1.3.8.2-1



The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* provides a set of *action items* to reduce risk from all categories of hazards through education and outreach programs, the development of partnerships, and implementation of preventative activities such as land use or watershed programs. The resources and information within the *Multi-Jurisdictional All-Hazards Mitigation Plan*: (1) Establish a foundation for coordination and collaboration among agencies and the public in Elmore County; (2) Identify and prioritize future mitigation projects;

and (3) Assist in meeting the requirements of federal assistance programs. The mitigation plan works in conjunction with other county plans, including the Elmore County Emergency Operations Plan (EOP).

1.3.8.3 Whom Does the Mitigation Plan Affect?

The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014,* affects incorporated urban areas, and the rural, unincorporated areas of the county. The Elmore County Base Map, **Figure 3.2-3** shows cities, towns, unincorporated areas, and major roads and rivers in Elmore County. This Plan establishes requirements for the cities and county, and provides them with a framework for planning for an *all-hazards* approach to mitigation activities. The resources and background information in the Plan are applicable county-wide, and the *goals* and *recommendations* can lay the groundwork for each local government and the many partnerships.

Jurisdictions that participate in the update of the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* are listed below, along with their participation status:

Local Governments

- Elmore County (continuing to participate)
- City of Millbrook (continuing to participate)
- City of Tallassee (continuing to participate)
- City of Wetumpka (continuing to participate)
- Town of Coosada (continuing to participate)
- Town of Deatsville (continuing to participate)
- Town of Eclectic (continuing to participate)
- Town of Elmore (continuing to participate)

Other Jurisdictions

- Elmore County Board of Education (continuing to participate)
- Tallassee City Board of Education (continuing to participate)
- Water Authorities throughout Elmore County (continuing to participate)
- Poarch Creek Band of Creek Indians (PCI)

An extensive list of participating stakeholders can be found at **Figures 4.1 – 4.15, Table 4.1** and **Appendix C.**

1.3.8.4 State Support for Natural Hazard Mitigation

All mitigation is local and the primary responsibility for development and implementation of risk reduction strategies and policies lies with local jurisdictions. Local jurisdictions, however, are not alone. Partners and resources exist at both state and federal levels. The primary Alabama state agency with a role in natural hazards and natural hazard mitigation is:

Alabama Emergency Management Agency (AEMA)
5898 County Road 41
PO Drawer 2160
Clanton, Alabama 35046

AEMA is responsible for the development of the State Hazard Mitigation Plan and for the coordination of disaster mitigation, preparedness, response, recovery, and the administration of federal funds after a major disaster declaration. The *Alabama State Hazard Mitigation Plan Dated April 2013*, was consulted and used in-part for the update of this Plan.

1.3.8.5 Plan Methodology

Information in the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* is based on research from a variety of sources. The Elmore County Emergency Management Agency (EMA) conducted data research and analysis, facilitated meetings and public workshops, and developed a draft of the mitigation plan. All work was completed in conjunction with the Elmore County Hazard Mitigation Planning Committee, also known as the Multi-Agency Coordination (MAC) Group. Research methods and contributions to the Plan's construction include:

Jurisdiction/Stakeholder Interviews: The planning process included surveys and interviews with individual representatives and specialists from organizations interested in all-hazards mitigation planning. The interviews identified common concerns related to all-hazards events and identified key long- and short-term activities to reduce risk from the hazards contained herein. The following jurisdictions/stakeholders were interviewed for the Plan:

- Elmore County Commission
- Elmore County Emergency Management Agency
- Elmore County Highway Department
- City of Millbrook Council
- City of Tallassee Council
- City of Wetumpka Council
- Town of Coosada Council
- Town of Deatsville Council
- Town of Eclectic Council
- Town of Elmore Council
- Poarch Band of Creek Indians
- Elmore County Fire Fighters' Association
- Water Authorities
- Local Governments and Departments (Elected and Appointed Officials)
- School Districts
- Fire Departments
- Utility Providers
- Local Businesses
- Elmore County Citizens

  Note: For a complete listing, **see Figures 4.1-4.15 and Table 4.1.**

State and Federal Guidelines and Requirements for Mitigation Plans:
Elmore County EMA examined a variety of existing multi-hazards mitigation and emergency plans from around the United States, current FEMA planning standards, the FEMA Flood Mitigation Assistance Program requirements, and the National Flood Insurance Program's (NFIP) Community Rating System (CRS). Statewide reference materials consisted of community and county mitigation plans, including:

- Elmore County Emergency Operations Plan (EOP)
- School District Operational Plans
- State and Local Mitigation Planning (FEMA)
- Developing Mitigation Plans (FEMA)
- Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments

Hazard-Specific Research: Elmore County EMA conducted extensive research, using a multitude of recognized and reputable sources and collected and compiled data on the following included hazards:

Adversarial Threats (including: Terrorism, Radiological Dispersal Device/Nuclear Attack, Biological Attack-Non-Food, Biological Attack/Chemical Food Contamination, Chemical Attack non-food, Aircraft Accident/Used as Weapons, Explosive Devices, Armed Assault, and Cyber Attack), Civil Unrest, Celestial Impacts, Dam Failure, Dense Fog, Drought, Earthquakes, Epidemiological/Public Health, Extreme Temperatures: Cold & Heat, Wildfire, Flooding/Flash Flooding/River Flooding, Hail, Hazardous Materials Releases/Spills, High Wind Events, Hurricanes, Landslides, Land Subsidence, Lightning, Sinkholes, Space Weather, Thunderstorms/Severe Thunderstorms, Tornadoes, Transportation Systems Failures, Tropical Storms, and Winter Storms.

Research materials came from web sites, state agencies, Elmore County Emergency Management Agency historical files, local newspapers/news sources, and individuals. The EMA conducted research by referencing historical newspapers, various databases, and interviewing residents. The EMA identified current mitigation activities, resources and programs, and potential *Action Items* from research materials and stakeholder interviews.

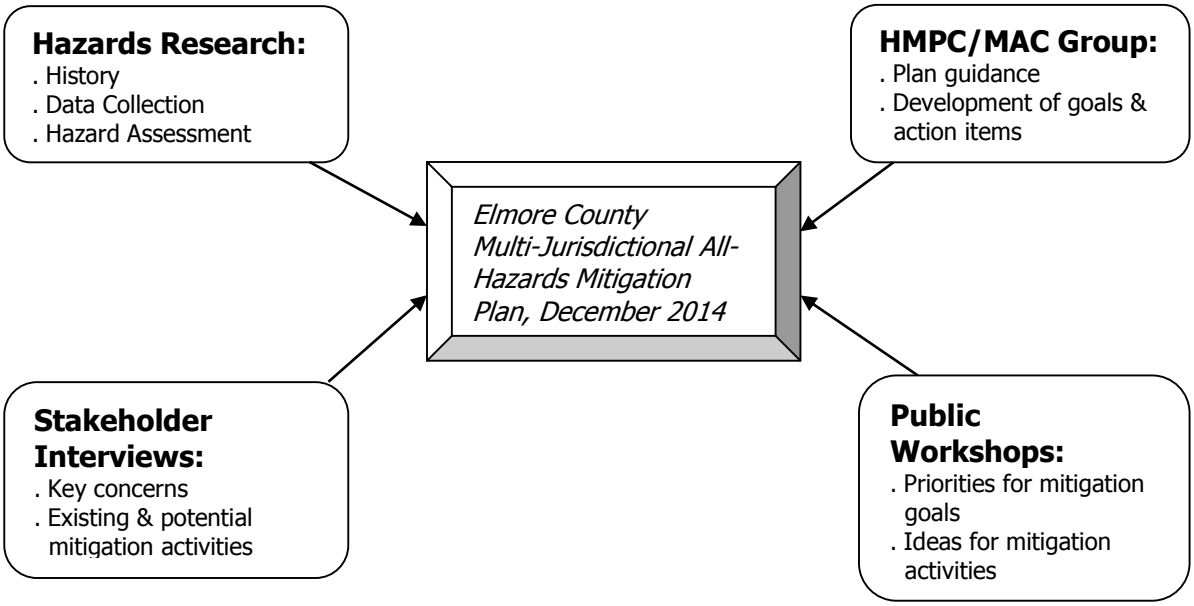
Public Forums: The Elmore County Emergency Management Agency (EMA) facilitated public forums to gather comments and ideas from Elmore County citizens about mitigation planning and priorities for mitigation plan *Goals*. Public input into the Plan was considered vital to the Plan's development. To this end, information was presented and surveys conducted during public forums (council meetings, work sessions) and other meetings (association meetings). The public meeting notifications were published in the local newspapers covering the entire county.

The adoption of the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* will be/was conducted in the same forums as input was gathered--from council meetings and commission meetings. Notification is published regarding when the public meetings are held.

The resources and information cited in the mitigation plan provide a strong local perspective and help identify strategies and activities to make Elmore County more disaster resilient. **Figure 1.3.9.5-1** below shows the mitigation planning process components and the key expected outcomes:

Area intentionally left blank.

Figure 1.3.8.5-1 Elmore County Mitigation Planning Process



1.3.8.6 How to Use the *Multi-Jurisdictional All-Hazards Mitigation Plan*

Each section of the Plan provides information and resources to assist people in understanding Elmore County and all the hazards-related issues facing citizens, businesses, and the environment. Combined, sections of the Plan work together to create a document that guides the mission to reduce risk and prevent loss from all future hazardous events, whether caused by natural, technological/accidental, or human-caused (man-made) means.

The structure of the Plan enables individuals to use each section of interest to them. The structure also allows local government to review and make updates to the Plan as new information/data becomes available. The ability to update sections individually places less of a financial burden on the local government. Decision-makers can allocate funding and staff resources to selected pieces in need of review, thereby avoiding a full update, which can be costly and time-consuming. New data can be easily incorporated, resulting in an all-hazards mitigation plan that remains current and relevant to Elmore County.

1.3.8.7 Mitigation Plan Format

As noted previously, the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* contains the following:

Table of Content
Section 1. Executive Summary and Introduction to the Plan
Section 2. Plan Approval, Adoption and Assurances
Section 3. County/Community Profiles
Section 4. The Planning Process
Section 5. Hazard Identification and Risk Assessment
Section 6. Mitigation Strategy
Section 7. Coordinating Local Planning
Section 8. Plan Maintenance
Section 9. List of Appendices

Section 2. Plan Approval, Adoption and Assurances

This section of the Plan addresses requirements of Final Rule (FR) Section 201.6. A copy of the Rule is provided for reference in **Appendix A** of this document.

Contents of this Section

2.1 Final Rule (FR) Requirements for the Plan Adoption Process
2.2 Plan Approval and Adoption Process
2.3 Formal Adoption Document(s)
2.4 Assurances

What has been updated?

The 2010 *Elmore County Natural Hazard Mitigation Plan* was completely revised during the 2015 plan update process. For the 2015 update, the Plan underwent a *major* re-write, was completely restructured and reformatted, and vastly broadened to include *all* hazards relative to Elmore County--natural, technological, and human-related (man-made)--thus warranting the new title: *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*.

Certain informational elements of the 2010 Plan were retained and carried forward into the 2015 plan update, like various maps, storm events data, census data, facilities, methodologies, strategies, action items, etc. All retained informational elements were refreshed and updated as appropriate and expanded where applicable. Numerous informational elements were added to the Plan to support the newly incorporated technological and human-related (man-made) threats and hazards, as well as additional natural hazards not previously covered, such as fog, sinkholes, and land subsidence.

Given the broad scope of changes resulting from this update, users are highly encouraged to read this plan "cover to cover," expecting numerous differences between the *2010* and *2015* editions. The scope of change contained herein extends far beyond the typical, minor, or expected changes one might see in a standard plan update.

The primary driving factors behind the complete "over-haul" of this Plan include:

- ✓ The desire to standardize its structure to more closely aligned it with that of the governing Final Rule (FR), thus improving its organization, cohesiveness, and flow;

- ✓ The desire to incorporate a number of threats and hazards not previously addressed in the Elmore County HMP; and

- ✓ The desire to more closely mirror the Alabama State Hazard Mitigation Plan, Updated April 2013.

2.1 Final Rule Requirements for the Plan Adoption Process

The Final Rule (201.6) requires the County Hazard Mitigation Plan to include the following elements:

i. "*A Plan Adoption Process.* The plan must be formally adopted by the State prior to submittal to FEMA for final review and approval. "

ii. "*Assurances.* The plan must include assurances that the county will comply with all applicable local/state/federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). The county will amend the Plan whenever necessary, to reflect changes in local/state/federal laws and statutes as required in 44 CFR 13.11(d)."

2.2 Plan Approval and Adoption Process

2.2.1 Background

The HMPC/MAC Group approved this plan in 2010 and has been involved in the plan update process. Documentation of each meeting is located at **Appendix F.**

The HMPC/MAC Group reviewed each section update and provided comments and feedback as appropriate for incorporation into the Plan. After comments were incorporated, the committee/group was provided with a detailed briefing on all proposed changes and additions to the Plan. Each member of the HMPC/MAC Group had a second opportunity to review and approve the document prior to submission to the AEMA.

2.2.2 Elmore County EMA Review and Approval

After the all comments are compiled and incorporated, the Director of Elmore County EMA will review the document for approval and formal adoption on behalf of the participating jurisdictions, as was the case with previous updates/reviews.

2.3 Formal Adoption Document(s)

By agreement between Elmore County EMA and Alabama EMA, the official adoption documents will be provided after the AEMA and FEMA's final review and conditional approval of the Plan. Documents are included in **Appendix D** of this Plan.

2.4 Assurances

The assurances required by the Rule, Section 201.6 and the Elmore County EMA statement of approval and implementation are included in **Appendix D** of this Plan.

Section 3. County and Community Profiles

This section is not required by the Final Rule (FR) but is retained in this document because it is deemed relevant and beneficial for local use.

Contents of this Section

3.1 Why Plan for Natural, Technological/Accidental, and Human-Related (Man-made) Threats and Hazards in Elmore County?
3.2 Geography and Environment
3.3 History
3.4 Major Rivers
3.5 Climate
3.6 Minerals and Soils
3.7 Population and Demographics
3.8 Land and Development
3.9 Housing and Community Development
3.10 Employment and Industry
3.11 Transportation and Commuting Patterns
3.12 County/City/Town Profiles

What has been updated?

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Given the broad scope of changes resulting from this update, users are highly encouraged to read this plan "cover to cover," expecting numerous differences between the *2010* and *2015* editions. The scope of change contained herein extends far beyond the typical, minor, or expected changes one might see in a standard plan update.

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- ✓ The desire to incorporate a number of threats and hazards not previously addressed in the Elmore County HMP; and
- ✓ The desire to more closely mirror the Alabama State Hazard Mitigation Plan, Updated April 2013.

3.1 Added "Why Plan for Natural, Technological/Accidental, and Human-Related (Man-made) Threats and Hazards in Elmore County?"
3.2 Geography and Environment: Revised; updated maps, data, information
3.3 History: Revised; updated maps, data, information
3.4 Major Rivers: Revised; updated maps, data, information
3.5 Climate: Revised; updated maps, data, information
3.6 Minerals and Soils: Revised; updated maps, data, information
3.7 Population and Demographics: Revised; updated maps, data, information
3.8 Land and Development: Revised; updated maps, data, information
3.9 Housing and Community Development: Revised; updated maps, data, information
3.10 Employment and Industry: Revised; updated maps, data, information
3.11 Education: Revised; updated maps, data, information
3.12 Transportation and Commuting Patterns: Revised; updated maps, data, information
3.13 County/City/Town Profiles: Revised; updated maps, data, information

3.1 Why Plan for Natural, Technological/Accidental, and Human-Related (Man-made) Threats and Hazards in Elmore County?

Frankly, because "stuff" happens.

Natural, technological/accidental, and human-related (man-made) threats and hazards have had and will continue to have an impact, directly or indirectly, on the citizens, property, environment, and economy of Elmore County. Period. Many presenting themselves with little or no fore-warning or notice. That's why we plan to mitigate against their impacts.

As stated in the *Department of Homeland Security Office of Inspector General, FEMA's Progress in All-Hazards Mitigation, October 2009,* "According to FEMA regulations, the purpose of mitigation planning is for state, tribal, and local governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources.[5] Hazard mitigation planning is the process of identifying risk and vulnerabilities to hazards, followed by a strategy that will reduce or prevent the effects of a hazard from developing into a disaster. The final product is a mitigation plan that provides the framework for implementing mitigation

projects that can also attract federal mitigation assistance and grants to mitigate the hazard. The following process for hazard mitigation planning is the same for natural, technological, and manmade hazards:

- Identify and organize (create a planning team with representatives from the public and private sectors, citizen groups, higher education institutions, and nonprofits);
- Assess risk (identify hazards and assess losses);
- Develop a mitigation plan (identify mitigation actions that will reduce the effects of the hazard and create a strategy to prioritize them);
- Implement mitigation actions, evaluate results, and update the mitigation plan accordingly."

[5] Code of Federal Regulations, Title 44, Part 201, §201.1, Purpose

For the 2015 hazard mitigation plan update, Elmore County tackled *all-hazards* planning, departing from a single *natural-hazards* focus. The resulting *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* addresses the following threats and hazards:

1. Thunderstorms/Severe Thunderstorms
2. Lightning
3. Hail
4. Tornadoes and High Wind Events
5. Flooding (includes Flash Flooding, River Flooding)
6. Hurricanes and Tropical Storms
7. Extreme Temperatures – Heat and Cold
8. Winter Storms
9. Drought
10. Wildfire
11. Landslides
12. Sinkholes and Land Subsidence
13. Earthquakes
14. Dam Failure
15. Dense Fog
16. Celestial Impact (Includes Space Weather)
17. Hazardous Materials
18. Transportation System Failures
19. Epidemiological/Public Health
20. Civil Unrest
21. Adversarial Threats (Includes: Terrorism, Radiological Dispersal Device/Nuclear Attack, Biological Attack-Non-Food, Biological/Chemical Food Contamination, Chemical Attack-Non-Food, Aircraft Accident/as Weapons, Explosive Devices, Armed Assault, Cyber Attack)

Elmore County continues to enjoy being recognized as the third fastest growing county in the state. As more people, business, and industry move to Elmore County, the risk associated with

the above threats and hazards increases as well. The inevitability of these threats and hazards, especially the most common of the natural hazards, along with a growing population and activity within the county, create the need to develop strategies, coordinate resources, and increase public awareness to reduce risks and prevent losses from future natural hazard events.

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3.2 Geography and the Environment

Elmore County, Alabama, situated in the east-central part of the state, is named in honor of General John A. Elmore. Elmore County was founded February 1, 1866 by an act of the state legislature. Elmore County covers a total area of approximately 657.21 square miles, 621.26 square miles of land, and 35.96 square miles of water. Of the 397,606 land acres, 102,664 acres are farmland and 240,301 are timberland (as of June, 2013). About one-fourth of the land area in Elmore County is incorporated, while the majority is unincorporated. The county seat is Wetumpka, located 15 miles north of Montgomery and 75 miles southeast of Birmingham. Millbrook is the largest city in the county. According to the 2010 census, the population of Elmore County stood at 79,303, with a population density of 128.2 people per square mile. The Elmore County Federal Information Processing Standards (FIPS) Code is 051. The county is part of the Montgomery Metropolitan Area (also known as the Montgomery Metropolitan Statistical Area), which includes the counties of Autauga, Elmore, Lowndes, and Montgomery. Major highways include Interstate 65, U.S. Highway 82, U.S. Highway 231, State Route 9, State Route 14, and State Route 63. Other heavily traveled routes in the county include: State Routes 111, 143, 170, and 229. Additionally, Intestate 85 is only 12 miles from Wetumpka. Counties adjacent to Elmore include Coosa County (north), Tallapoosa County (northeast), Macon County (southeast), Montgomery County (south), Autauga County (west), and Chilton County (northwest).

Elmore County's mild climate encourages the growth of a large number of crops, including many winter-growing ones. The mild climate is ideally suited to agriculture, forestry, and related industries. According to www.AlabamaAgImpact.com, "In 2010, $78.1 million was generated through the county's agricultural and forestry production center." According to the website, cotton was the largest agricultural commodity, contributing 12.9 percent of the county's total agricultural and forestry production. The second largest production was cattle, which contributed 7.5 percent of the county's total agricultural and forestry production. The third largest was greenhouse, nursery, and floriculture production, which contributed 7.1 percent of the county's total agricultural and forestry production. Forestry production—timberland—accounted for 60.4 percent of the surface land area of Elmore County. Total forestry production contributed 24.9 percent of the county's total agricultural and forestry production. Overall, Elmore County's agricultural, forestry, and related industries generated 4,857 full- and part-time jobs, representing 17.6 percent of the county's total workforce (27,624 jobs). The total impact of agriculture, forestry, and related industries was $319.5 million, which was 11.7 percent of the county's total economic activity ($2.7 billion). The indirect business taxes impact was $17.5 million, 15.5 percent of the county's total indirect business taxes. The website identifies Elmore County's "Top Industry Groups" as: Manufacturing, Real Estate and Rentals, Government-related Services, and Agriculture, Forestry, and Related Industries.

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Figure 3.2-1 Alabama Map Interstate Highways US Highways

Figure 3.2-2

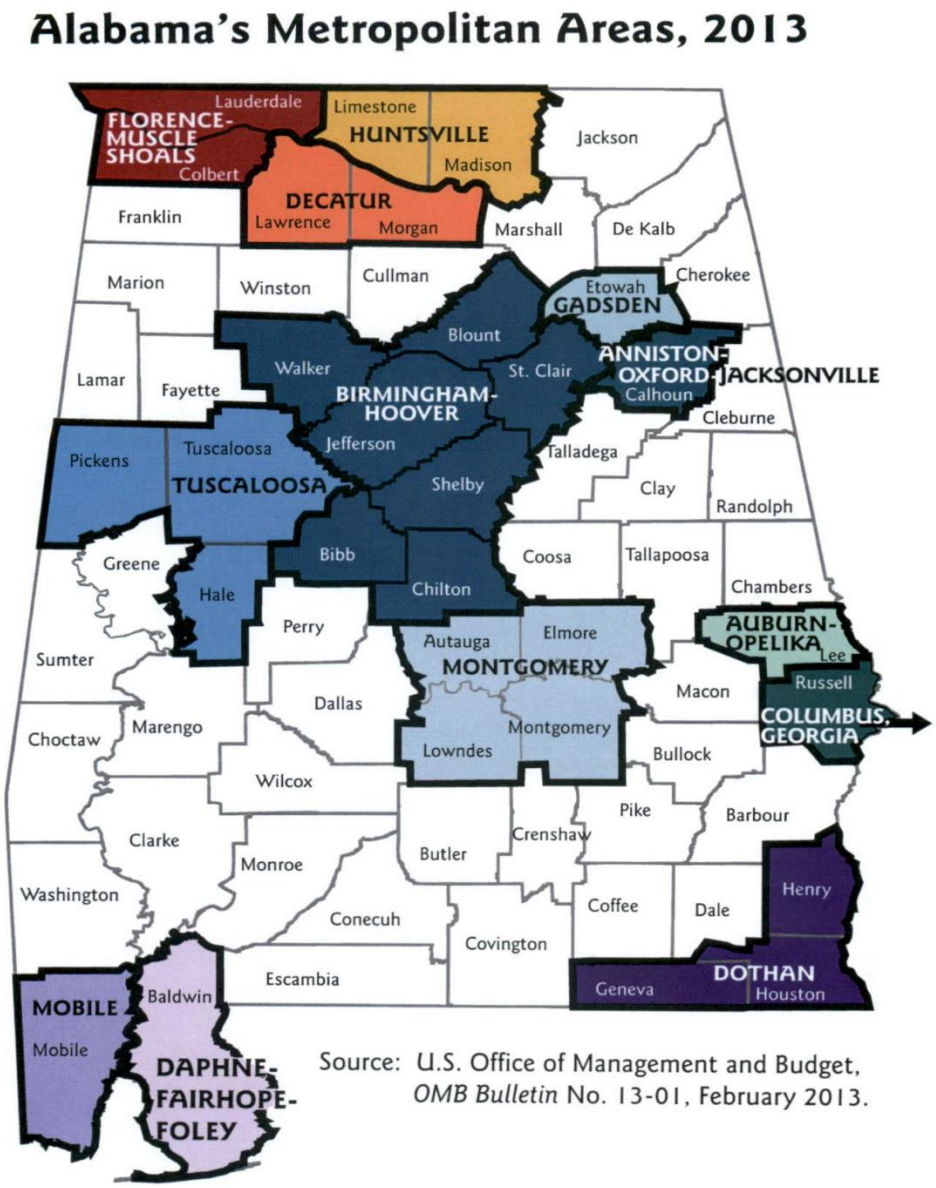
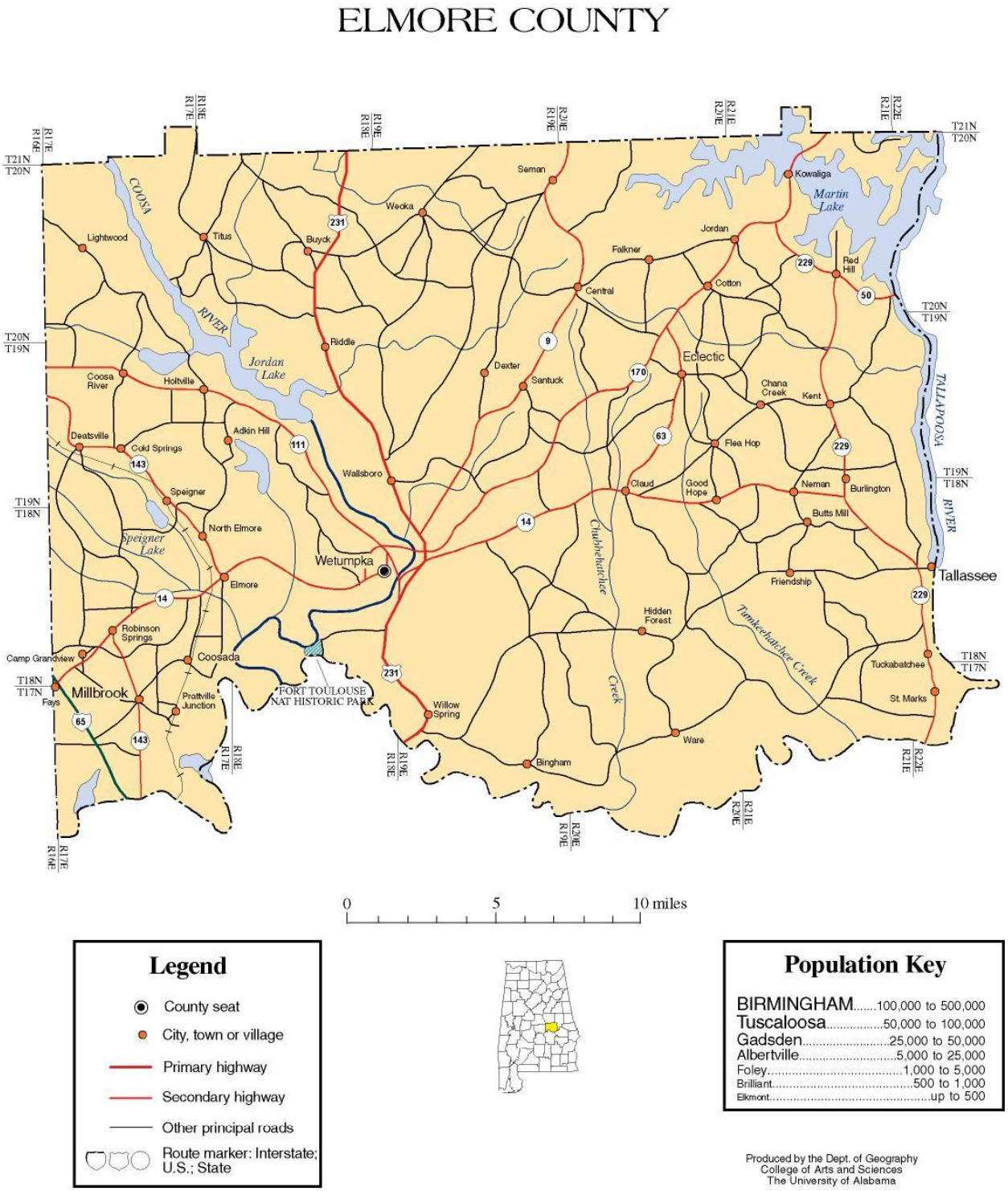

Alabama's Metropolitan Areas, 2013
Lauderdale
Limestone
FLORENCE-MUSCLE SHOALS
Colbert
HUNTSVILLE
Madison
Jackson
DECATUR
Lawrence
Morgan
Franklin
Marshall
De Kalb
Marion
Winston
Cullman
Etowah
GADSDEN
Cherokee
Blount
Walker
St. Clair
ANNISTON-OXFORD-JACKSONVILLE
Calhoun
Lamar
Fayette
BIRMINGHAM-HOOVER
Cleburne
Pickens
Tuscaloosa
Jefferson
Talladega
TUSCALOOSA
Shelby
Clay
Randolph
Greene
Bibb
Coosa
Tallapoosa
Hale
Chilton
Chambers
Perry
Autauga
Elmore
AUBURN-OPELIKA
Lee
Sumter
MONTGOMERY
Russell
Macon
Dallas
Marengo
Montgomery
COLUMBUS, GEORGIA
Choctaw
Lowndes
Bullock
Wilcox
Pike
Barbour
Clarke
Crenshaw
Monroe
Butler
Washington
Henry
Coffee
Dale
Conecuh
Covington
Escambia
DOTHAN
Geneva
Houston
MOBILE
Baldwin
Mobile
DAPHNE-FAIRHOPE-FOLEY
Source: U.S. Office of Management and Budget, OMB Bulletin No. 13-01, February 2013.

Figure 3.2-3


ELMORE COUNTY
Lightwood
Titus
Buyck
Weoka
Seman
Kowaliga
Martin Lake
Jordan
Falkner
Red Hill
Central
Cotton
Riddle
Jordan Lake
Dexter
Santuck
Eclectic
Chana Creek
Kent
Coosa River
Holtville
Deatsville
Cold Springs
Adkin Hill
Flea Hop
Wallsboro
Claud
Good Hope
Neman
Burlington
Speigner
Butts Mill
North Elmore
Speigner Lake
Wetumpka
Elmore
Friendship
Tallassee
Hidden Forest
Robinson Springs
Camp Grandview
Coosada
Tuckabatchee
Millbrook
Fays
Prattville Junction
FORT TOULOUSE NAT HISTORIC PARK
Willow Spring
St. Marks
Ware
Bingham
COOSA
RIVER
TALLAPOOSA
RIVER
Tuckabatchee Creek
Tuckabatchee Creek
0
5
10 miles
Legend
County seat
City, town or village
Primary highway
Secondary highway
Other principal roads
Route marker: Interstate; U.S.; State
Population Key
BIRMINGHAM.....100,000 to 500,000
Tuscaloosa.....50,000 to 100,000
Gadsden.....25,000 to 50,000
Albertville.....5,000 to 25,000
Foley.....1,000 to 5,000
Brilliant.....500 to 1,000
Elkmont.....up to 500
Produced by the Dept. of Geography
College of Arts and Sciences
The University of Alabama

3.3 History

A historically significant area, Elmore County was named after the distinguished revolutionary soldier, General John Archer Elmore. Wetumpka was selected as the county seat. Elmore County was created February 15, 1866, from parts of Autauga, Coosa, Montgomery and Tallapoosa Counties. The earliest white traveler known to enter Elmore County was Hernando De Soto. In 1540, this famous Spanish explorer is thought to have traveled along the Coosa River while journeying south from the Indian village of Coosa, which is located in present-day Talladega County. In 1714, the French governor of Louisiana, Sieur de Bienville, built the famous Fort Toulouse in the Elmore County area. The fort was located at the fall line of the Coosa River where it joins the Tallapoosa River to form the Alabama River. In 1763, at the end of the seven-year French and Indian War, the British occupied the fort and surrounding area. After defeating the Creek Indians at Horseshoe Bend in 1814, Ft. Jackson, named for General Andrew Jackson, was built on the old Ft. Toulouse site. Rich soils and abundant water resources for barge transportation made Elmore County the natural setting for a town. The earliest Anglo settlers of the area migrated from the Carolinas and Georgia between 1814 and 1820. In 1834, the Town of Wetumpka was incorporated. By the mid-1800's, Wetumpka was a thriving town with a population of 3,000 inhabitants. By a small margin, Wetumpka lost the state capitol site to Montgomery in 1845. Today, several attractions bring people to Elmore County. The area's natural resources that attracted early settlers to the area do so today. Effective and efficient leadership has moved Elmore County forward without losing its sense of rich natural heritage.

Alabama Register of Landmarks and Heritage—Elmore County
The Alabama Register of Landmarks and Heritage is an official listing of buildings, sites, structures, objects, and districts worthy of preservation. These properties may be of national, state, and local significance. The designation is honorary and carries no restrictions or financial incentives.

The Alabama Register of Landmarks and Heritage was created by the AHC to provide the public with a quick, easy way to bring recognition to historic properties. The Alabama Register includes properties such as cemeteries, churches, moved properties, reconstructed properties, and properties at least 40 years old.

The following listing includes forty-nine (49) properties in Elmore County currently listed on the Alabama Register of Landmarks and Heritage (pages 43-45 of the online document)

Area intentionally left blank.

Figure 3.3-1

ELMORE COUNTY

Bateman, Florence, House, 311 Government St., Wetumpka
c. 1842 Listed: 6/15/77

Beaulieu, Francis, House, cor. Blue Ridge and Old Jasmine Rds, Wetumpka
c. 1816 Listed: 3/30/77

Bibb-Graves Bridge, over Coosa River, Wetumpka
c. 1931 Listed: 2/25/77

Bibb, William Wyatt, Grave, One block off Elmore County 23, Coosada
c. Listed: 11/5/76

Billingsley Home and Windmill (2), .1 mi N on Asberry Rd, near Tallassee
c. 1930 Listed: 11/4/77

Busch Log Cabin, 1301 Jasmine Hill Road, Wetumpka
c. 1935 Listed: 3/22/91

Confederate Arsenal House (Elliott House), 305 King Street, Tallassee
c. 1864 Listed: 8/1/77

Corn Dance Farm, Cedar Dr, off Cook Rd, N of inter. Cook & Coosada Rds, 2 mi, Coosada
c. 1820 Listed: 11/30/77

Crommelin's Landing, behind Wetumpka City Hall on the Coosa River, Wetumpka*
c. 1820 Listed: 3/27/77

Edward Rock Dogtrot House, 13 mi N of Wetumpka on Westside of US 231
****Moved to Old Alabama Town in 1987; known as the Rose-Morris House****
c. 1830 Listed: 3/1/77

Ellerslie (Bowling Hall House), 2650 Edgewood Rd, Millbrook
c. 1820 Listed: 6/30/95

Elmore County Courthouse, Commerce Street, Wetumpka
c. 1931 Listed: 5/2/77

Elmore County Training School, 1 Lancaster Street, Wetumpka
c. 1924 Listed: 3/7/02

First Baptist Church, 205 W Bridge Street, Wetumpka (NRHP 10/24/08) *
c. 1846 Listed: 6/3/77

First United Methodist Church, 1 Jordan Avenue, Tallassee
c. 1929 Listed: 6/26/03

Gantt Dogtrot House, Elmore CR 29, Titus
Listed: 4/8/77

Hagerty-Turner-Yung House ("Blue Hills"), 4690 Jasmine Hill Road, Wetumpka (NRHP)
c. 1840-1860 Listed: 9/30/99

Harrogate Springs/Crommelin House, 1 mi S of Wetumpka
c. 1905 Listed: 3/30/77

*File Missing From Inventory
NRHP = National Register of Historic Places

Page 43

Herron Hill, turn on Herron Rd at light in front of Tallassee Hospital, Tallassee
c. 1855 Listed: 7/25/77

Hickory Knoll, E side of Hwy 143, .3 mi N of Hwy 14, Elmore
c. 1892 Listed: 10/24/77

Holtville School (Holtville High School), Rt 2, Hwy 111, Deatsville
c. 1929 Listed: 5/18/77

Hotel Talisi, Corner of Sistrunk and James Sts, Tallassee
c. 1929 Listed: 7/28/77

Howle, John, House, 300 N Bridge Street, Wetumpka
c. 1904-05 Listed: 5/26/86

Jasmine Hill Gardens, Jasmine Hill Rd between Wetumpka & Montgomery, off US 231
c. 1820, Gardens 1930 Listed: 7/21/77

Jordan Dam, Coosa River, 8 mi upstream from Wetumpka
c. 1927 Listed: 11/5/76

Lanark Plantation (Spring Hill), 2 mi E of Millbrook off Edgewood Rd
c. 1820 Listed: 9/20/77

Martin Dam, Tallapoosa River, N of Tallassee (portion in Tallapoosa Co.) *
Listed: 1/5/76

McCowen House (Thomas Home), 306 E Bridge Street, Wetumpka
c. 1904-05 Listed: 11/30/77

McMorris House, 400 N. Bridge Street, Wetumpka,
c. 1905 Listed: 4/13/09

Museum of Music, Hwy 231 S of Wetumpka
c. Listed: 1/25/77

Old Calaboose, E bank Coosa River 100 ft N of Bibb Graves Bridge, Wetumpka
c. 1840 Listed: 1/27/76

Old Wetumpka Post Office, 206 South East Main Street, Wetumpka
c. 1937 Listed: 5/19/99

Oliver, Willam K., House, 3080 Greys Ferry Road, Titus vic.,
c. 1842 Listed: 3/25/04

Peterson and Peterson Store (2) (Cowling General Store) .1 mi W of intersection of Hwy 14 W & 14 S across RR tracks S Elmore
c. 1900 Listed: 11/3/77

Robinson Springs Methodist Church, AL 14, 143 int., Robinson Springs (NRHP) *
c. 1845 Listed: 7/21/77

Robinson Springs Methodist Parsonage Lot, AL 143, SE of AL 14, Millbrook
c. 1850 Listed: 7/21/77

Sandtown High School, 3180 Sandtown Road, Millbrook
c. 1947 Listed: 8/5/10

*File Missing From Inventory
NRHP = National Register of Historic Places

Swayback Bridge, on US 231 across Sofkahatchee Creek, Wetumpka vcn
c. 1931 Listed: 4/14/77

Tallassee Mill, off AL 14 East of Tallassee*
c. 1841 Listed: 1/18/78

Tanglewood, 2810 Tanglewood Drive, Millbrook vic.
c. 1823 Listed: 3/24/05

The Elms, 4721 Lindsey Road, Coosada (Millbrook)
c. 1836 Listed: 8/15/83

Thornfield, 79 Thornfield Drive, Millbrook
c. 1824 Listed: 8/25/11

Titus Historic District (10), 15 mi N of Wetumpka on CR 29, Titus
c. 1800 Listed: 4/12/78

Tukabahchi, E of Airport, 3 1/2 mi S of Tallassee, E off AL Hwy 229; SW bank of Tallapoosa River in big loop to East, Tallassee
c. Listed: 7/21/77

Tuskeena Street District (15), 200-900 Blks, Tuskeena St, 200-600 Blks Coosa and Tallapoosa Sts; connecting portions of Government, Ala. and West Main Sts, Wetumpka*
c. 1830-1906 Listed: 7/29/77

Wall, Tom, House (Taylor-Wall-Ingram House) (George Taylor House)
Rt 1 Box 280, US Hwy 231 N 1 1/2 mi N of Tutwiler Womens Prison, Wetumpka
c. 1830 Listed: 1/14/80

Wetumpka Municipal Airport (Elmore Auxiliary Training Field #2), Elmore
c. 1942 Listed: 2/21/13

Wetumpka Lock (Lock 31), Coosa River under Bibb Graves Bridge, Wetumpka
c. 1896 Listed: 8/3/77

Wingard, Christian, Home Place, 608 Company Street, Wetumpka
c. 1937 Listed: 6/30/95

Return to Page 1

*File Missing From Inventory
NRHP = National Register of Historic Places

Figure 3.3-2

Alabama Counties, 1860
Lauderdale
Limestone
Jackson
Madison
Lawrence
Franklin
Morgan
Marshall
De Kalb
Winston
Cherokee
Marion
Blount
Walker
St. Clair
Calhoun
Fayette
Jefferson
Pickens
Tuscaloosa
Talladega
Shelby
Randolph
Bibb
Coosa
Chambers
Greene
Tallapoosa
Perry
Autauga
Sumter
Macon
Dallas
Montgomery
Russell
Marengo
Choctaw
Lowndes
Wilcox
Barbour
Pike
Clarke
Butler
Monroe
Washington
Coffee
Dale
Henry
Conecuh
Covington
Baldwin
Mobile
Produced by the Dept. of Geography
College of Arts and Sciences
The University of Alabama

Figure 3.3-3

Alabama Counties, 1870

Figure 3.3-4

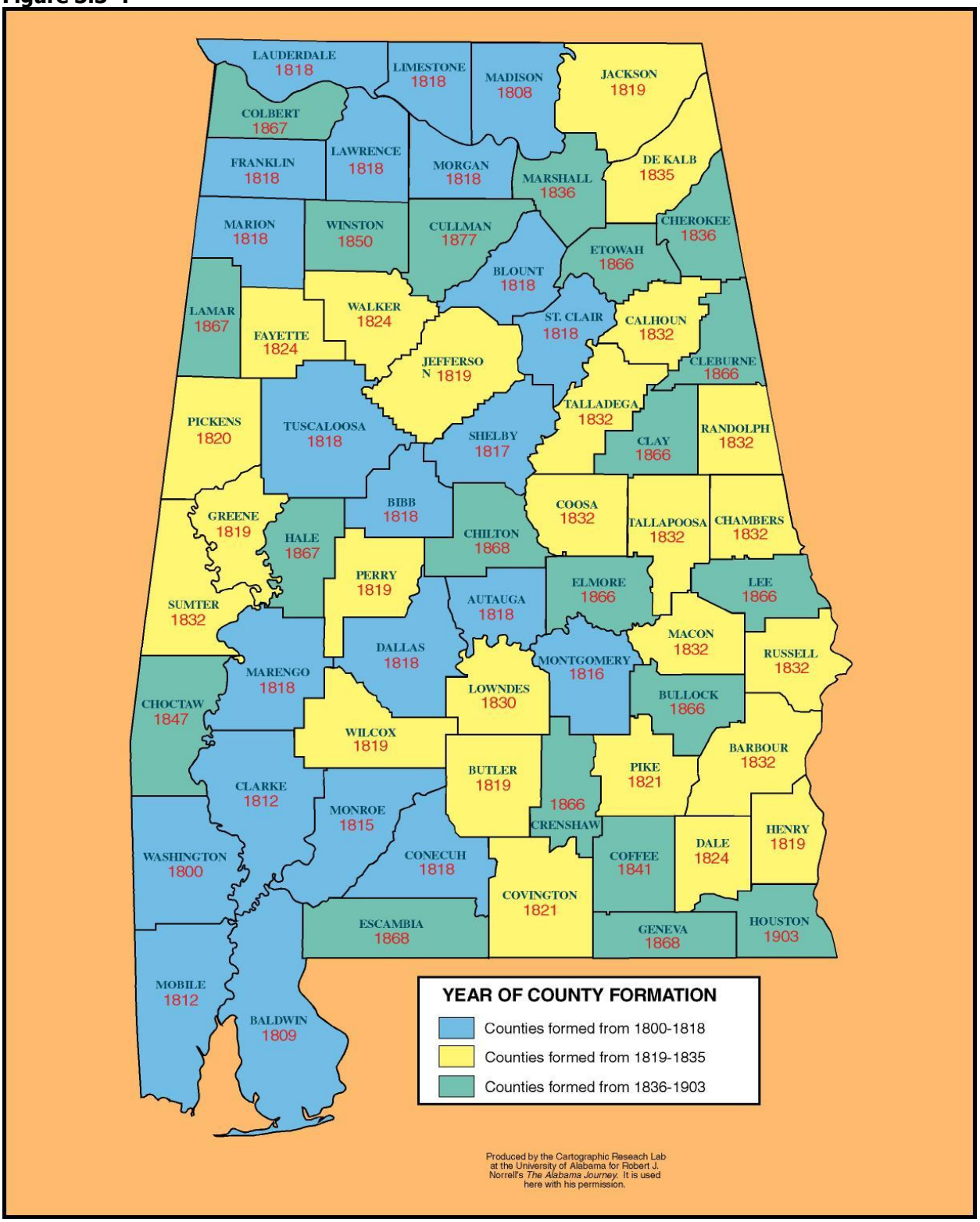

LAUDERDALE 1818
LIMESTONE 1818
MADISON 1808
JACKSON 1819
COLBERT 1867
FRANKLIN 1818
LAWRENCE 1818
MORGAN 1818
MARSHALL 1836
DE KALB 1835
MARION 1818
WINSTON 1850
CULLMAN 1877
CHEROKEE 1836
ETOWAH 1866
BLOUNT 1818
LAMAR 1867
WALKER 1824
FAYETTE 1824
ST. CLAIR 1818
CALHOUN 1832
JEFFERSON 1819
CLEBURNE 1866
PICKENS 1820
TUSCALOOSA 1818
SHELBY 1817
TALLADEGA 1832
CLAY 1866
RANDOLPH 1832
GREENE 1819
HALE 1867
BIBB 1818
CHILTON 1868
COOSA 1832
TALLAPOOSA 1832
CHAMBERS 1832
PERRY 1819
SUMTER 1832
AUTAUGA 1818
ELMORE 1866
LEE 1866
DALLAS 1818
MACON 1832
RUSSELL 1832
MARENGO 1818
MONTGOMERY 1816
LOWNDES 1830
BULLOCK 1866
CHOCTAW 1847
WILCOX 1819
BARBOUR 1832
BUTLER 1819
PIKE 1821
CLARKE 1812
MONROE 1815
1866
CRENSHAW
HENRY 1819
WASHINGTON 1800
CONECUH 1818
COFFEE 1841
DALE 1824
COVINGTON 1821
ESCAMBIA 1868
GENEVA 1868
HOUSTON 1903
MOBILE 1812
BALDWIN 1809
YEAR OF COUNTY FORMATION
Counties formed from 1800-1818
Counties formed from 1819-1835
Counties formed from 1836-1903
Produced by the Cartographic Reseach Lab at the University of Alabama for Robert J. Norrell's The Alabama Journey. It is used here with his permission.

Figure 3.3-5

Indian Villages and Forts
of the Coosa-Tallapoosa River Region
Explanation
Contemporary Town
Fort (date built if known)
Indian Village
ALABAMA
CREEK & CHEROKEE DIVIDING LINE
Brown's Village
Ft. Armstrong
Turkey Town
Centre
Gadsden
Costa
Oneonta
Ataff
Ashville
Cataula
Jacksonville
Otipalin
Littafatchee
Ft. Strother (1813)
Talishatchie
Tooktocaugee
Edwardsville
Anniston
Istopoga
Atchunalgi
Oakfuskee
Fifes Village
Talladega
Ft. Leslie (1813)
Ft. Chinneby (c1813)
Kitchopataki
Coosa
Eufaulee Old Town
Kymulga
Talatiga
Puckna
Abacoochee
Abihkudshi
Abihka
Lanka Oka
Coosee Old Town
Potcheshatchi
Entachopco
Ashland
Wedowee
Cohatchie
Chitothlbi
Natchee
Wako Kau
Talimachusi
Lanadshipala
Chalakagay
Tallaseehatchee
Tuxtukaoi
Lutchapoga
Atchinalga
Ft. Williams (1814)
Hillabee
Talimuchasi
Unchaula
Ototuttchina
Cholocco Litabixee (Horseshoe Bend)
Aucheucaula
Hillabi
Ocfuskee Old Town
Chatoksofka
Uncaula
Itawa
Sakapatoyi
Sukaispoka
Nuuyaka
Owekofea
Rockford
Alkehatchi
Imukfa
Lafayette
Fish Pond Town
Ft. Okfuskee (c1735)
Jehassehoga
Lalokalka
Pokana Talahassa
Kialige
Dadeville
Pinthlocco
Oppilako
Eufaulau
Chakihlako
Takpafka
Talipsihoka
Saugahatchi
Suchahatchee
Chichoufkee
Little Tallassee
Kailaidshi
Opelika
Tchuko Lako
Oche-ubo-fau
Nafolee
Ft. Toulouse (c1717)
Ft. Jackson (1814)
Wetumpka
Hatchitchapa
Atchinahatchi
Chau-woo-e-lau-hatchee
Tuskegee
Tallassee
Yufala
Watoola
Prattville
Coo-sau-dee
Sambellau
Tuckabatchee
Laplako
Coweta
Autauga
Fucihatchi
Atassi
Ft. Decatur (b1814)
Tuskegee
Tallahassee
Tawasa
Ecunchata
Chawocelauhatchee
Ekatchuka
Cussetau
Pau-wac-ta
Ho-ith-le-wau-le
Ft. Mitchell (1813)
Uchi
Ft. Hull (1813)
Too-see-hotchee
Wetumca
Yuchi
Sawanogi
Cauwaulau
Osotchi
Muklassa
Ft. Bainbridge (1814)
Hatchichapa
Seale
Conaliga
High Log
Apalatchukla
Chiaha
Chananogi
Hailhagi
Hitchiti
Okoni
Union Springs
Chuahudshi
Chauakle
Hulitaiga
Chattahoochee
Tallapoosa River
Coosa River
0
25
50 Miles
Source: Historical Atlas of Alabama, Volume I, Historic Locations by County
Produced by Cartographic Research Lab
University of Alabama

3.4 Major Rivers

Elmore County lies within three major river basins -- the Alabama River, Coosa River and Tallapoosa River. The Alabama River is formed south of Wetumpka by the confluence of the Coosa and Tallapoosa Rivers at the southern boundary of the county about 5 miles southwest of Wetumpka.

❖ **Coosa River**

The Coosa River Basin begins in Georgia near Rome and covers about 5000 square miles, encompassing more than 600 miles of rivers and tributaries. The Coosa River is a vital, multi-purpose waterway that touches the lives of thousands of people along its banks and throughout eastern and central Alabama. An important historical and cultural resource, the Coosa provides natural beauty, abundant wildlife, and varied recreational opportunities. Alabama Power operates and maintains six reservoirs in the Coosa Basin. These reservoirs provide in-stream benefits for fish, wildlife, navigation, and water quality. Recreational use at many of the reservoirs is also significant. The Coosa River has generated economic growth and promoted quality of life for years.

However, to achieve these benefits, the structure and integrity of the river have been compromised, as population growth and development have strained the land and water.

❖ **Tallapoosa River**

The Tallapoosa River received its name from the Creek Indian tribe that once lived along the river. The Tallapoosa River begins in Georgia just south of Rome and flows towards its confluence with the Coosa River near Wetumpka.

The Tallapoosa River Basin is largely rolling hills, forest and farm lands. Most of the communities along the river depend on the Tallapoosa for their drinking water. There are four dams along the river course and one large reservoir, Lake Martin.

❖ **Alabama River**

The confluence of the Coosa and Tallapoosa Rivers forms the Alabama River just southeast of Wetumpka. The river flows southwesterly to its merging with the Tombigbee River to form the Mobile River. The Alabama River is a navigable river from its source to its mouth. The river impacts Elmore County along its southern boundary with Montgomery County. The large flood plain expands along both sides of its banks. There are several horseshoe lakes along its course. The river provides wildlife habitat, recreation, drinking water and transportation. Due to these activities the Alabama River is considered to be a major economic resource.

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Figure 3.4-1

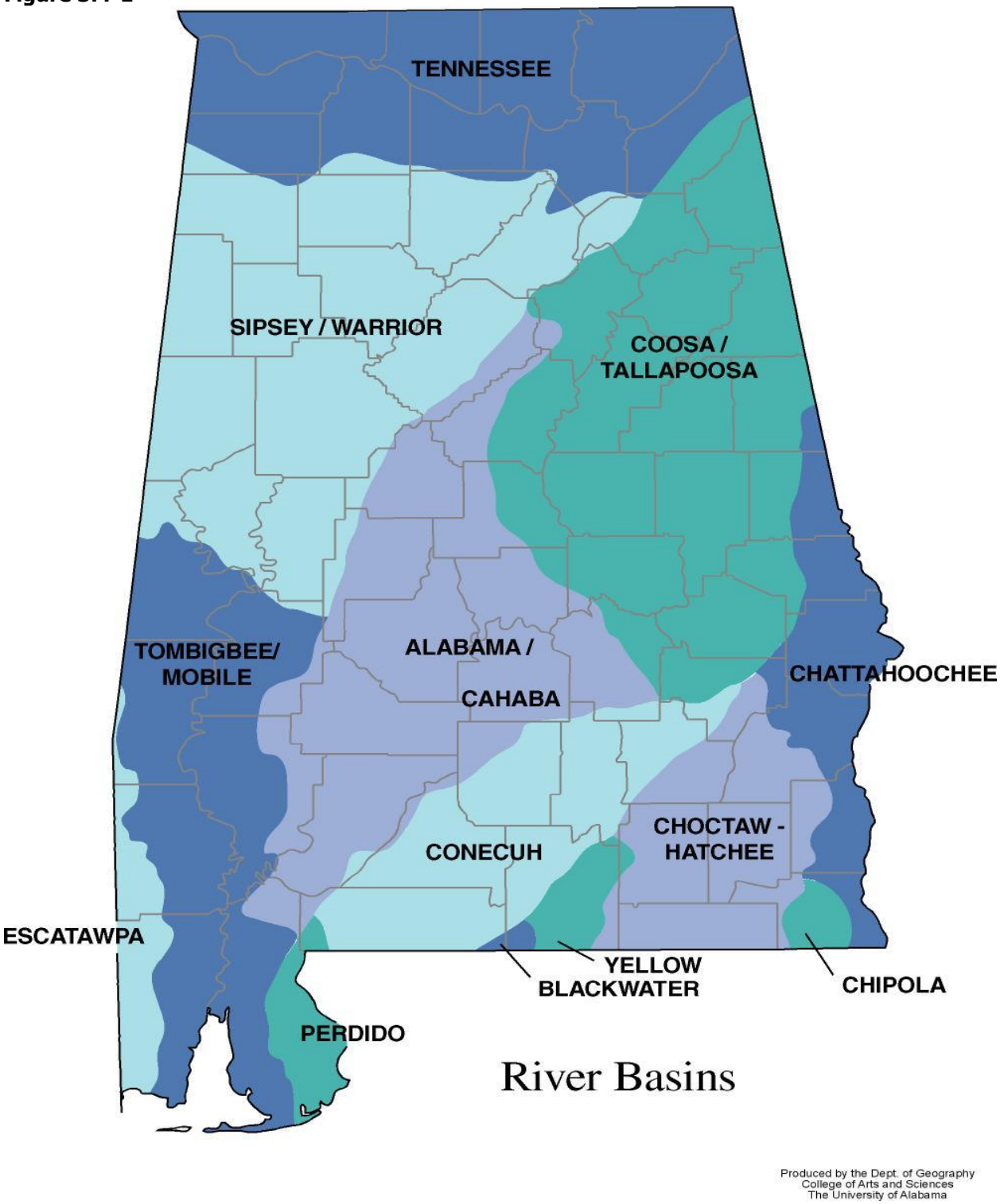
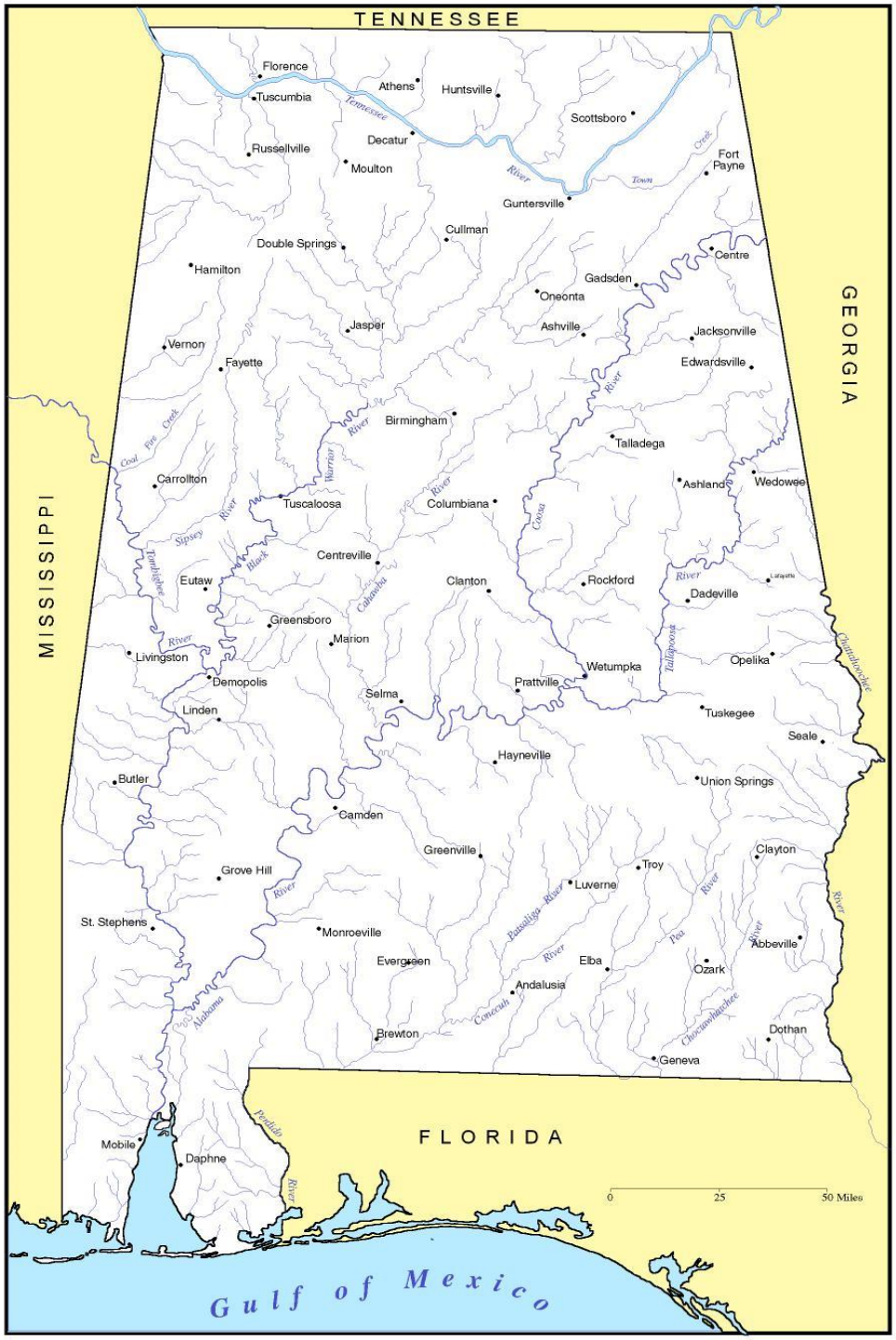

TENNESSEE
SIPSEY / WARRIOR
COOSA / TALLAPOOSA
TOMBIGBEE/ MOBILE
ALABAMA / CAHABA
CHATTAHOOCHEE
CONECUH
CHOCTAW - HATCHEE
ESCATAWPA
YELLOW BLACKWATER
CHIPOLA
PERDIDO
River Basins
Produced by the Dept. of Geography
College of Arts and Sciences
The University of Alabama

Figure 3.4-2

Alabama Rivers



Produced by the Cartographic Research Lab
University of Alabama

Figure 3.4-3

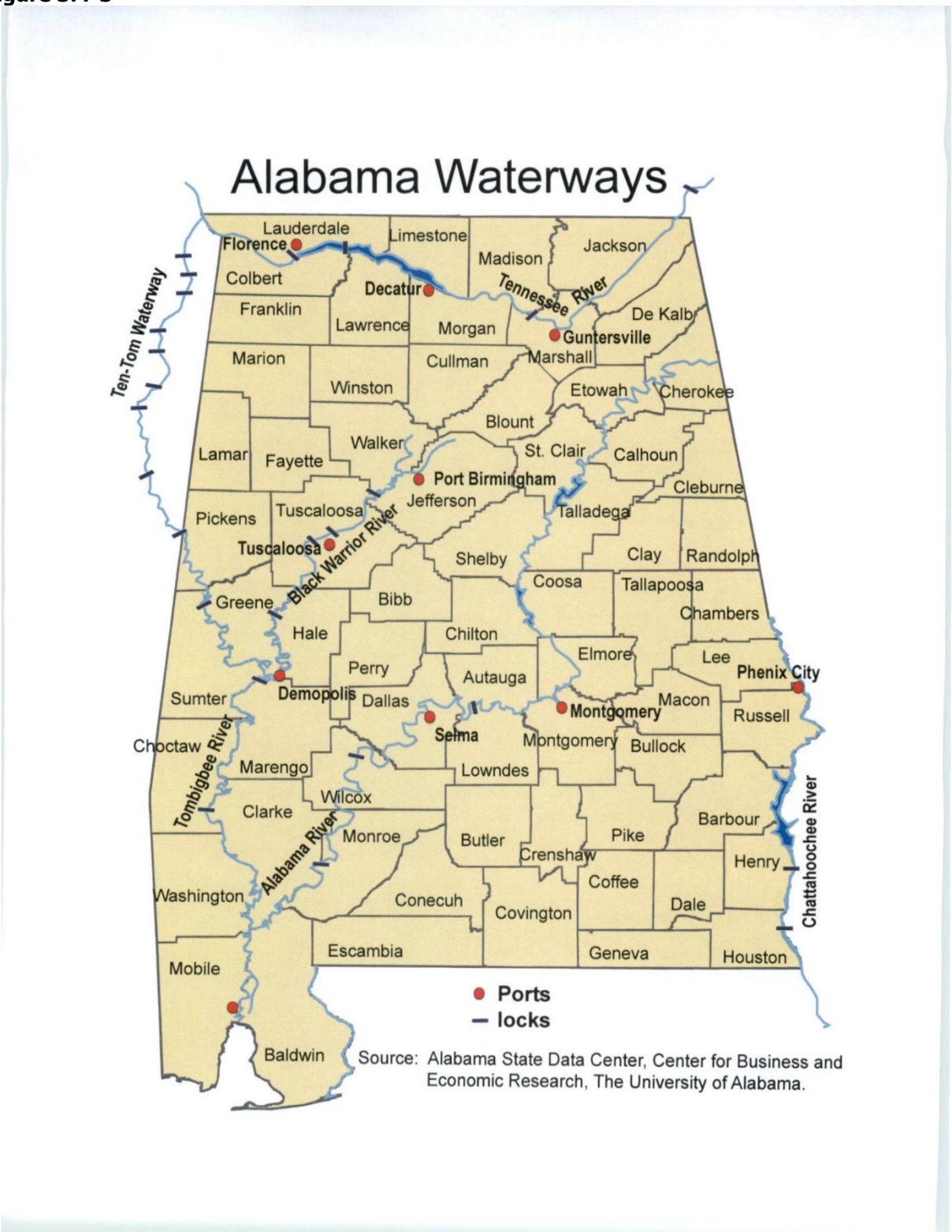
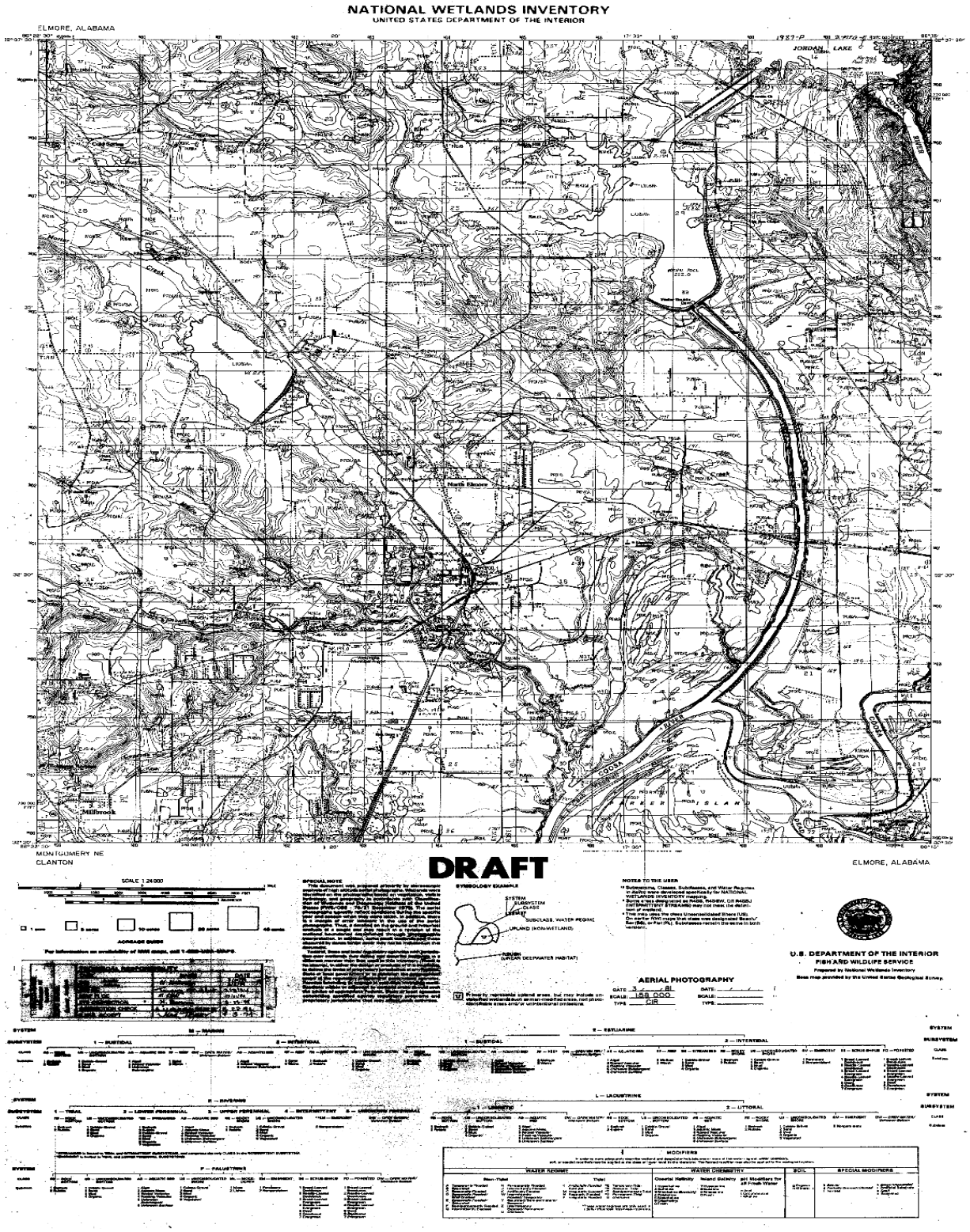

Alabama Waterways
Lauderdale
Florence
Limestone
Madison
Jackson
Colbert
Decatur
Tennessee River
Franklin
Lawrence
Morgan
De Kalb
Guntersville
Marion
Cullman
Marshall
Winston
Etowah
Cherokee
Blount
Lamar
Fayette
Walker
St. Clair
Calhoun
Port Birmingham
Cleburne
Pickens
Tuscaloosa
Jefferson
Talladega
Tuscaloosa
Black Warrior River
Shelby
Clay
Randolph
Coosa
Tallapoosa
Greene
Bibb
Chambers
Hale
Chilton
Elmore
Lee
Perry
Autauga
Phenix City
Sumter
Demopolis
Dallas
Montgomery
Macon
Russell
Selma
Montgomery
Bullock
Choctaw
Tombigbee River
Marengo
Lowndes
Wilcox
Clarke
Alabama River
Monroe
Butler
Pike
Barbour
Crenshaw
Henry
Coffee
Washington
Conecuh
Covington
Dale
Chattahoochee River
Escambia
Geneva
Houston
Mobile
Ports
locks
Baldwin
Source: Alabama State Data Center, Center for Business and Economic Research, The University of Alabama.
Ten-Tom Waterway

Figure 3.4-4 National Wetlands Inventory, Elmore County



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3.5 Climate

Long, warm summers and short, relatively mild winters characterize the climate of Elmore County. The difference between the average summer and winter temperatures is approximately 32° F. The temperature, is therefore, favorable for the production of a large number of crops, including many winter crops.

The average annual temperature of the county, based on available climatic data, is approximately 63°F. The average temperature in summer (July) is approximately 81°F. The summers are warm, temperatures often exceeding 90°F between June and September. Frost and freezing temperatures occur, on average, between ten to twenty times each winter. The average temperature in winter (January) is approximately 49°F. More than three frosts, or freezes, on successive nights are unusual and are generally followed by rain. The soil is seldom frozen to a depth of more than 1 inch, and it generally thaws out during the day. Snow is rare and several years may pass with no snowfall.

The average annual precipitation is about 52 inches. During the summer months gardens, farm crops, and pastures are often severely damaged by prolonged dry periods. The winter and spring seasons are the seasons that generally experience the most rainfall.

On average, the first frost occurs between October 30th and November 10th, while the last frost occurs on average between March 15th and 25th each year. The average length of the frost-free season is 218 days, or from March 26th to October 29th. The latest recorded frost is April 15, and the earliest is October 17. The frost-free season is always long enough to ripen all staple crops. Sugarcane and late-planted sweet potatoes, where grown on low ground, may sometimes be nipped by frosts. The more frost-resistant plants-onions, collards, cabbage, radishes, rape, oats, and rye remain green throughout the winter. These crops, however, usually make slow growth unless given a good start by early fall planting.

High winds do little damage; the annual average wind movement is only 5 miles an hour, the greatest velocity occurring in spring and the least in midsummer. Prevailing winds are from the north in winter, from the south in spring, from the northwest in summer, and from the northeast in fall. Summer days are often sultry, but breezes usually cool the nights.

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Figure 3.5-1 Alabama Average January Temperature (Degrees in Fahrenheit)

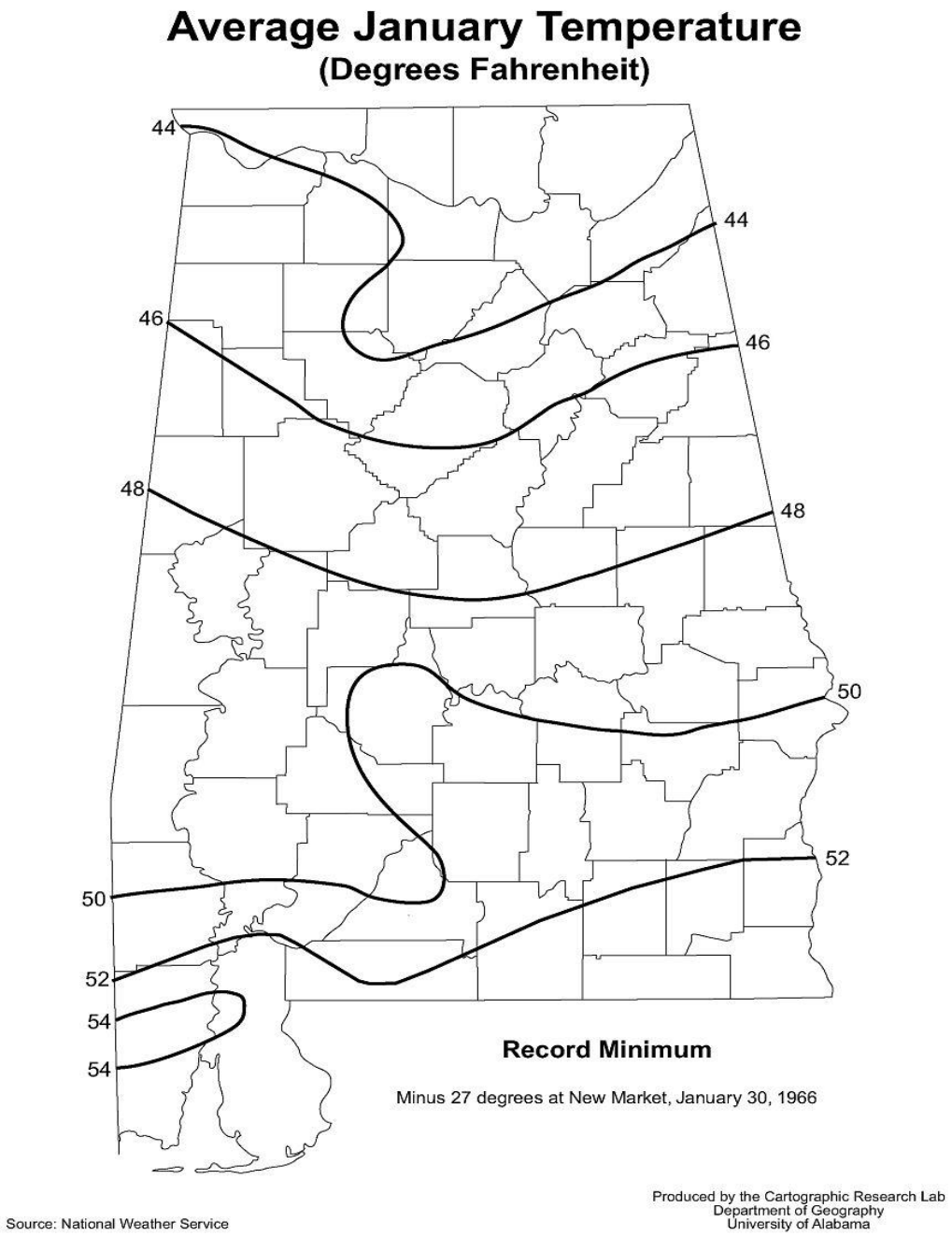


Figure 3.5-2 Alabama Average July Temperature (Degrees Fahrenheit)

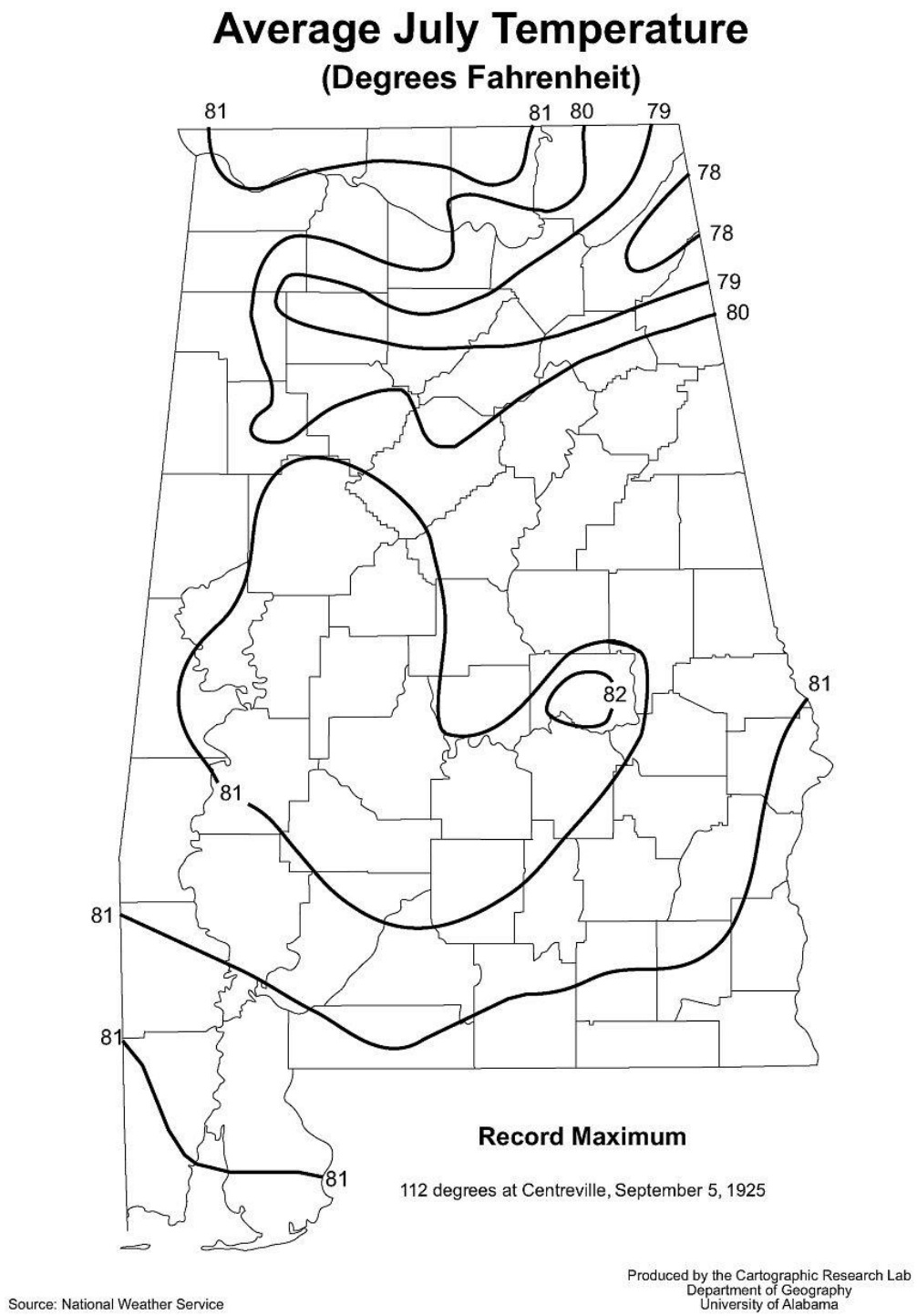


Figure 3.5-3 Alabama Average Annual Temperature, in degrees Fahrenheit

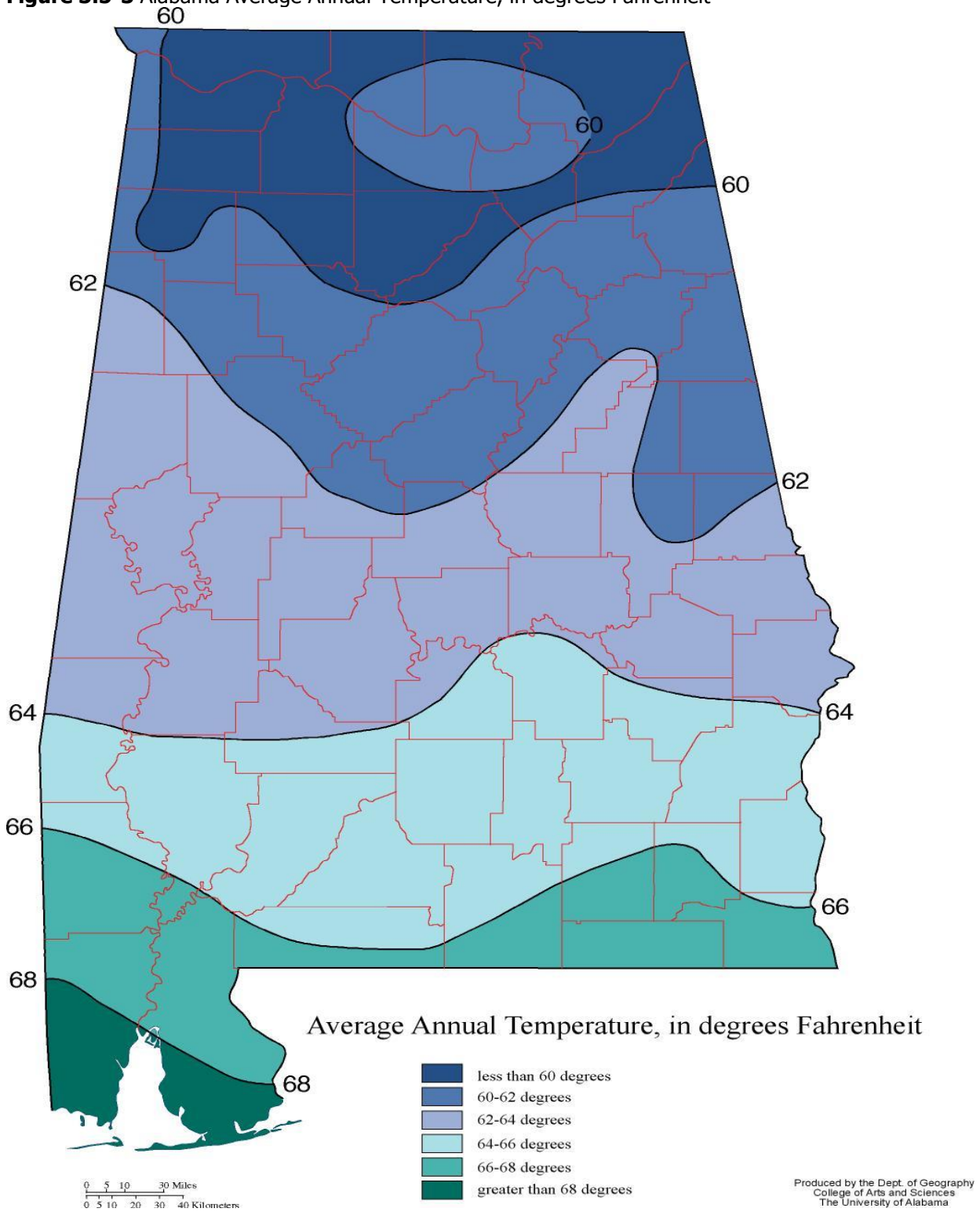


Figure 3.5-4 Alabama First Frost

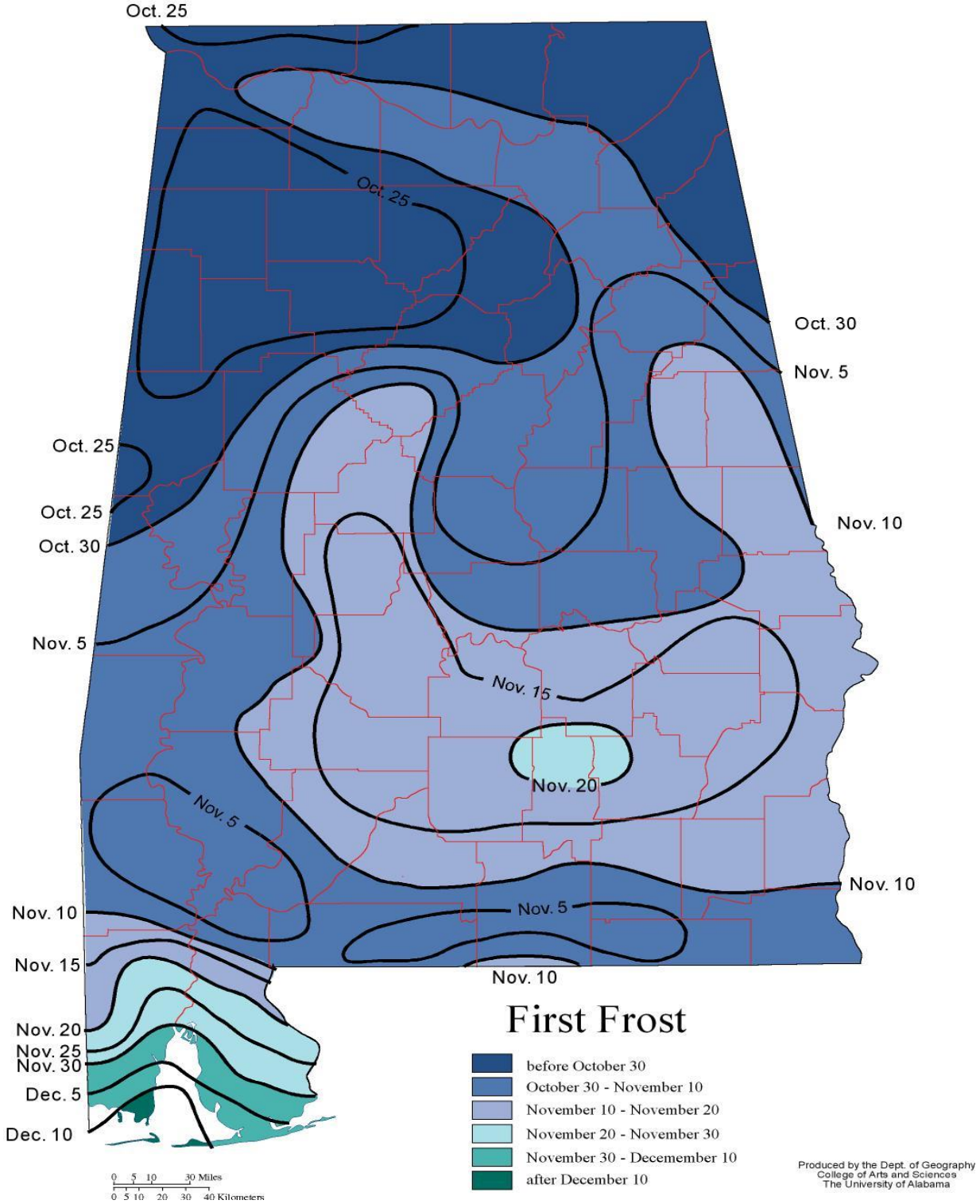


Figure 3.5-5 Alabama Last Frost

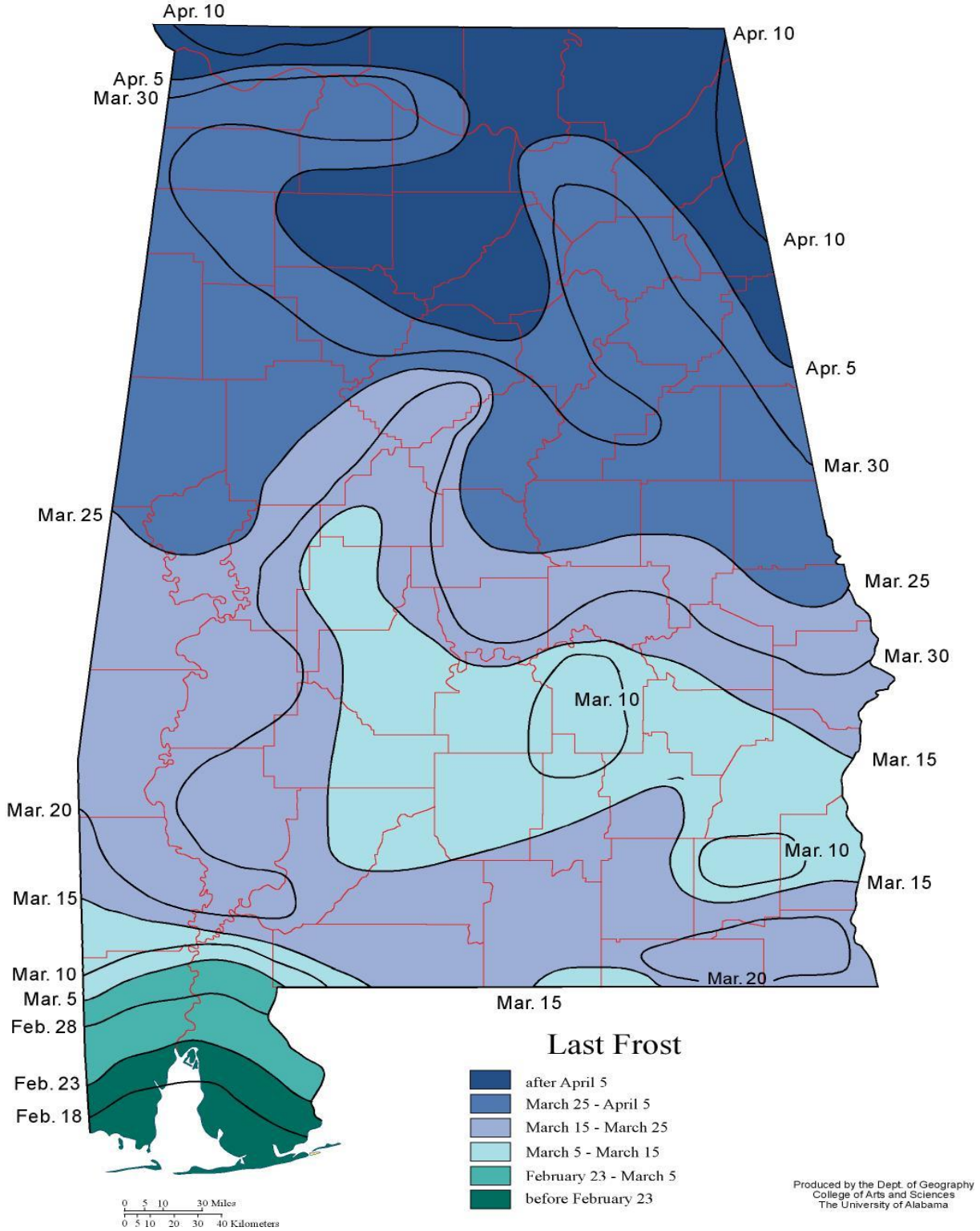


Figure 3.5-6 Alabama Average Annual Rainfall

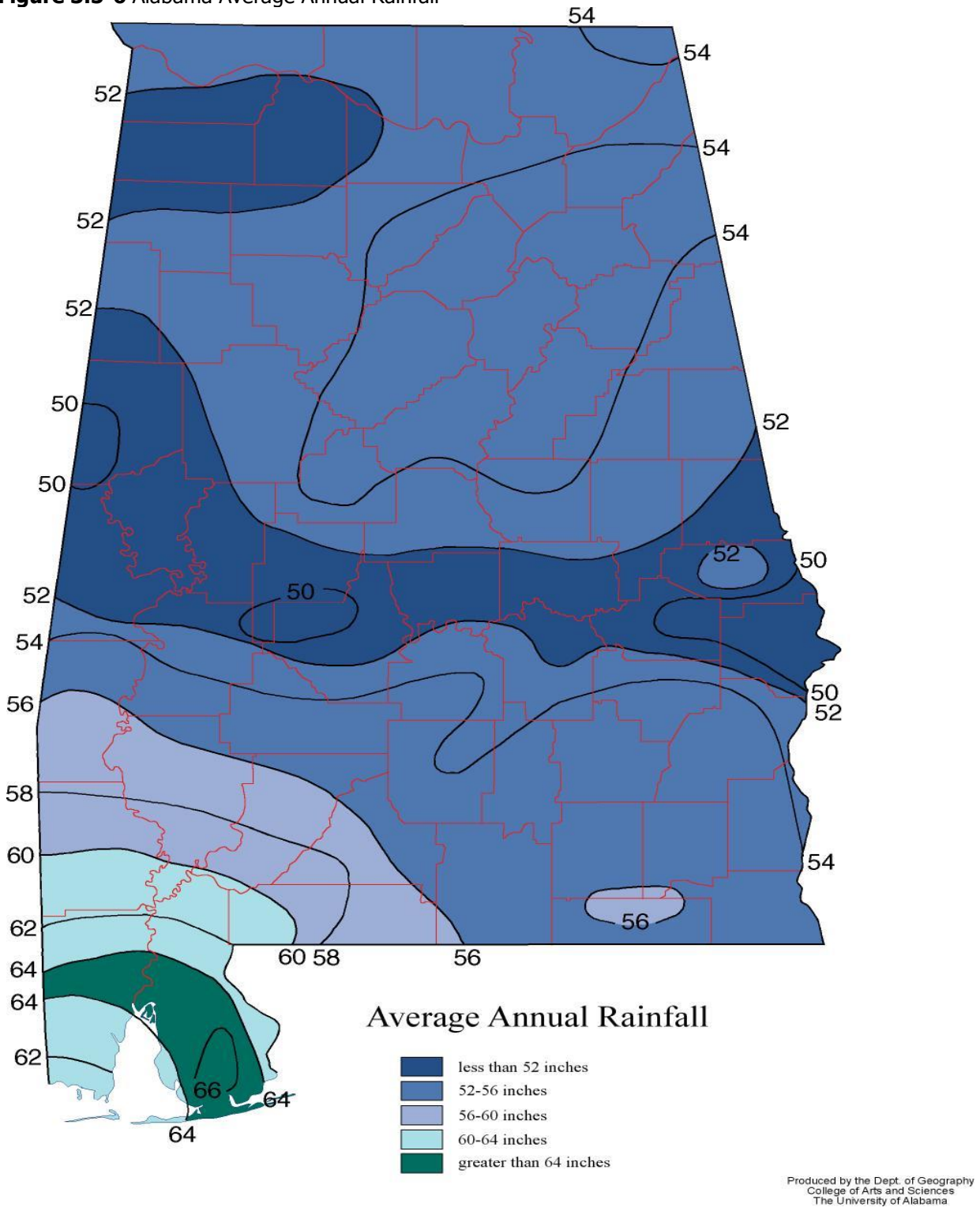
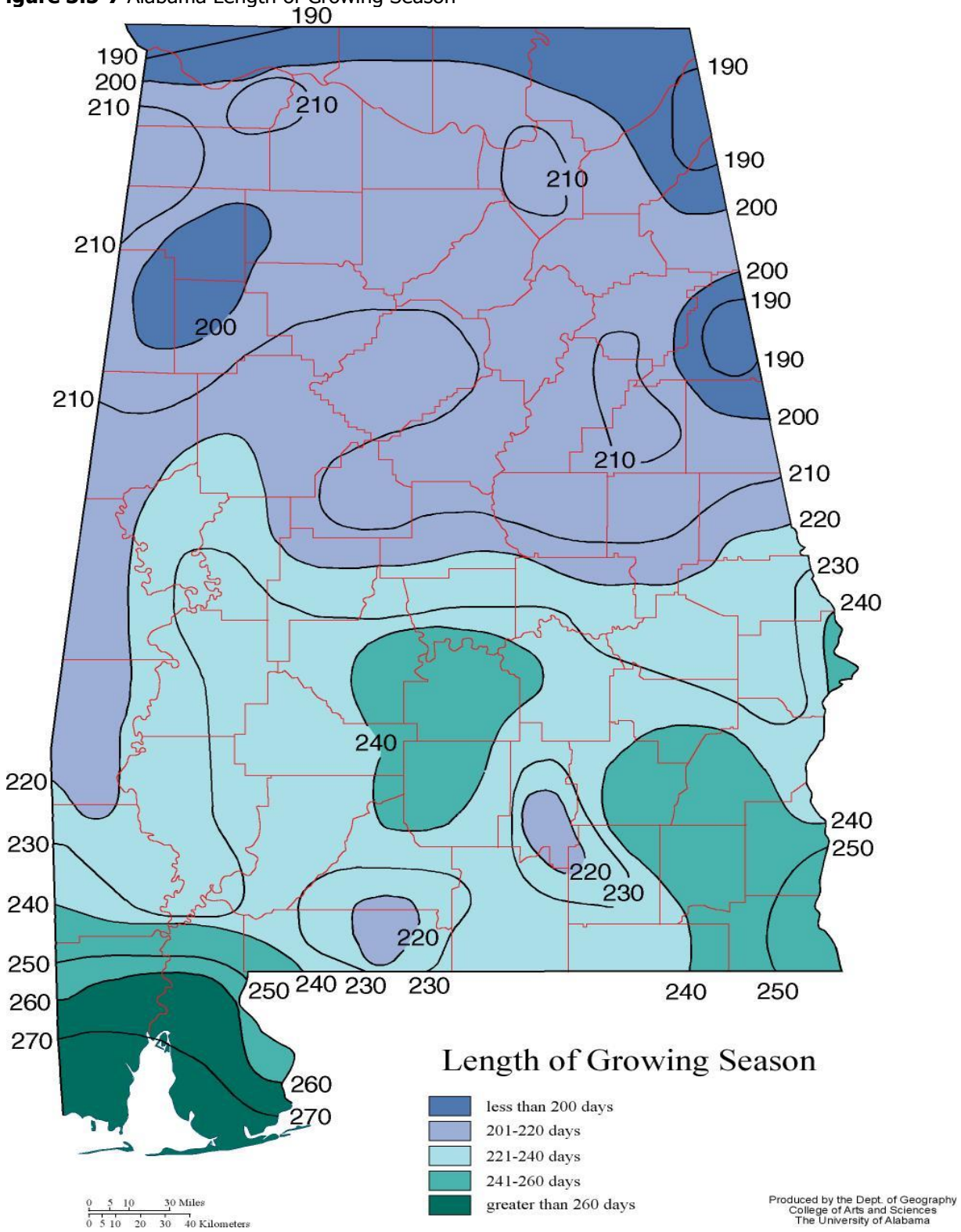


Figure 3.5-7 Alabama Length of Growing Season



3.6 Minerals and Soils

According to the *Soil Survey, Elmore County Alabama, Series 1939, No. 26, Issued September, 1955, U.S. Department of Agriculture*, Elmore County lies within two physiographic regions--the Piedmont Province and the Coastal Plain. The physiographic features of the county are varied. Broad and comparatively level terraces and stream bottoms occur on the Tallapoosa, Coosa, and Alabama Rivers (particularly south of Wetumpka and Elmore and following the Tallapoosa River to its intersection with the Coosa). Upland areas are level to gently rolling, rolling to hilly, and hilly to extremely broken where they adjoin the Tallapoosa and Coosa Rivers and their tributaries in the northeastern part of the county.

As stated above, the county is divided into the Piedmont Province and the Coastal Plain. The Piedmont Province, occurring in the northern and northeastern parts of the county, includes the highest elevations and the most rolling to broken land of the county. The Coastal Plain, located in the southern and western parts of the county, constitutes the more sandy part of the county. Elevations within the county range from less than 200 feet adjacent to the rivers to as much as 746 feet on the ridge tops around the Seman community. The elevations of the following towns are based upon data taken from the United States Geological Survey topographical maps: Elmore, 172 feet; Coosada, 178 feet; Wetumpka, 182 feet; Tallassee, 202 feet; Deatsville, 306 feet; Buyck, 459 feet; Kent, 594 feet; Central, 637 feet; Channahatchee, 639 feet; and Seman, 746 feet. The Coastal Plain areas generally are more favorable for farming because of the milder slopes.

There are three major drainage basins within the county served by the major river systems; the Alabama, Coosa and Tallapoosa Rivers. The merging of the Coosa River and the Tallapoosa River forms the Alabama River, near Wetumpka (county seat). The Tallapoosa and Alabama Rivers form the southern county boundary along with Montgomery County. Elmore County possesses five hydroelectric power dams along the Tallapoosa and Coosa Rivers.

There are a variety of complex eco-regions, including southern pine forests, foothills, and coastal plains.

According to the Soil Survey Series 1939, No. 26, the soils of Elmore County, though predominantly light-colored, exhibit all shades from light gray or yellowish gray through brownish gray to reddish brown and red. The lightest colored soils are those in the Coastal Plain, or sandy part of the county; the darkest ones prevail in the Piedmont province. This is particularly true in the color of the sub soils. Organic-matter content is usually low, as climatic conditions are unfavorable for its accumulation. Both surface soils and sub soils range from slightly acid to very strongly acid in reaction.

Textures of the soils range from sands to clays. The consistence of the sub-soils varies from loose and friable to firm or slightly compact and plastic. Many rounded quartz gravel are on the surface and mixed with the soils in some localities in the Coastal Plain, whereas gneiss, hornblende schist, and angular quartz fragments are scattered over the surface in the Piedmont province.

Large areas have sloping, rolling, or hilly relief. If used for clean-cultivated crops, such areas will require terracing, strip cropping, and contour cultivation, as well as the growing of row (corn or soybeans) crops, to control soil loss from surface wash. Both surface wash and gully erosion are noticeable, particularly in the Piedmont plateau. Considerable erosion has taken place on soil where the slope is less than 5 percent. Large areas of Cecil sandy loam in the northern part of the county, un-eroded not too long ago, now have much of their sandy surface soil removed through sheet erosion and the red clay subsoil exposed. This eroded condition, particularly on the more sloping areas, is largely the result of growing clean-cultivated crops year after year on the same soil. Many of the steeper slopes should not have been cleared of their native vegetation. After some of these areas were farmed for a few years, they became eroded and were left to grow up in old-field pine, sweet gum, and post oak.

The soils of the county are classified into two groups according to their parent materials. In the northern one-fifth of the county, which is in the Piedmont Province, the soils have developed from the weathered products of the underlying rocks; in the Coastal Plain section they have formed from the weathering of beds of sand, sandy clay, and clay. The soils in these two regions differ widely in color, texture, consistence, and chemical composition. Soil differences also exist in the Piedmont Province, depending on the character of the parent material and the degree and depth to which it is weathered.

The soils of the county have been grouped into approximately 40 series that have similar characteristics, and the series have been subdivided into soil types according to the texture of the surface soil.

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Figure 3.6-1 Alabama Physiographic Regions

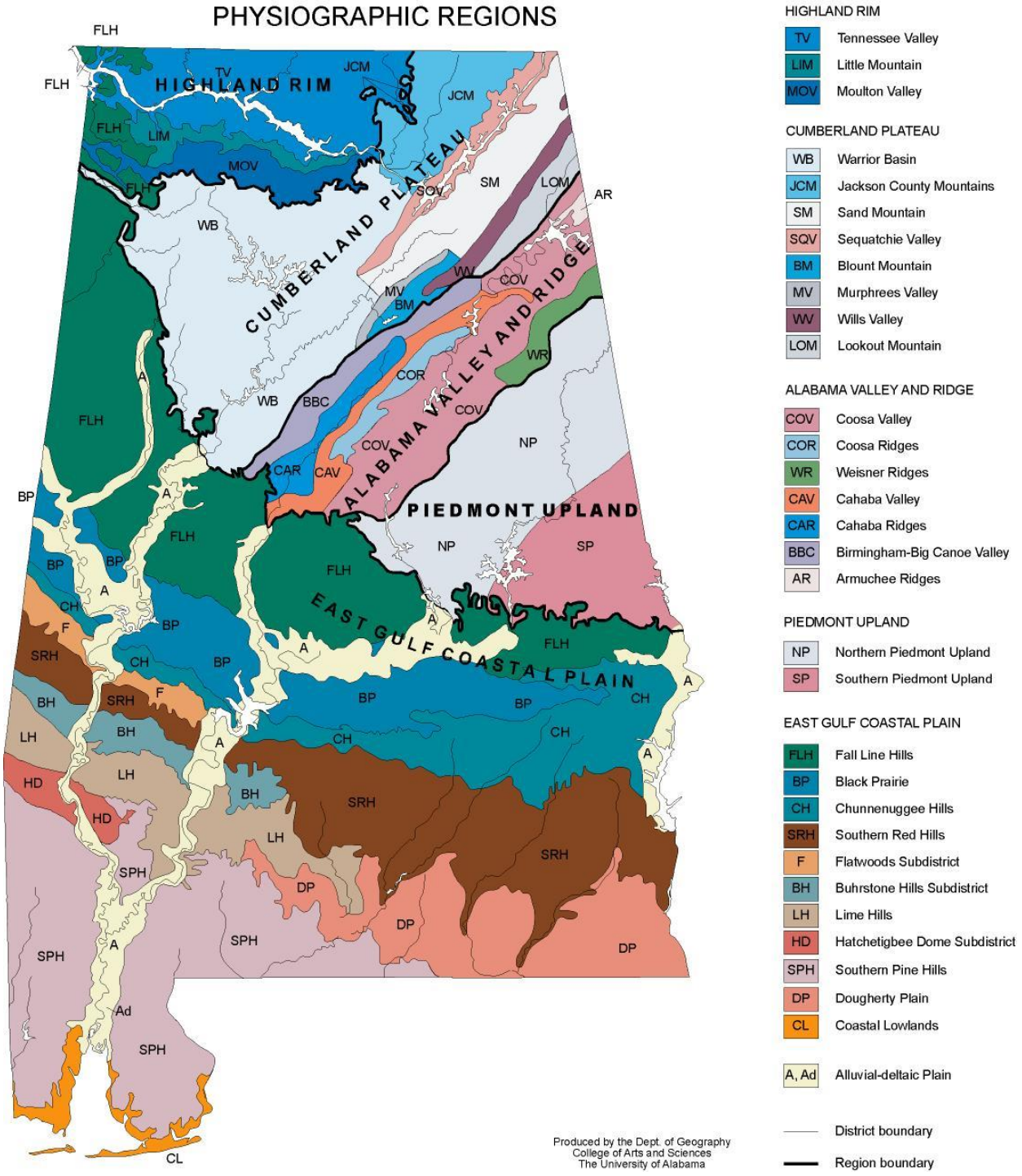

Figure 3.6-2 Alabama General Physiography

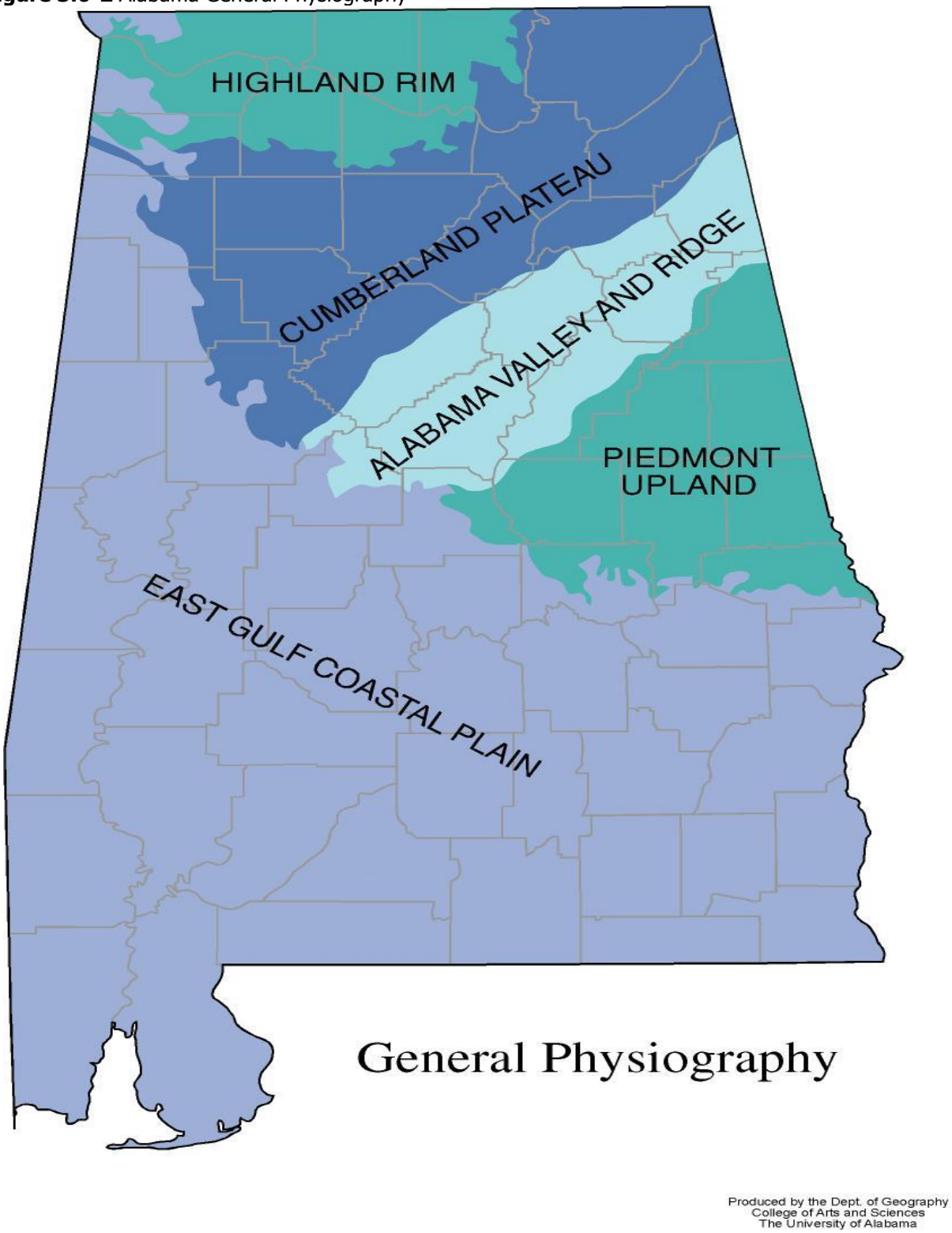

Figure 3.6-3 Alabama General Soils

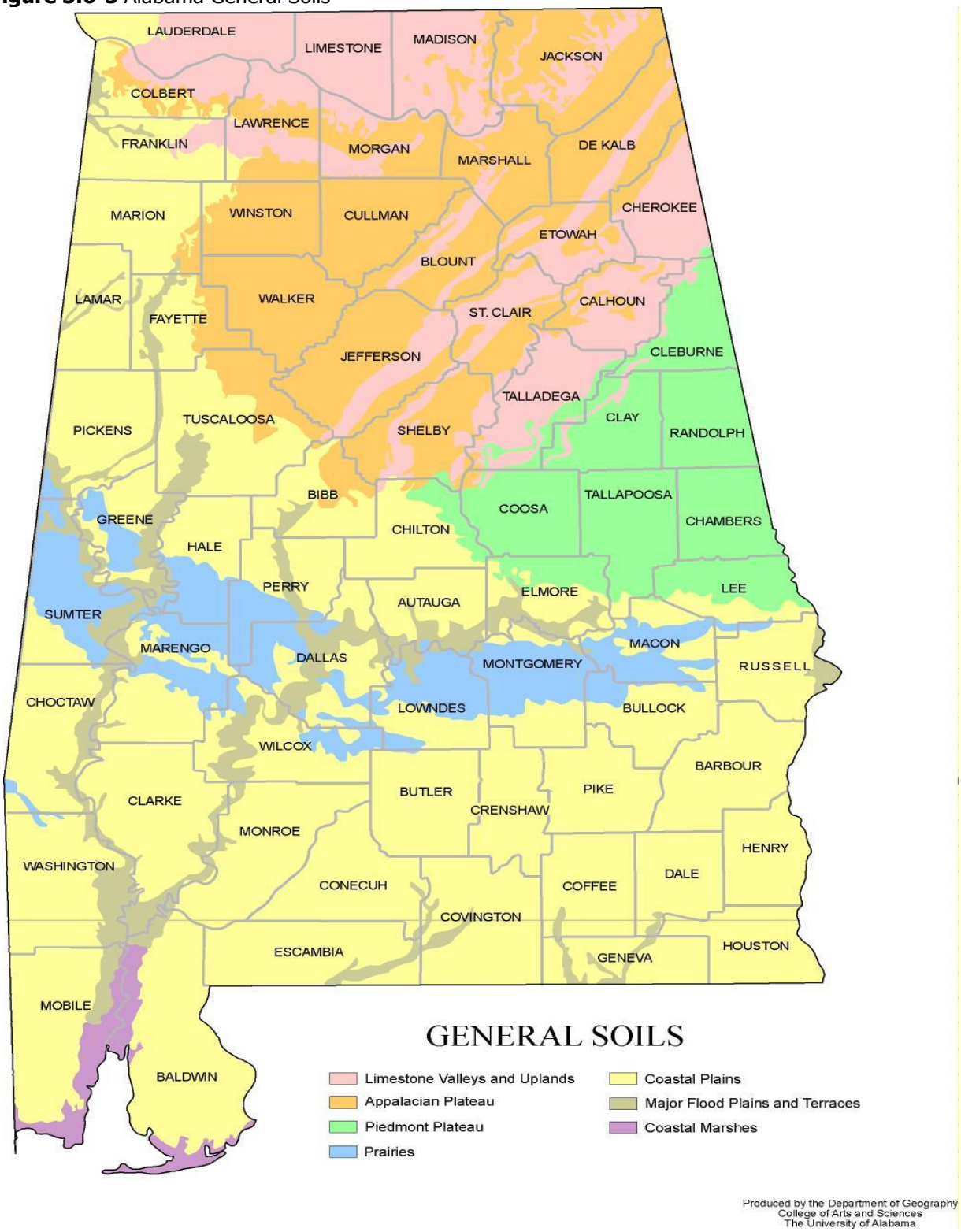

Figure 3.6-4 United States Dominant Soil Orders

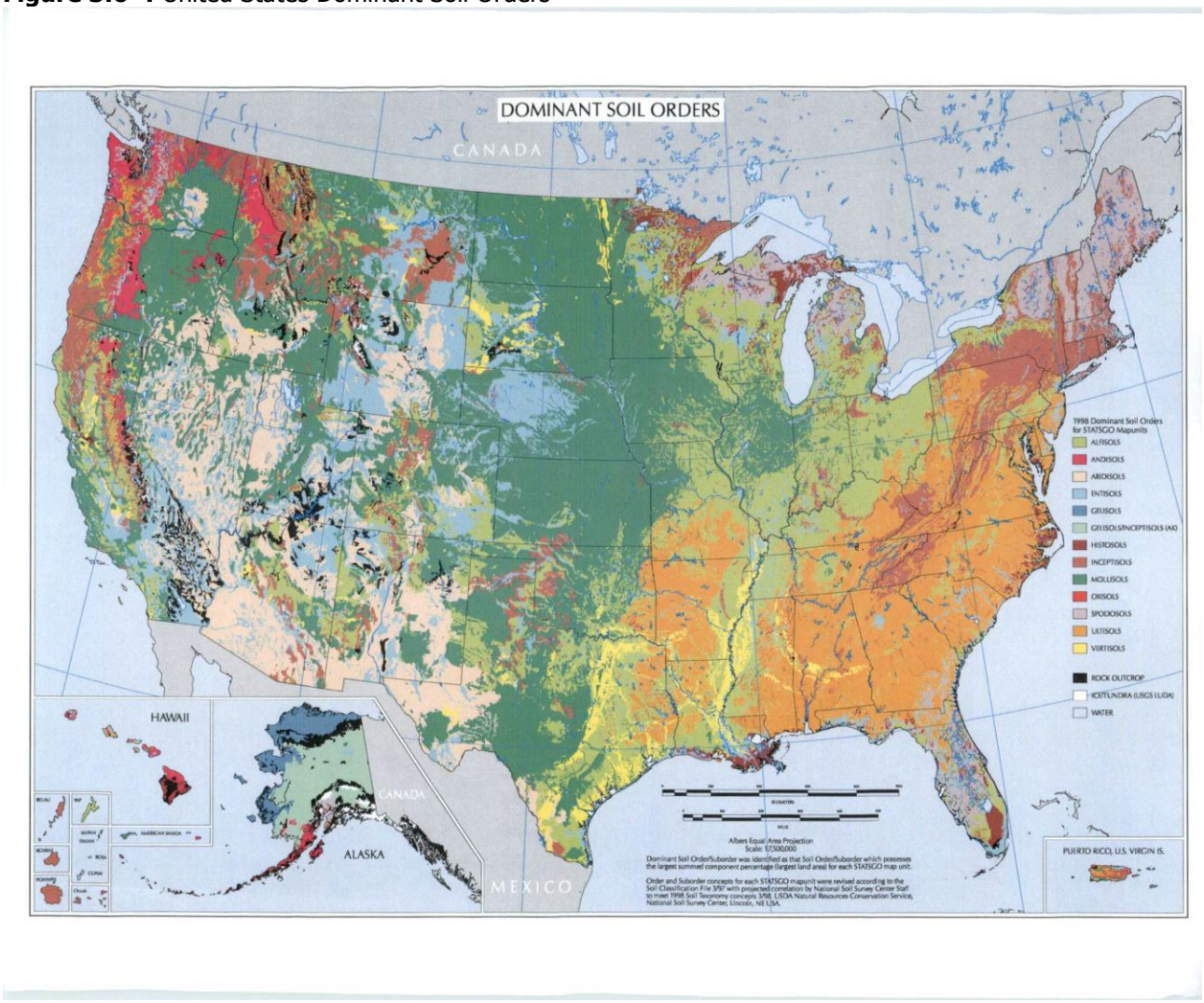

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Figure 3.6-5 USDA 1911 Soil Survey, Elmore County, Alabama
Source: U.S. Department of Agriculture, 1911 Elmore County Soil Survey, Geological Survey of Alabama; www.alabamamaps.ua.edu/historicalmaps

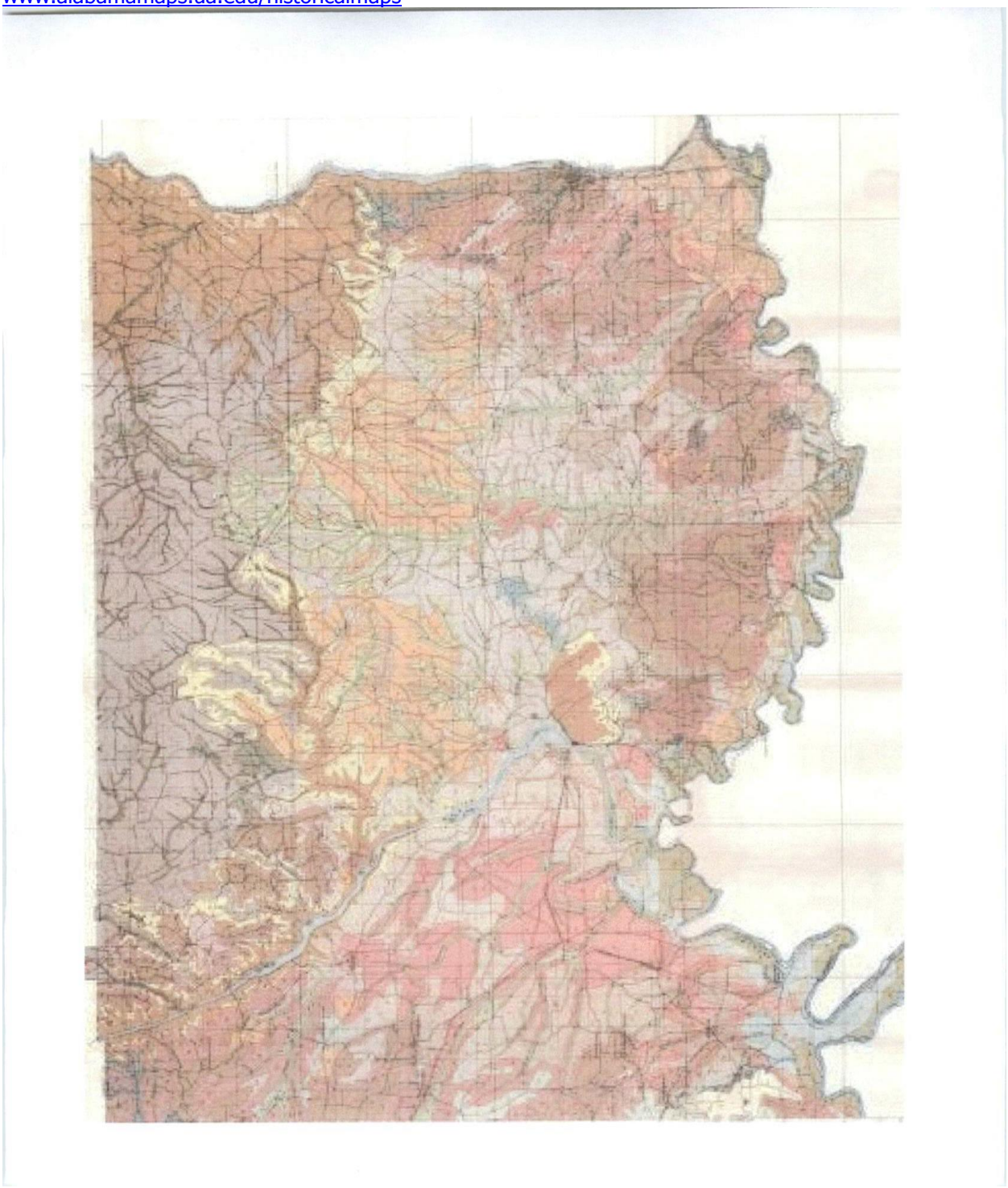


Figure 3.6-6 Alabama Topographical Map

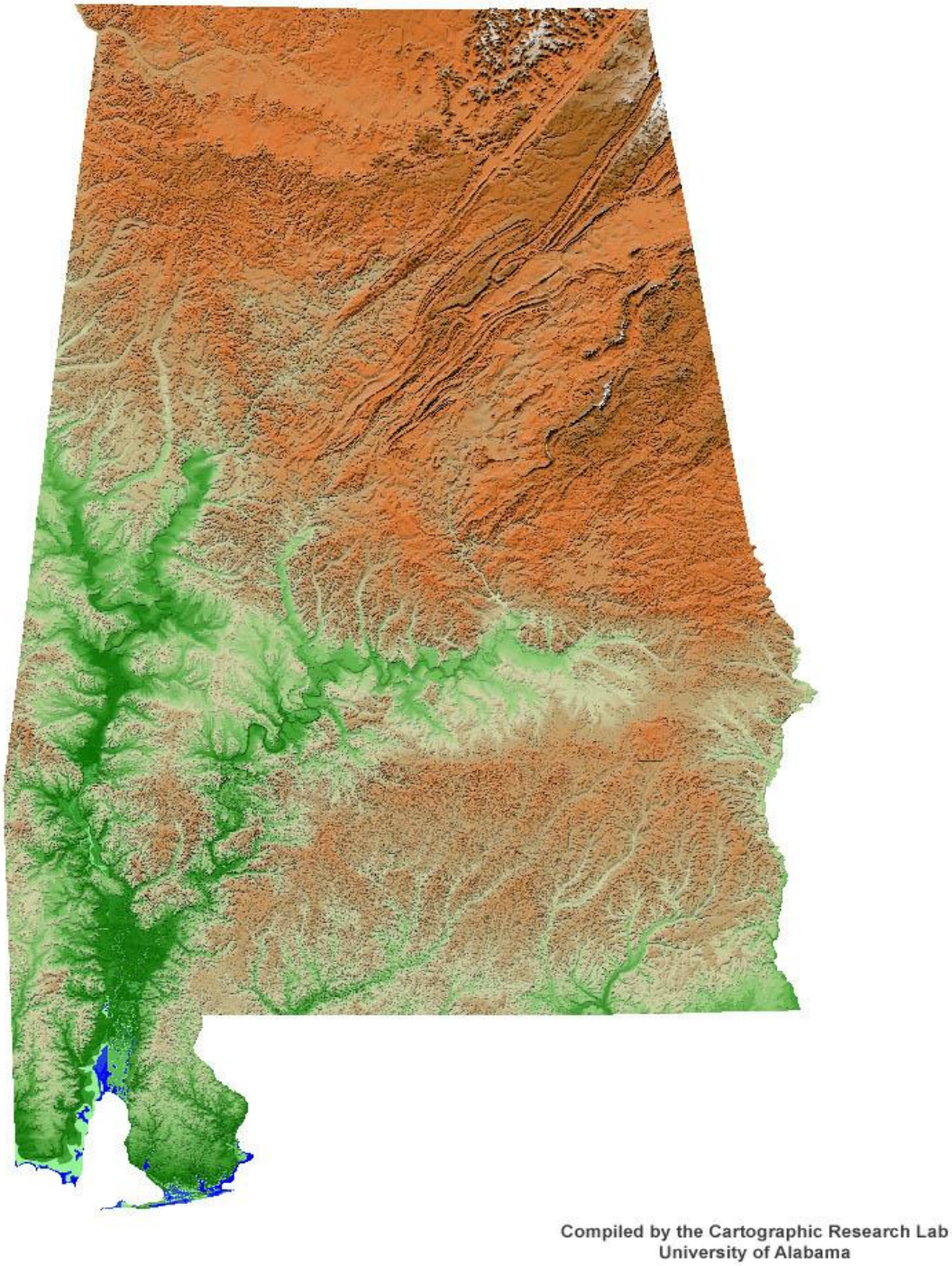
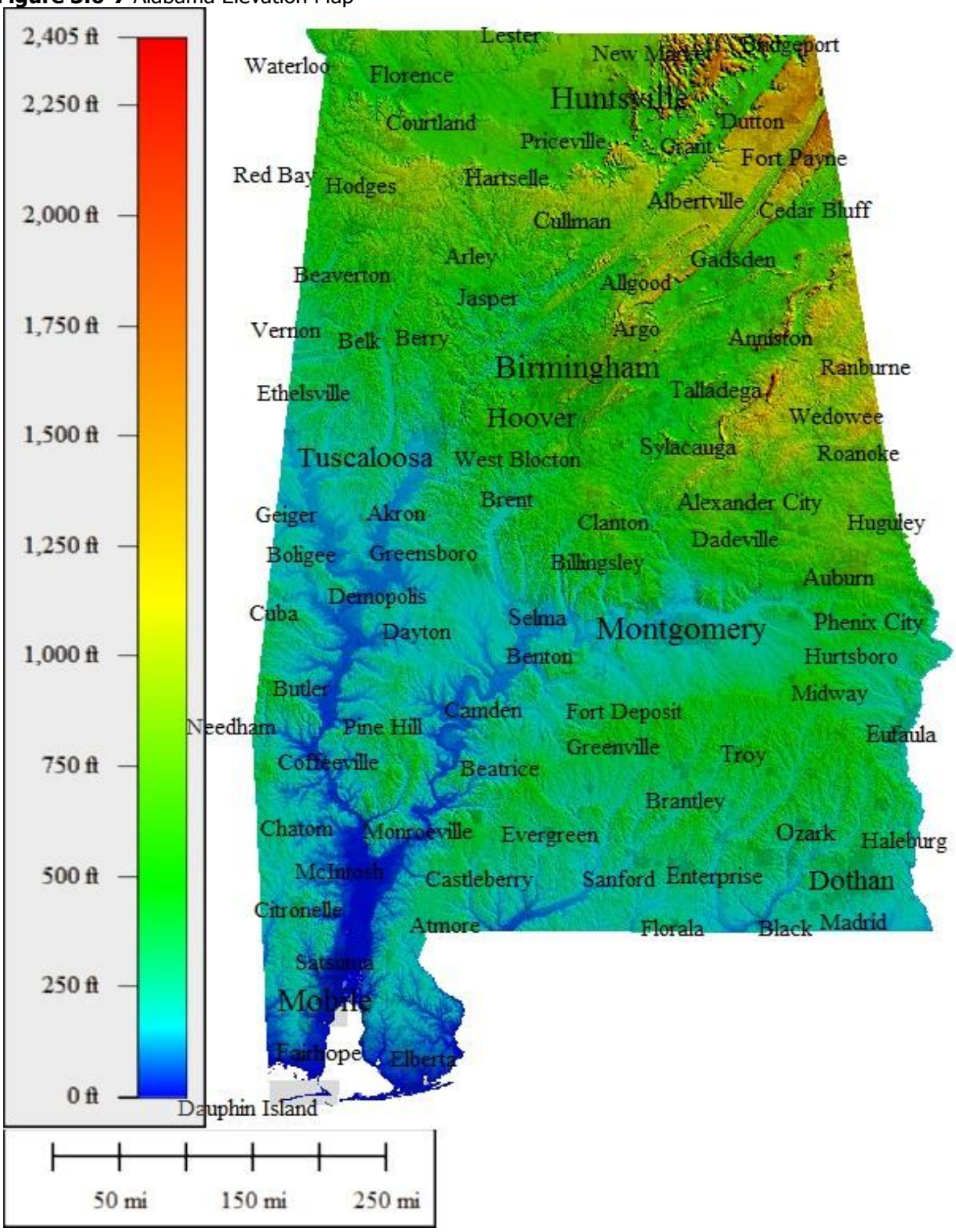


Figure 3.6-7 Alabama Elevation Map



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3.7 Population and Demographics

The U.S. Census Bureau (www.census.gov, American FactFinder: Profile of General Population and Housing Characteristics: 2010, 2010 Demographic Profile Data; and State & County QuickFacts) was the source of population and demographics data referenced herein. Data was researched and compiled for the following:

- Blue Ridge Census Designated Place (CDP), Alabama
- Deatsville Census County Division (CCD), Elmore County, Alabama
- Deatsville Town, Alabama
- Eclectic Census County Division (CCD), Elmore County, Alabama
- Eclectic Town, Alabama
- Elmore County, Alabama
- Elmore Census County Division (CCD), Elmore County, Alabama
- Elmore Town, Alabama
- Emerald Mountain Census Designated Place (CDP), Alabama
- Holtville Census Designated Place (CDP), Alabama
- Millbrook (City), Alabama
- Prattville (City), Alabama
- Redland Census Designated Place (CDP), Alabama
- Tallassee Census County Division (CCD), Elmore County, Alabama
- Tallassee (City), Alabama
- Titus Census County Division (CCD), Elmore County, Alabama
- Wetumpka (City), Alabama

According to *CensusScope* at www.censusscope.org: Alabama Population Growth Ranking, Alabama Counties Ranked by Rate of Population Growth, 1990-2000, Elmore County ranked 3rd with a 33.86% rate of population growth, behind #2 Baldwin County with a 42.87% population growth rate, and Shelby County, #1, with a 44.22% growth rate.

According to the *U.S. Bureau of the Census, Population of Counties by Decennial Census: 1900 to 1990*, Elmore County has seen fluctuations in population:

Table 3.7-1

Decade	Population	+/-
1900	26099	UNKWN
1910	28245	+2146
1920	28085	-160
1930	34280	+6195
1940	34546	+266
1950	31649	-2897
1960	30524	-1125
1970	33535	+3011
1980	43390	+9855

1990	49210	+5820
*2000	65874	16664
**2010	79303	13429

* According to 2000 U.S. Census ** According to 2010 U.S. Census

Population: Elmore County – 79303
Incorporated Municipalities: 30628 Unincorporated Areas: 48675
Population Growth between 2000 – 2010: 20.4%

According to Alabama Demographics by Cubit (www.alabama-demographics.com/elmore-county-demographics), the following Annual Population Estimates are provided:

Table 3.7-2 Annual Population Estimates, 2010-2012, By Elmore County Jurisdiction

By Jurisdiction, Annual Population Estimates for 2010 - 2012			
Jurisdiction	*2010*	*2011*	*2012*
Elmore County	79303	80149	80629
Coosada	1224	1231	1232
Deatsville	1154	1163	1166
Eclectic	1001	1009	1012
Elmore	1262	1282	1285
Emerald Mountain	2270	2259	-
Holtville	4394	4050	-
Millbrook	14640	14840	14952
Tallassee	4819	4837	4829
Wetumpka	6528	6891	7103

Annual County Population 2000-2010 and Projections 2015-2040 Ref: Elmore County

Census 2000 Population: 65874 Census 2010 Population: 79303

Table 3.7-3 Population Projections

Year	Population Projection
2015	84950
2020	90211
2025	94857
2030	98810
2035	102032
2040	104541

Change 2010-2040 (Elmore County)

Number	Percent
25238	31.8

Note: These projections are driven by population change between Census 2000 and Census 2010. Recent data on births and deaths from the Alabama Department of Public Health are used to derive birth and death rates for the state and each county.

As reflected in the preceding tables, Elmore County is projected to experience a 31.8 percent rate of population growth between 2010 and 2040. Based on this study, Elmore County rounds out the top 10 counties projected to see positive rates of growth:

1. Baldwin County: 63.7%
2. Shelby County: 62.6%
3. St. Clair County: 57.4%
4. Limestone County: 54.7%
5. Autauga County: 48.3%
6. Lee County: 45.6%
7. Madison County: 43.2%
8. Coffee County: 37.3%
9. Marshall County: 34.4%
10. Elmore County: 31.8%

An additional 24 counties is Alabama are projected to experience positive population growth rates, leaving the remaining 33 counties projected with varying rates of population losses, or negative rates of growth. Percentages of projected negative growth rates range from -1.2%, for Covington & Etowah Counties, to -32.4% for Choctaw County.

Source: U.S. Census Bureau and Center for Business and Economic Research, The University of Alabama, Fall 2012.

Area intentionally left blank.

Figure 3.7-1 2010 Census – Census Tract Reference Map: Elmore County, AL

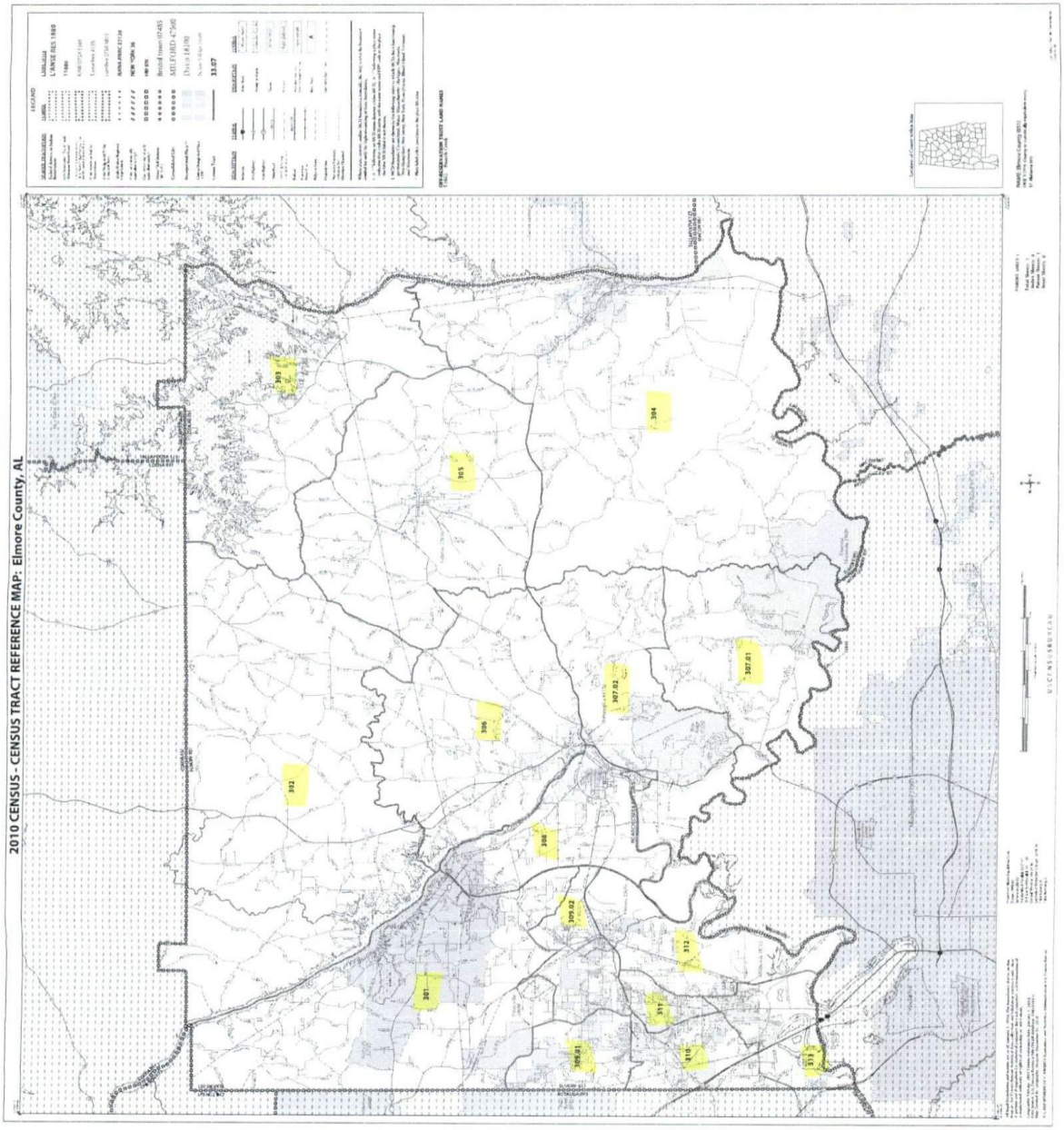

Table 3.7-4 2010 US Census Demographic Profile Data, Elmore County, Alabama

U.S. Census Bureau

AMERICAN FactFinder

DP-1 | Profile of General Population and Housing Characteristics: 2010

2010 Demographic Profile Data

NOTE: For more information on confidentiality protection, nonsampling error, and definitions, see http://www.census.gov/prod/cen2010/doc/dpsf.pdf.

Geography: Elmore County, Alabama

Subject	Number	Percent
SEX AND AGE		
Total population	79,303	100.0
Under 5 years	4,859	6.1
5 to 9 years	5,206	6.6
10 to 14 years	5,256	6.6
15 to 19 years	5,579	7.0
20 to 24 years	5,144	6.5
25 to 29 years	5,049	6.4
30 to 34 years	5,439	6.9
35 to 39 years	5,872	7.4
40 to 44 years	5,752	7.3
45 to 49 years	6,367	8.0
50 to 54 years	5,890	7.4
55 to 59 years	4,908	6.2
60 to 64 years	4,546	5.7
65 to 69 years	3,318	4.2
70 to 74 years	2,422	3.1
75 to 79 years	1,617	2.0
80 to 84 years	1,136	1.4
85 years and over	943	1.2
Median age (years)	37.8	(X)
16 years and over	62,879	79.3
18 years and over	60,596	76.4
21 years and over	57,293	72.2
62 years and over	12,107	15.3
65 years and over	9,436	11.9
Male population	38,689	48.8
Under 5 years	2,451	3.1
5 to 9 years	2,659	3.4
10 to 14 years	2,654	3.3
15 to 19 years	2,902	3.7
20 to 24 years	2,679	3.4
25 to 29 years	2,414	3.0
30 to 34 years	2,648	3.3
35 to 39 years	2,762	3.5
40 to 44 years	2,771	3.5
45 to 49 years	3,014	3.8
50 to 54 years	2,891	3.6
55 to 59 years	2,371	3.0
60 to 64 years	2,216	2.8
65 to 69 years	1,642	2.1
70 to 74 years	1,136	1.4

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Subject	Number	Percent
75 to 79 years	754	1.0
80 to 84 years	445	0.6
85 years and over	280	0.4
Median age (years)	36.7	(X)
16 years and over	30,354	38.3
18 years and over	29,145	36.8
21 years and over	27,445	34.6
62 years and over	5,564	7.0
65 years and over	4,257	5.4
Female population	40,614	51.2
Under 5 years	2,408	3.0
5 to 9 years	2,547	3.2
10 to 14 years	2,602	3.3
15 to 19 years	2,677	3.4
20 to 24 years	2,465	3.1
25 to 29 years	2,635	3.3
30 to 34 years	2,791	3.5
35 to 39 years	3,110	3.9
40 to 44 years	2,981	3.8
45 to 49 years	3,353	4.2
50 to 54 years	2,999	3.8
55 to 59 years	2,537	3.2
60 to 64 years	2,330	2.9
65 to 69 years	1,676	2.1
70 to 74 years	1,286	1.6
75 to 79 years	863	1.1
80 to 84 years	691	0.9
85 years and over	663	0.8
Median age (years)	38.6	(X)
16 years and over	32,525	41.0
18 years and over	31,451	39.7
21 years and over	29,848	37.6
62 years and over	6,543	8.3
65 years and over	5,179	6.5
RACE		
Total population	79,303	100.0
One Race	78,159	98.6
White	60,455	76.2
Black or African American	15,900	20.0
American Indian and Alaska Native	285	0.4
Asian	518	0.7
Asian Indian	101	0.1
Chinese	34	0.0
Filipino	78	0.1
Japanese	19	0.0
Korean	82	0.1
Vietnamese	59	0.1
Other Asian [1]	145	0.2
Native Hawaiian and Other Pacific Islander	63	0.1
Native Hawaiian	13	0.0
Guamanian or Chamorro	34	0.0
Samoan	5	0.0
Other Pacific Islander [2]	11	0.0
Some Other Race	938	1.2

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Subject	Number	Percent
Two or More Races	1,144	1.4
White; American Indian and Alaska Native [3]	322	0.4
White; Asian [3]	196	0.2
White; Black or African American [3]	339	0.4
White; Some Other Race [3]	93	0.1
Race alone or in combination with one or more other races: [4]		
White	61,481	77.5
Black or African American	16,375	20.6
American Indian and Alaska Native	698	0.9
Asian	762	1.0
Native Hawaiian and Other Pacific Islander	113	0.1
Some Other Race	1,080	1.4
HISPANIC OR LATINO		
Total population	79,303	100.0
Hispanic or Latino (of any race)	2,129	2.7
Mexican	1,342	1.7
Puerto Rican	246	0.3
Cuban	49	0.1
Other Hispanic or Latino [5]	492	0.6
Not Hispanic or Latino	77,174	97.3
HISPANIC OR LATINO AND RACE		
Total population	79,303	100.0
Hispanic or Latino	2,129	2.7
White alone	1,006	1.3
Black or African American alone	86	0.1
American Indian and Alaska Native alone	16	0.0
Asian alone	4	0.0
Native Hawaiian and Other Pacific Islander alone	13	0.0
Some Other Race alone	864	1.1
Two or More Races	140	0.2
Not Hispanic or Latino	77,174	97.3
White alone	59,449	75.0
Black or African American alone	15,814	19.9
American Indian and Alaska Native alone	269	0.3
Asian alone	514	0.6
Native Hawaiian and Other Pacific Islander alone	50	0.1
Some Other Race alone	74	0.1
Two or More Races	1,004	1.3
RELATIONSHIP		
Total population	79,303	100.0
In households	73,820	93.1
Householder	28,301	35.7
Spouse [6]	16,018	20.2
Child	22,259	28.1
Own child under 18 years	16,332	20.6
Other relatives	4,612	5.8
Under 18 years	2,107	2.7
65 years and over	643	0.8
Nonrelatives	2,630	3.3
Under 18 years	247	0.3
65 years and over	89	0.1
Unmarried partner	1,287	1.6
In group quarters	5,483	6.9
Institutionalized population	5,359	6.8
Male	2,771	3.5

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Subject	Number	Percent
Female	2,588	3.3
Noninstitutionalized population	124	0.2
Male	5	0.0
Female	119	0.2
HOUSEHOLDS BY TYPE		
Total households	28,301	100.0
Family households (families) [7]	21,003	74.2
With own children under 18 years	9,200	32.5
Husband-wife family	16,018	56.6
With own children under 18 years	6,449	22.8
Male householder, no wife present	1,287	4.5
With own children under 18 years	675	2.4
Female householder, no husband present	3,698	13.1
With own children under 18 years	2,076	7.3
Nonfamily households [7]	7,298	25.8
Householder living alone	6,238	22.0
Male	2,912	10.3
65 years and over	678	2.4
Female	3,326	11.8
65 years and over	1,518	5.4
Households with individuals under 18 years	10,430	36.9
Households with individuals 65 years and over	6,725	23.8
Average household size	2.61	(X)
Average family size [7]	3.04	(X)
HOUSING OCCUPANCY		
Total housing units	32,657	100.0
Occupied housing units	28,301	86.7
Vacant housing units	4,356	13.3
For rent	843	2.6
Rented, not occupied	55	0.2
For sale only	590	1.8
Sold, not occupied	117	0.4
For seasonal, recreational, or occasional use	1,739	5.3
All other vacants	1,012	3.1
Homeowner vacancy rate (percent) [8]	2.6	(X)
Rental vacancy rate (percent) [9]	11.5	(X)
HOUSING TENURE		
Occupied housing units	28,301	100.0
Owner-occupied housing units	21,882	77.3
Population in owner-occupied housing units	57,551	(X)
Average household size of owner-occupied units	2.63	(X)
Renter-occupied housing units	6,419	22.7
Population in renter-occupied housing units	16,269	(X)
Average household size of renter-occupied units	2.53	(X)

X Not applicable.

[1] Other Asian alone, or two or more Asian categories.

[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.

[3] One of the four most commonly reported multiple-race combinations nationwide in Census 2000.

[4] In combination with one or more of the other races listed. The six numbers may add to more than the total population, and the six percentages may add to more than 100 percent because individuals may report more than one race.

[5] This category is composed of people whose origins are from the Dominican Republic, Spain, and Spanish-speaking Central or South

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American countries. It also includes general origin responses such as "Latino" or "Hispanic."

[6] "Spouse" represents spouse of the householder. It does not reflect all spouses in a household. Responses of "same-sex spouse" were edited during processing to "unmarried partner."

[7] "Family households" consist of a householder and one or more other people related to the householder by birth, marriage, or adoption. They do not include same-sex married couples even if the marriage was performed in a state issuing marriage certificates for same-sex couples. Same-sex couple households are included in the family households category if there is at least one additional person related to the householder by birth or adoption. Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households. "Nonfamily households" consist of people living alone and households which do not have any members related to the householder.

[8] The homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale." It is computed by dividing the total number of vacant units "for sale only" by the sum of owner-occupied units, vacant units that are "for sale only," and vacant units that have been sold but not yet occupied; and then multiplying by 100.

[9] The rental vacancy rate is the proportion of the rental inventory that is vacant "for rent." It is computed by dividing the total number of vacant units "for rent" by the sum of the renter-occupied units, vacant units that are "for rent," and vacant units that have been rented but not yet occupied; and then multiplying by 100.

Source: U.S. Census Bureau, 2010 Census.

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Table 3.7-5 Elmore County, AL

Population Estimates for Alabama, April 1, 2010 and July 1, 2012
Total and One-Dimensional Demographic Summaries (Hispanic, Race, Age and Sex)
By County

5

	County											
	Dale AL		Dallas AL		DeKalb AL		Elmore AL		Escambia AL		Etowah AL	
	2012	2010	2012	2010	2012	2010	2012	2010	2012	2010	2012	2010
Total Population	50,444	50,251	42,864	43,820	71,080	71,112	80,629	79,296	37,994	38,319	104,392	104,430
Hispanic												
Non-hispanic	47,503	47,430	42,495	43,511	61,081	61,422	78,459	77,167	37,218	37,601	100,623	100,983
Hispanic or Latino	2,941	2,821	369	309	9,999	9,690	2,170	2,129	776	718	3,769	3,447
Race												
White alone	37,938	38,093	12,433	12,833	65,712	65,911	61,493	61,314	23,729	24,107	85,008	85,447
Black alone	9,979	9,769	29,818	30,465	1,432	1,270	16,950	15,985	12,243	12,246	16,208	15,927
American Indian & Alskan Native alone	415	401	93	86	1,560	1,557	346	329	1,303	1,298	560	580
Asian alone	629	543	204	152	291	266	564	535	110	99	801	738
Native Hawaiian & Other Pac IsIndr alone	53	52	16	11	540	624	89	85	20	20	322	335
Two or more races	1,430	1,393	300	273	1,545	1,484	1,187	1,048	589	549	1,493	1,403
Age												
0 to 4	3,498	3,690	3,181	3,197	4,844	5,046	4,948	4,859	2,326	2,385	6,181	6,140
5 to 9	3,414	3,459	3,006	3,097	5,079	5,200	5,053	5,206	2,368	2,379	6,356	6,540
10 to 14	3,431	3,350	3,165	3,271	5,103	5,045	5,405	5,256	2,433	2,391	7,044	6,905
15 to 19	3,089	3,250	3,036	3,343	4,662	5,021	5,331	5,579	2,256	2,553	6,697	7,224
20 to 24	3,450	3,454	2,807	2,705	4,384	3,883	5,827	5,144	2,425	2,227	6,665	6,070
25 to 29	3,866	3,897	2,493	2,614	4,102	4,411	5,100	5,049	2,401	2,437	5,834	6,022
30 to 34	3,501	3,358	2,486	2,375	4,517	4,632	5,456	5,439	2,627	2,582	6,172	6,024
35 to 39	2,992	3,100	2,277	2,494	4,603	4,805	5,556	5,872	2,505	2,720	6,421	6,931
40 to 44	3,120	3,039	2,394	2,527	4,888	4,853	5,794	5,752	2,521	2,519	7,115	7,025
45 to 49	3,191	3,454	2,794	3,145	4,669	4,860	5,985	6,367	2,560	2,728	6,916	7,260
50 to 54	3,528	3,528	3,199	3,369	4,880	4,854	5,975	5,890	2,760	2,858	7,481	7,634
55 to 59	3,305	3,077	3,122	2,916	4,544	4,363	5,278	4,907	2,614	2,505	7,316	7,257
60 to 64	2,837	2,836	2,569	2,602	4,281	4,264	4,472	4,542	2,228	2,223	7,111	6,890
65 to 69	2,401	2,216	2,106	1,946	3,549	3,236	3,857	3,318	1,967	1,872	5,629	5,028
70 to 74	1,822	1,701	1,601	1,584	2,611	2,479	2,619	2,420	1,513	1,512	4,159	4,069
75 to 79	1,325	1,331	1,111	1,073	1,933	1,877	1,783	1,617	1,110	1,110	3,092	3,077
80 to 84	968	826	824	849	1,346	1,241	1,143	1,136	755	704	2,294	2,398
85+	706	685	693	713	1,085	1,042	1,047	943	625	614	1,909	1,936
Sex												
Male	24,943	24,825	19,877	20,244	35,061	35,114	39,041	38,685	19,590	19,766	50,549	50,626
Female	25,501	25,426	22,987	23,576	36,019	35,998	41,588	40,611	18,404	18,553	53,843	53,804

Figure 3.7-2 Alabama Total Population, 2010, Population By County

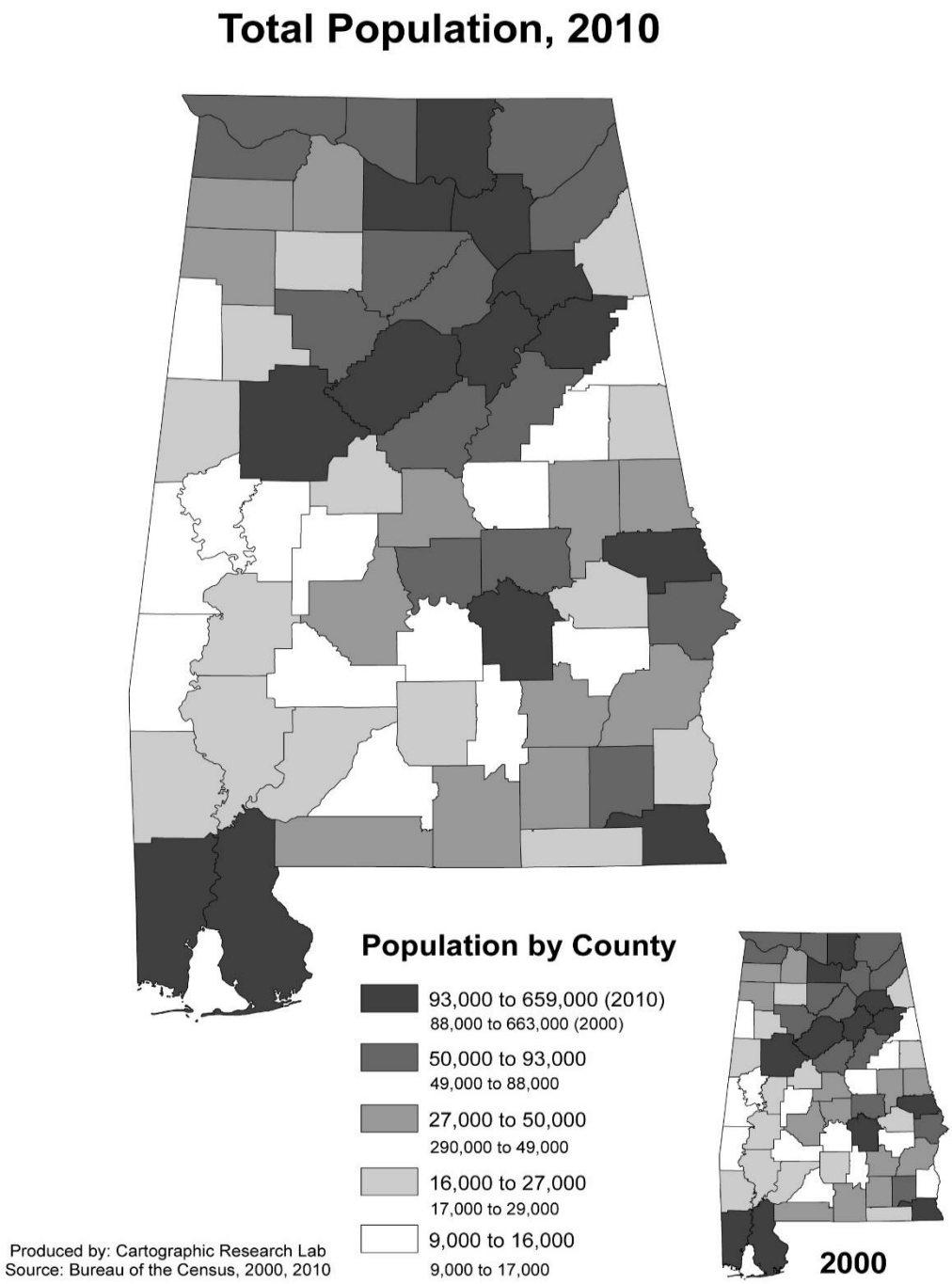


Figure 3.7-3 Alabama Population, Age 65 Years and Older, 2010 Percent by County

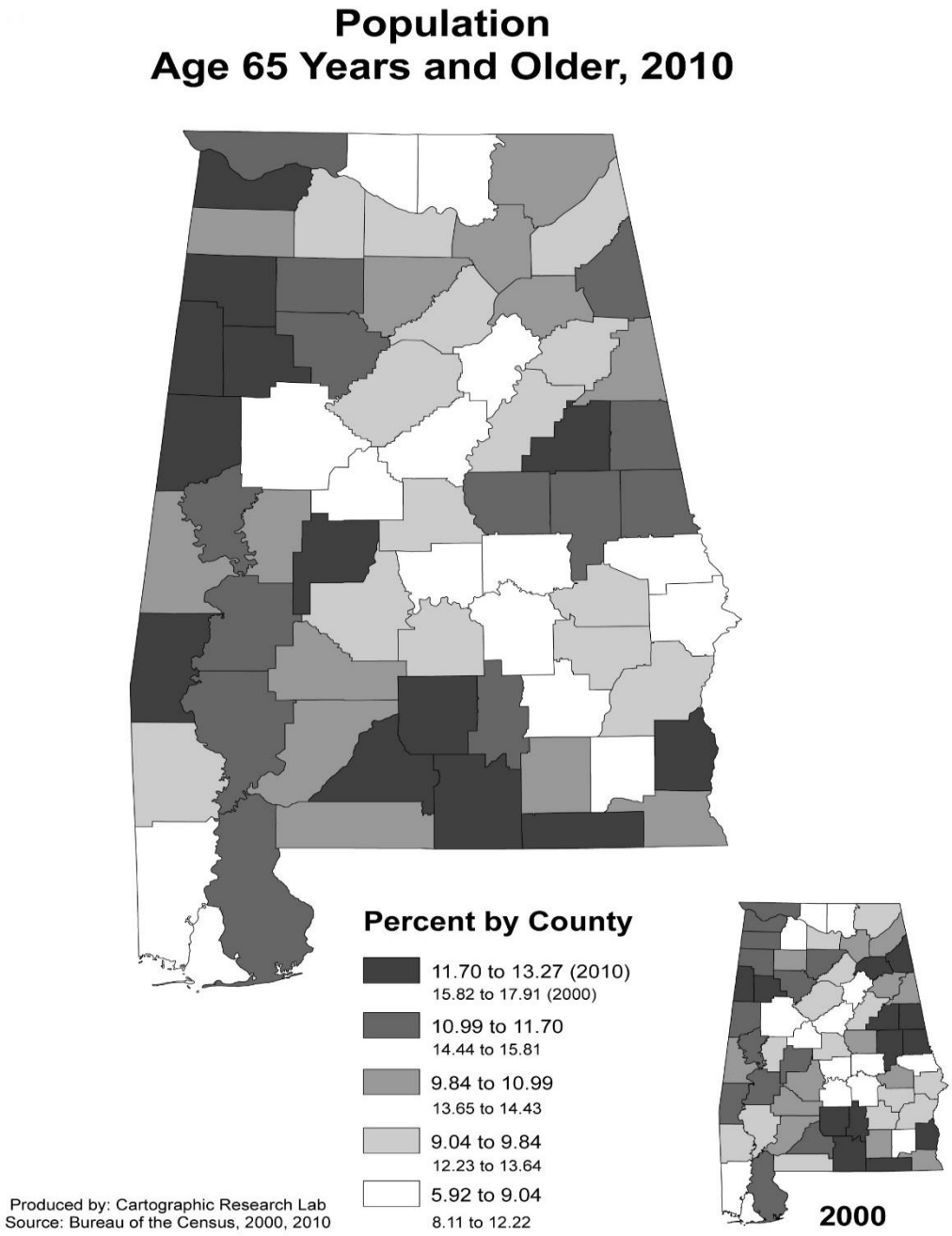


Figure 3.7-4 Alabama Population, Age 60-64 Years, 2010, Percent by County

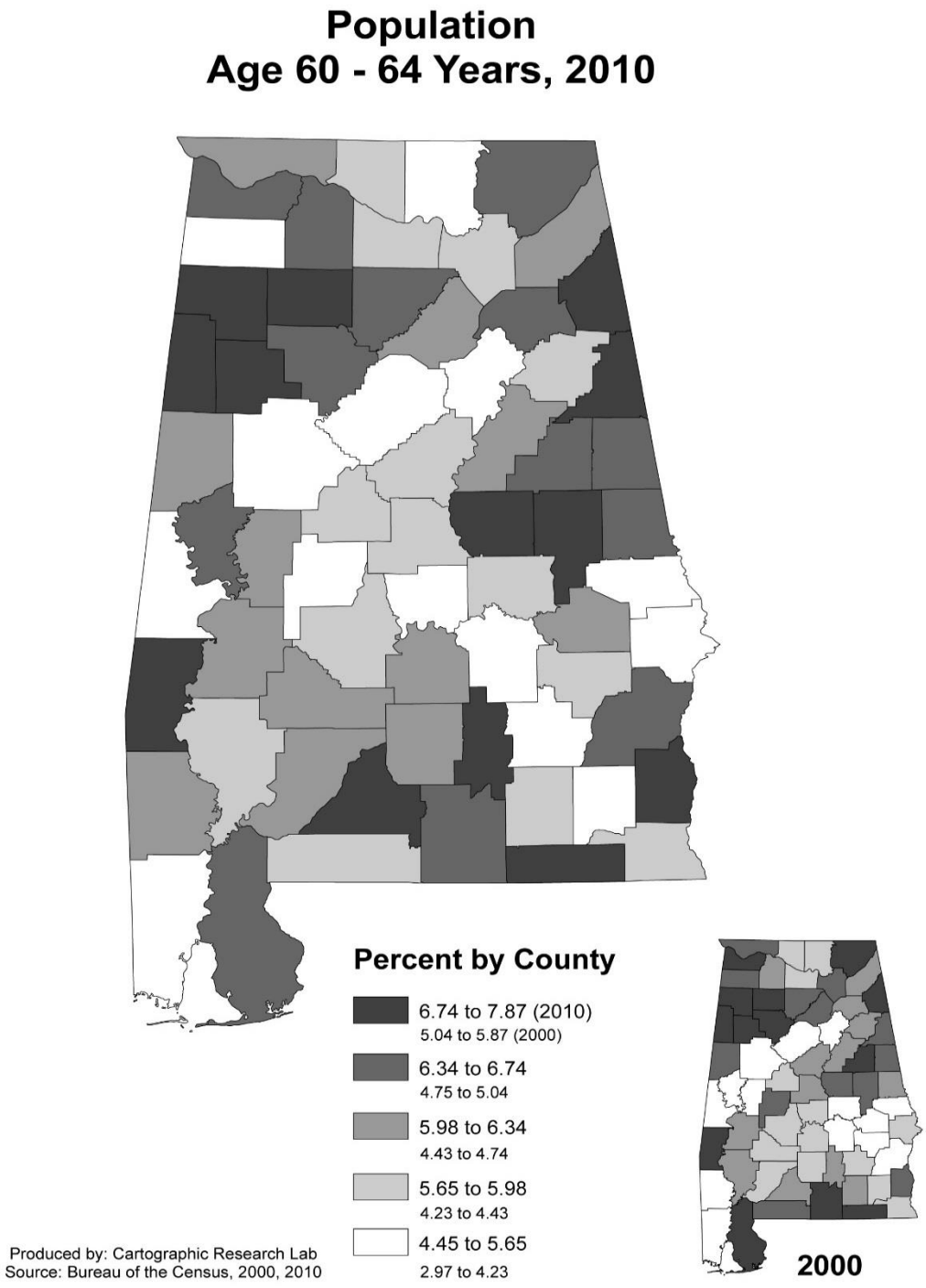


Figure 3.7-5 Alabama Population, Age 55 to 59 Years, 2010 Percent by County

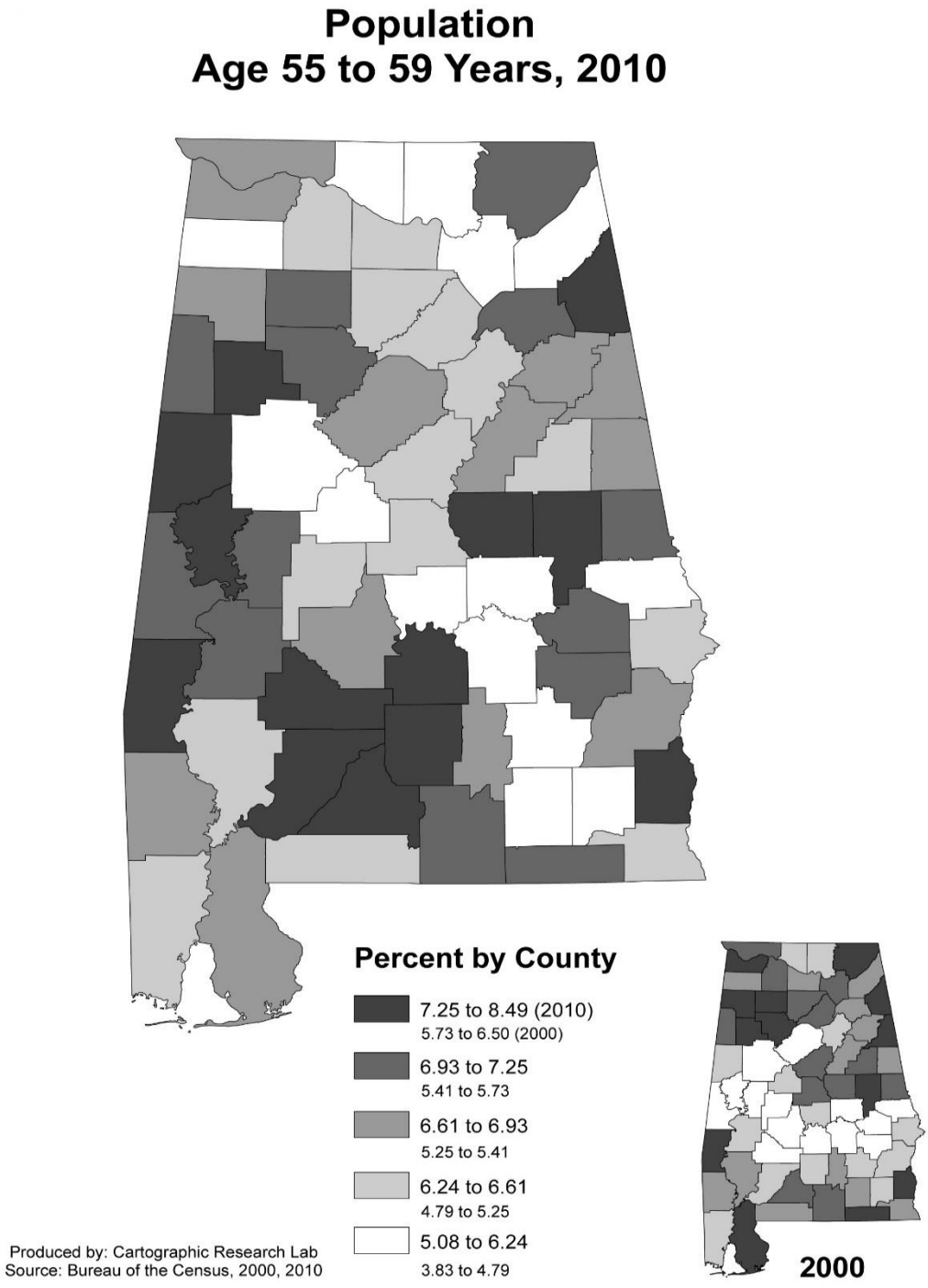


Figure 3.7-6 Alabama Population, Age 45 to 54 Years, 2010 Percent by County

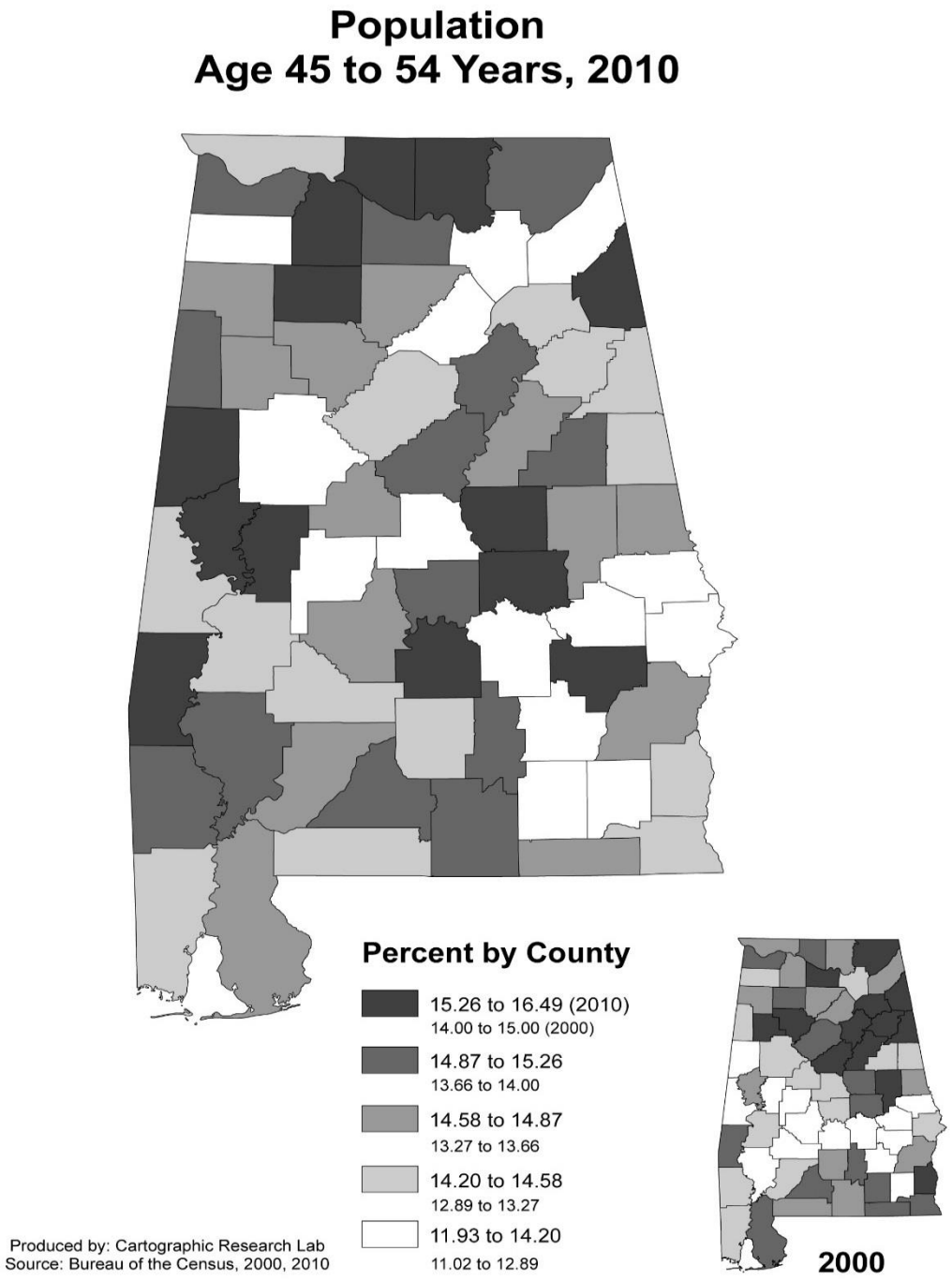


Figure 3.7-7 Alabama Population, Age 35 to 44 Years, 2010 Percent by County

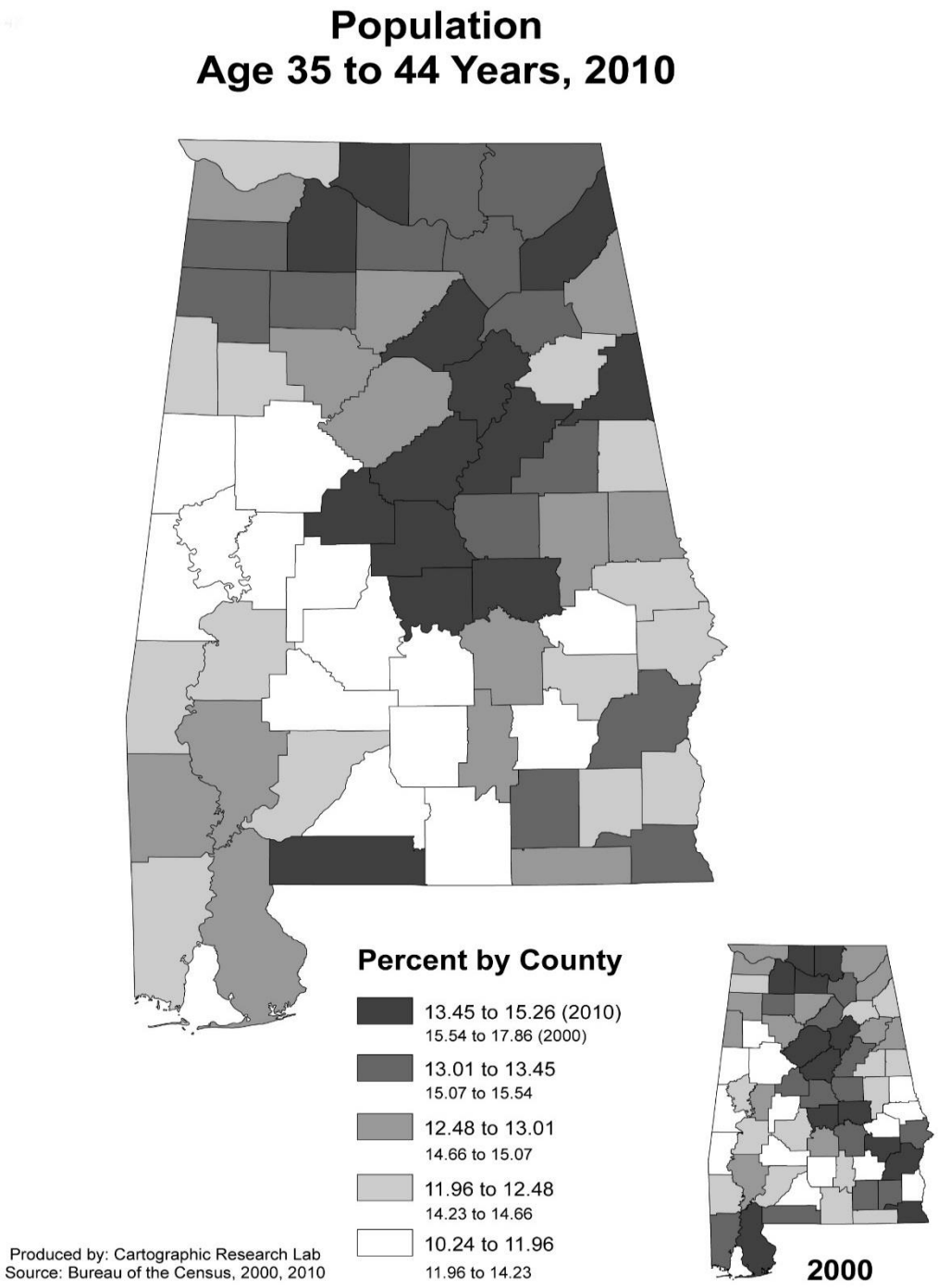


Figure 3.7-8

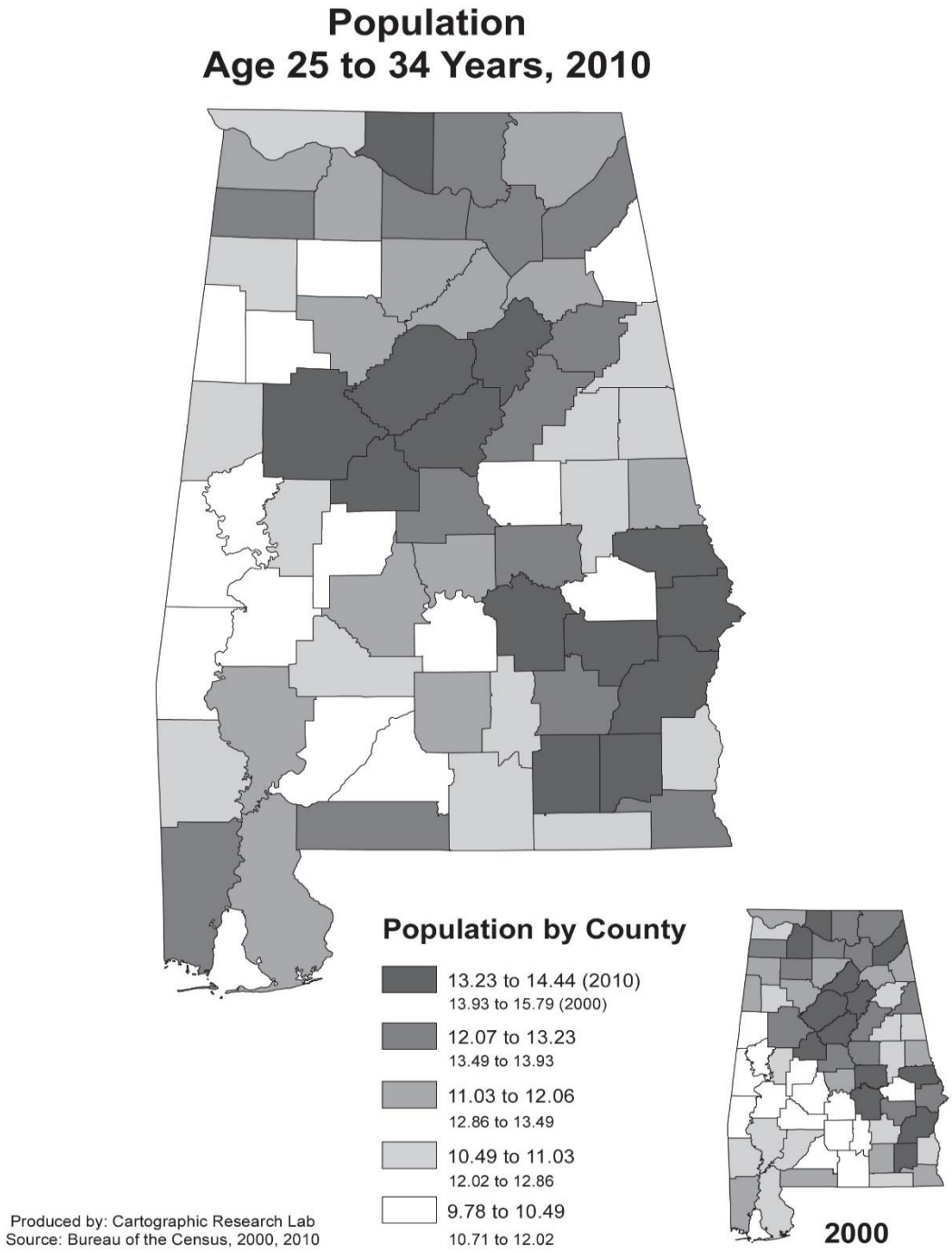

Population
Age 25 to 34 Years, 2010
Population by County
13.23 to 14.44 (2010)
13.93 to 15.79 (2000)
12.07 to 13.23
13.49 to 13.93
11.03 to 12.06
12.86 to 13.49
10.49 to 11.03
12.02 to 12.86
9.78 to 10.49
10.71 to 12.02
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Figure 3.7-9

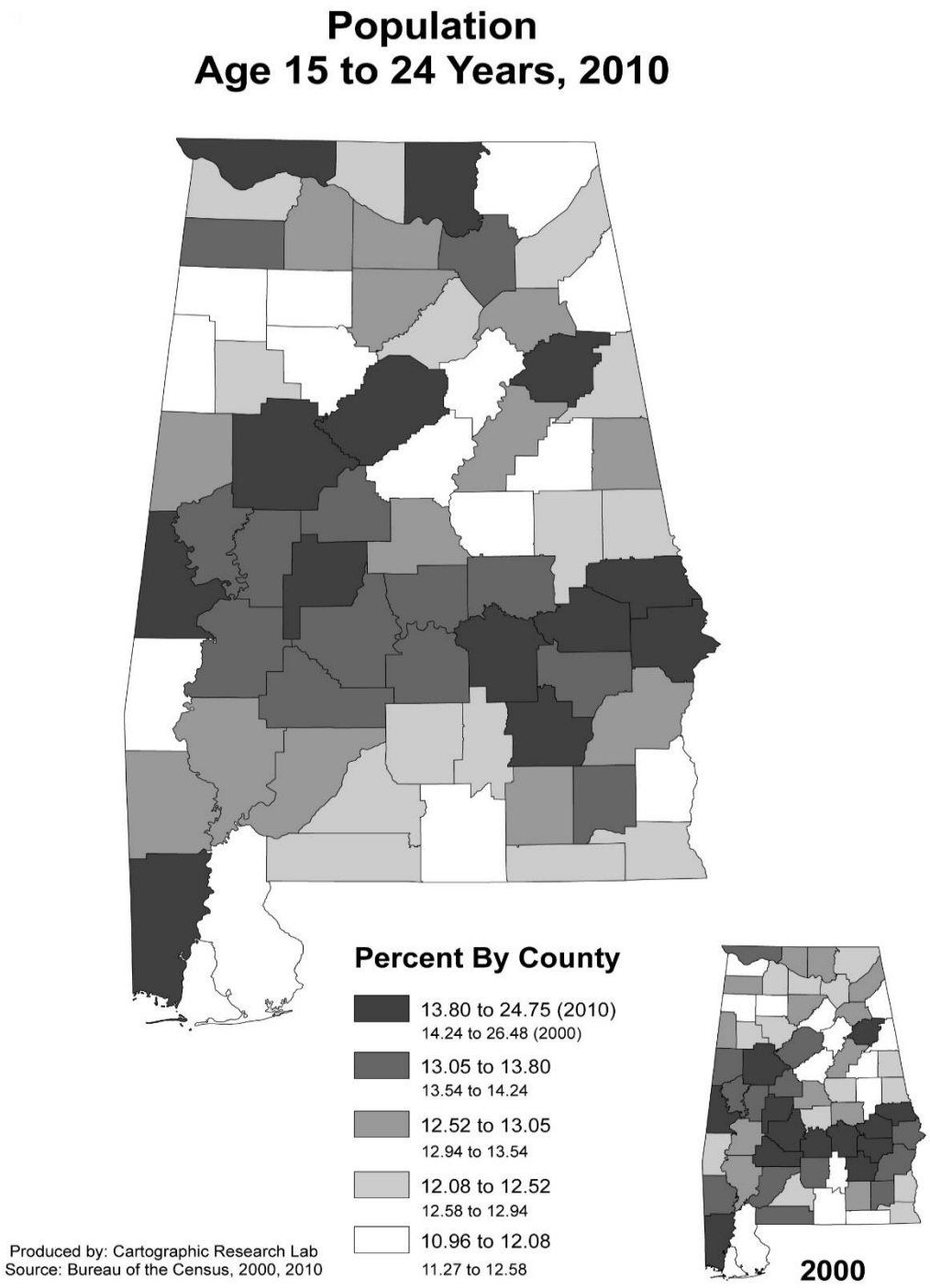

Population
Age 15 to 24 Years, 2010
Percent By County
13.80 to 24.75 (2010)
14.24 to 26.48 (2000)
13.05 to 13.80
13.54 to 14.24
12.52 to 13.05
12.94 to 13.54
12.08 to 12.52
12.58 to 12.94
10.96 to 12.08
11.27 to 12.58
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Figure 3.7-10

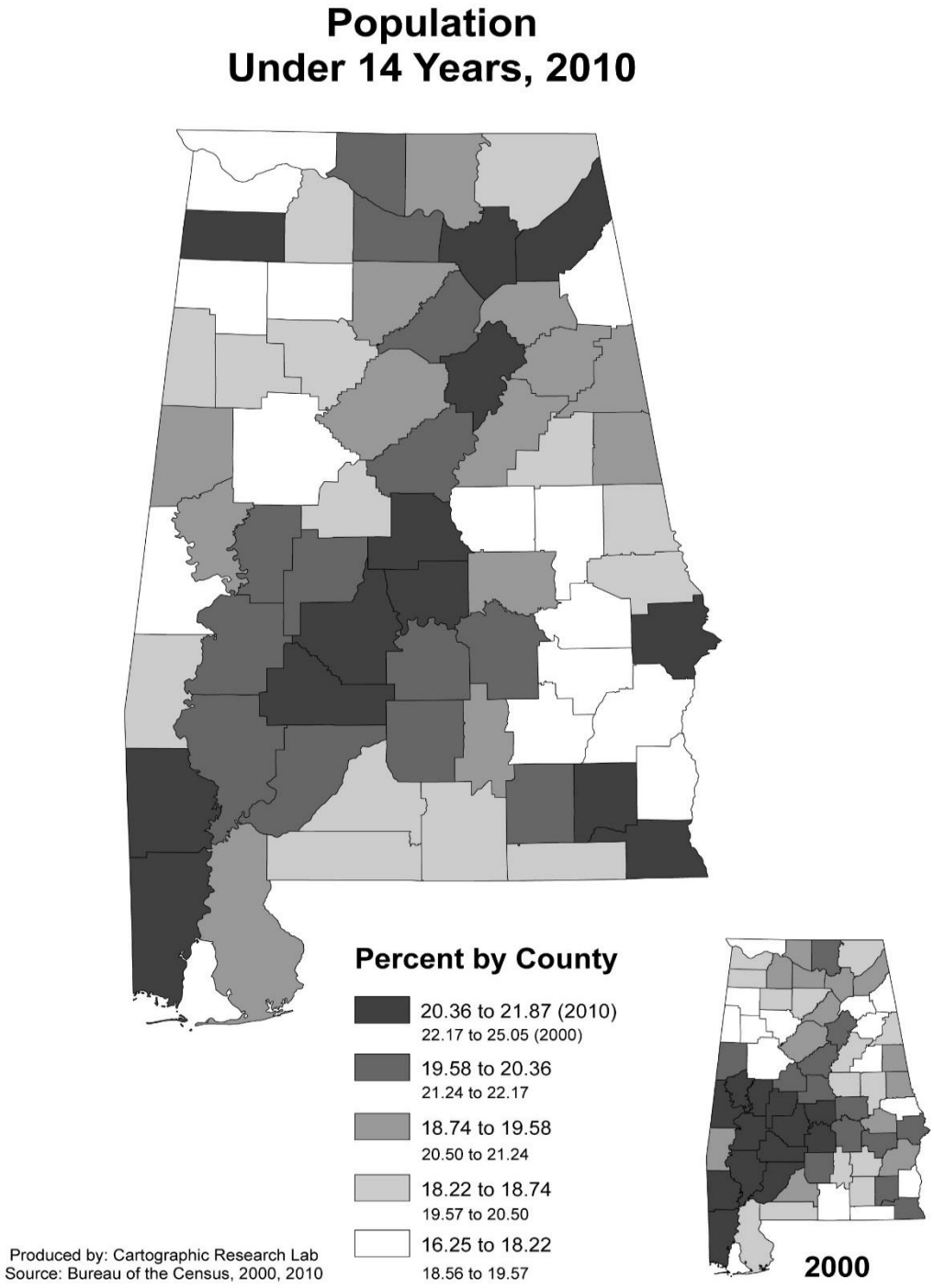

Population
Under 14 Years, 2010
Percent by County
20.36 to 21.87 (2010)
22.17 to 25.05 (2000)
19.58 to 20.36
21.24 to 22.17
18.74 to 19.58
20.50 to 21.24
18.22 to 18.74
19.57 to 20.50
16.25 to 18.22
18.56 to 19.57
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Figure 3.7-11

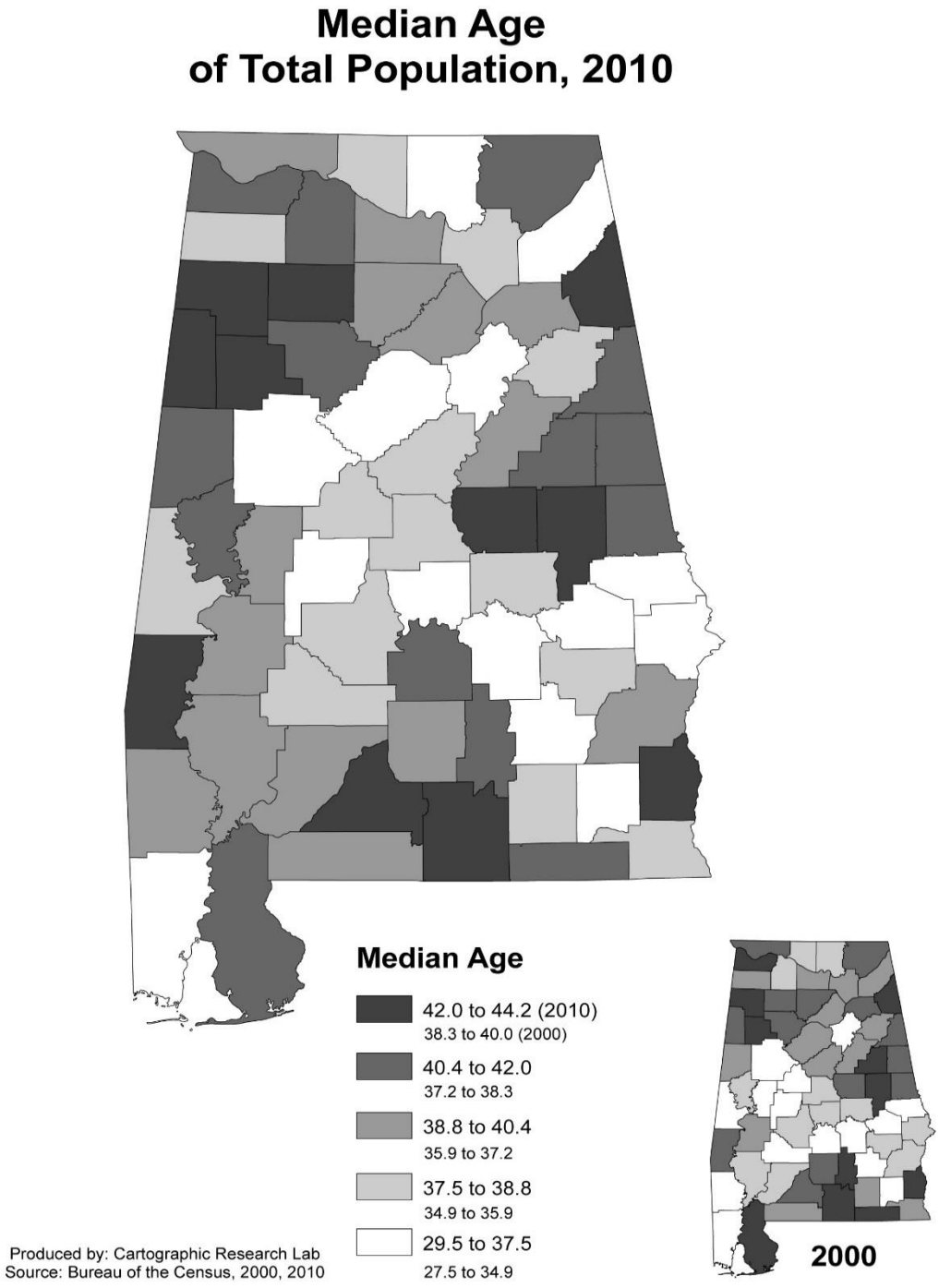

Median Age
of Total Population, 2010
Median Age
42.0 to 44.2 (2010)
38.3 to 40.0 (2000)
40.4 to 42.0
37.2 to 38.3
38.8 to 40.4
35.9 to 37.2
37.5 to 38.8
34.9 to 35.9
29.5 to 37.5
27.5 to 34.9
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Figure 3.7-12

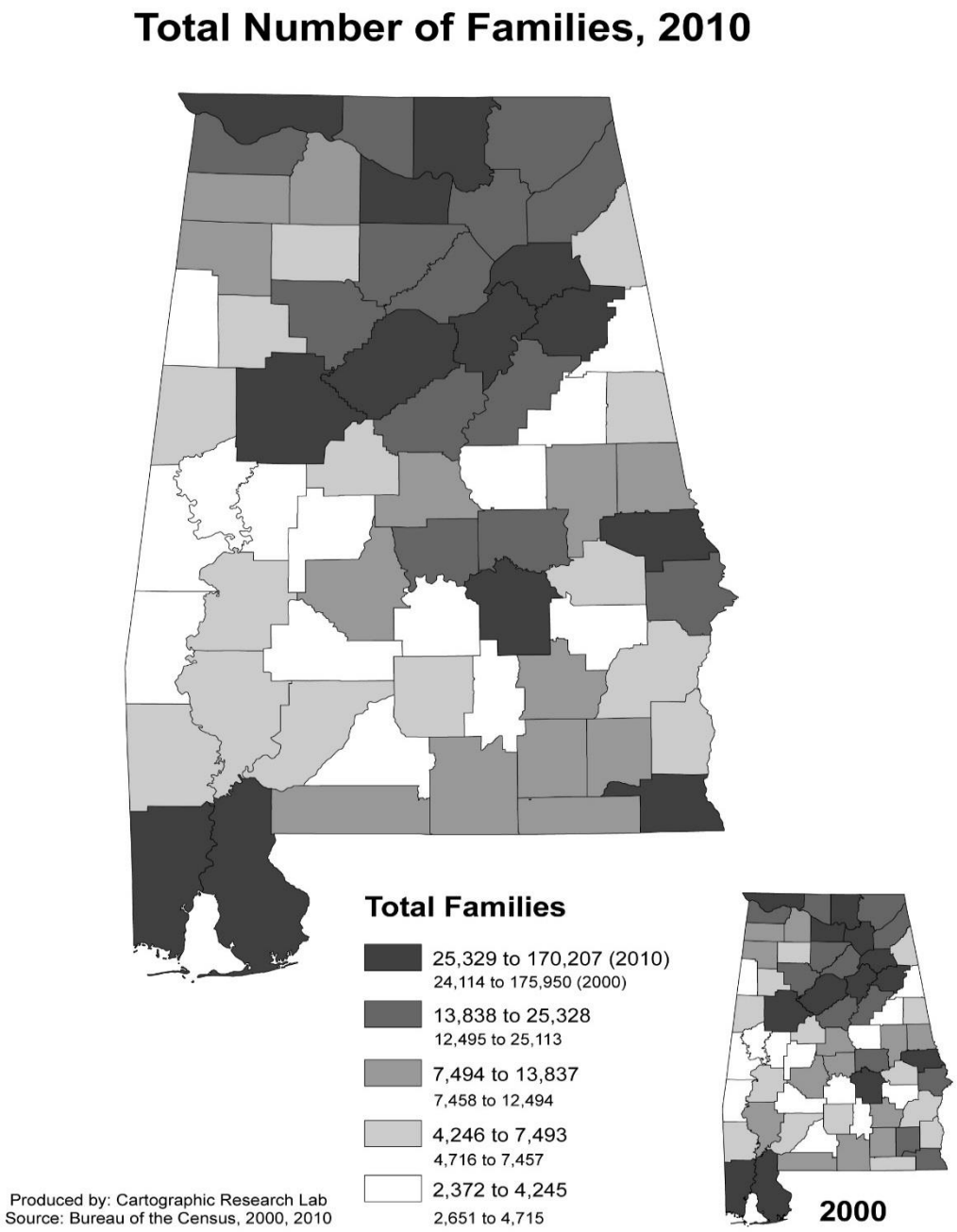

Total Number of Families, 2010
Total Families
25,329 to 170,207 (2010)
24,114 to 175,950 (2000)
13,838 to 25,328
12,495 to 25,113
7,494 to 13,837
7,458 to 12,494
4,246 to 7,493
4,716 to 7,457
2,372 to 4,245
2,651 to 4,715
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Figure 3.7-13

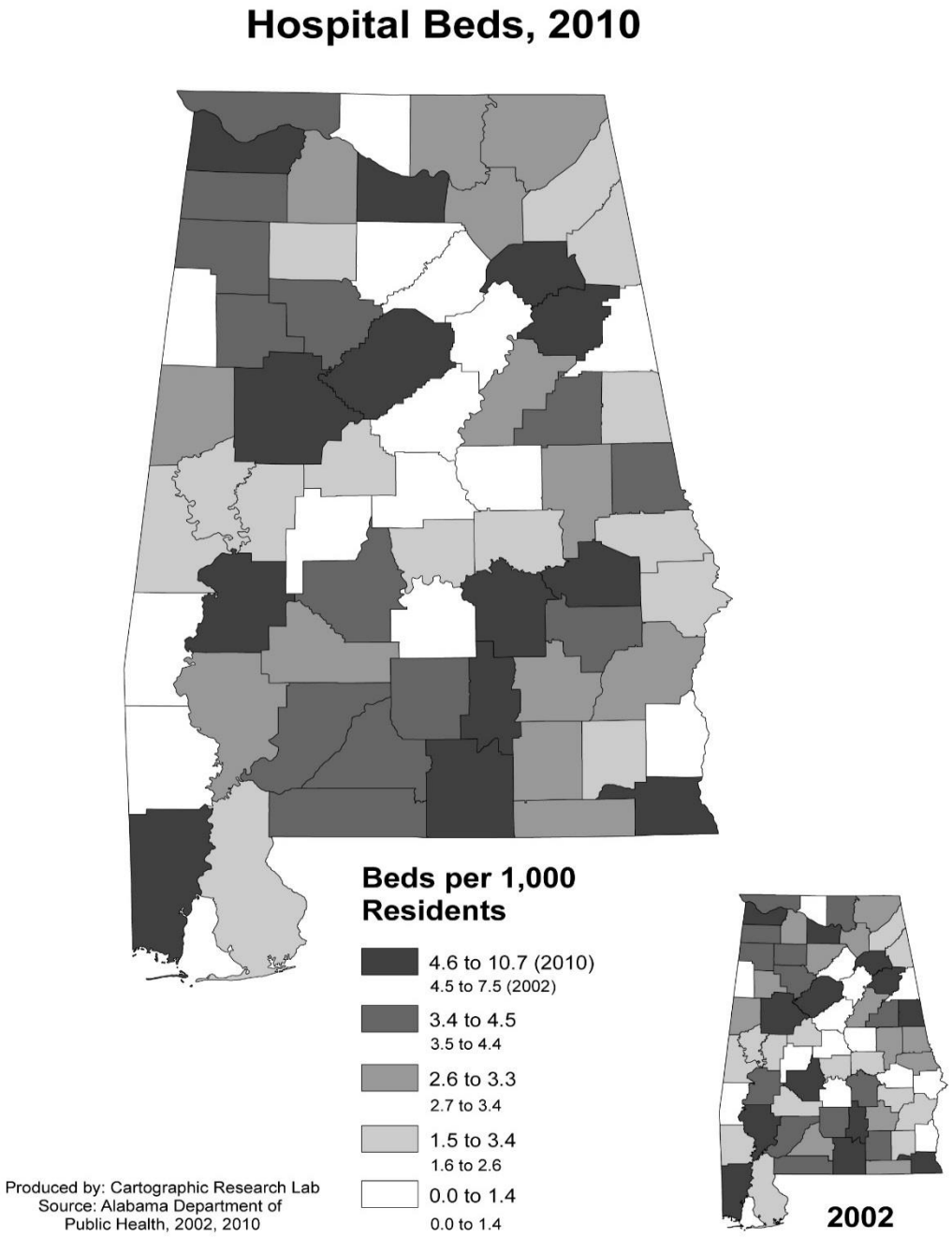

Hospital Beds, 2010
Beds per 1,000 Residents
4.6 to 10.7 (2010)
4.5 to 7.5 (2002)
3.4 to 4.5
3.5 to 4.4
2.6 to 3.3
2.7 to 3.4
1.5 to 3.4
1.6 to 2.6
0.0 to 1.4
0.0 to 1.4
Produced by: Cartographic Research Lab
Source: Alabama Department of Public Health, 2002, 2010
2002

Figure 3.7-14

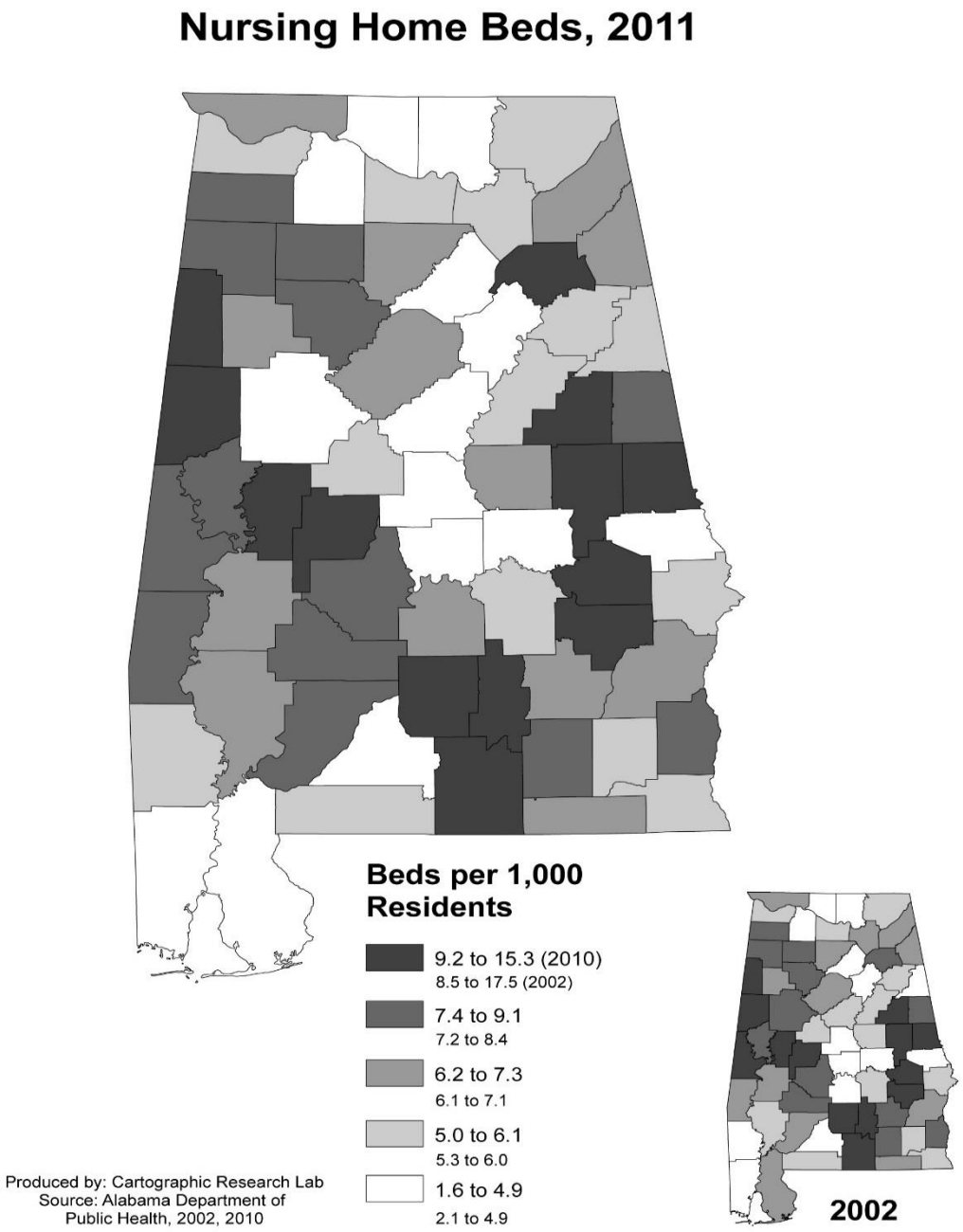

Nursing Home Beds, 2011
Beds per 1,000 Residents
9.2 to 15.3 (2010)
8.5 to 17.5 (2002)
7.4 to 9.1
7.2 to 8.4
6.2 to 7.3
6.1 to 7.1
5.0 to 6.1
5.3 to 6.0
1.6 to 4.9
2.1 to 4.9
Produced by: Cartographic Research Lab
Source: Alabama Department of Public Health, 2002, 2010
2002

Figure 3.7-15

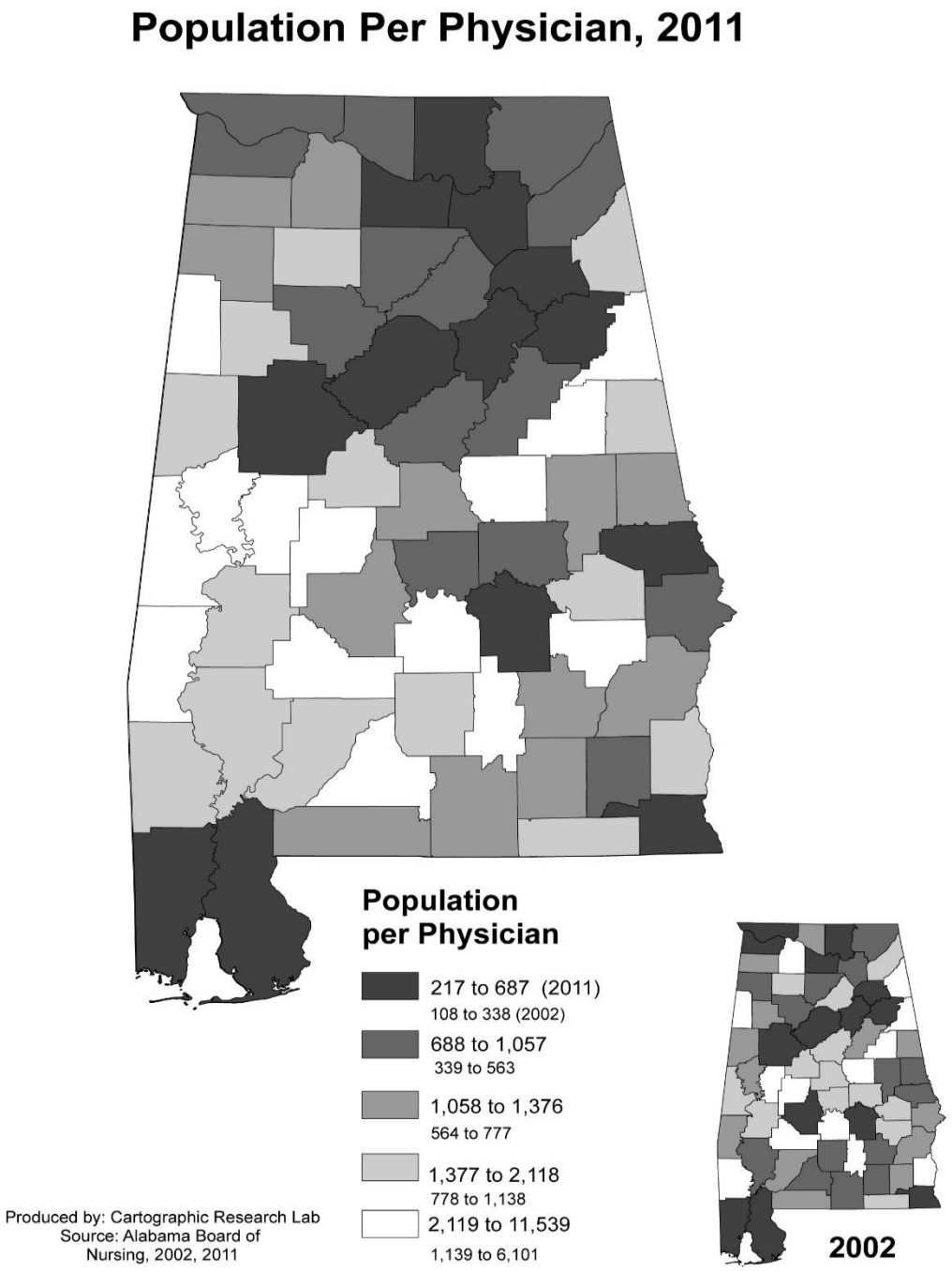

Population Per Physician, 2011
Population per Physician
217 to 687 (2011)
108 to 338 (2002)
688 to 1,057
339 to 563
1,058 to 1,376
564 to 777
1,377 to 2,118
778 to 1,138
2,119 to 11,539
1,139 to 6,101
Produced by: Cartographic Research Lab
Source: Alabama Board of Nursing, 2002, 2011
2002

Figure 3.7-16

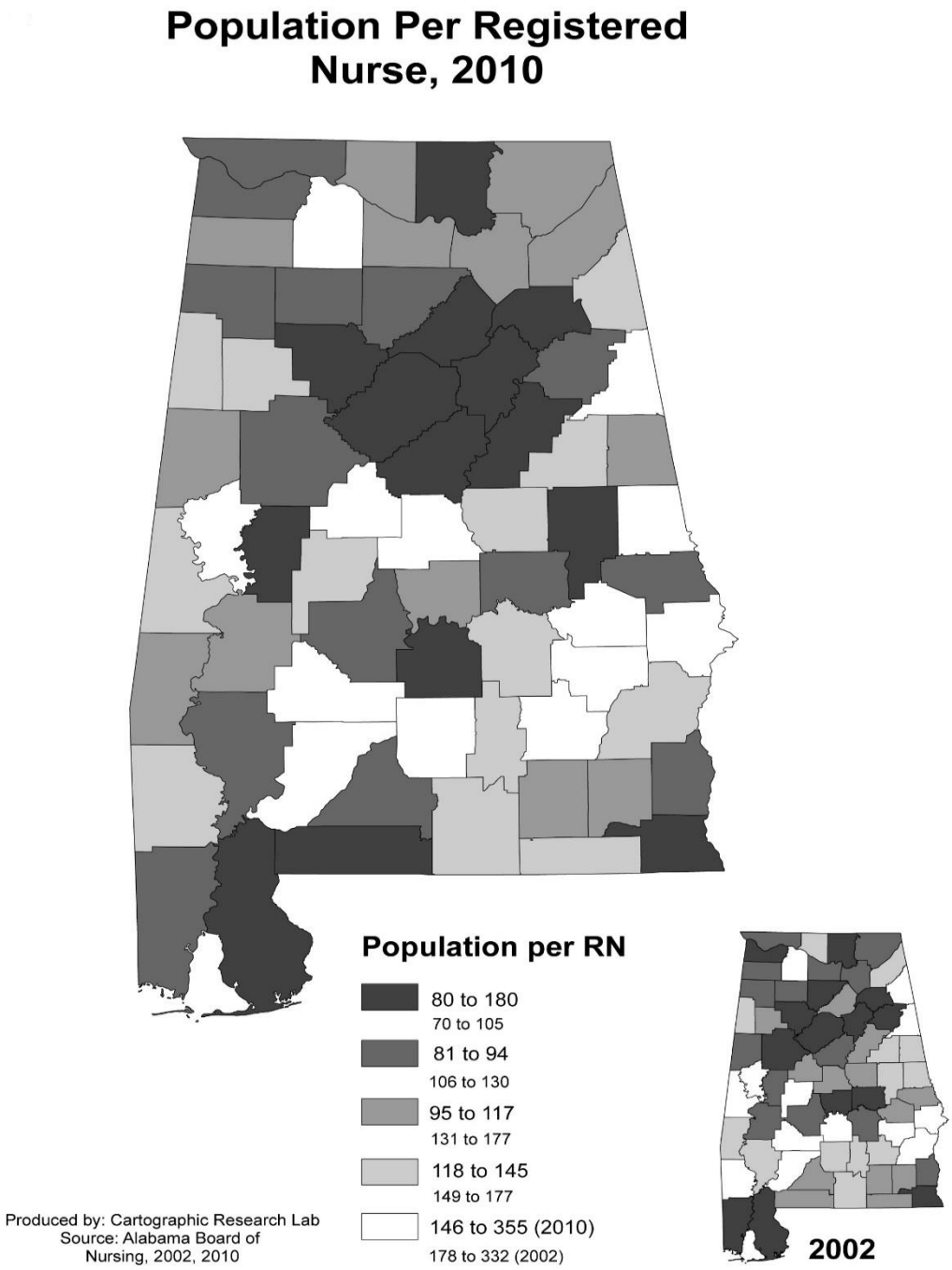

Population Per Registered Nurse, 2010
Population per RN
80 to 180
70 to 105
81 to 94
106 to 130
95 to 117
131 to 177
118 to 145
149 to 177
146 to 355 (2010)
178 to 332 (2002)
Produced by: Cartographic Research Lab
Source: Alabama Board of Nursing, 2002, 2010
2002

Figure 3.7-17

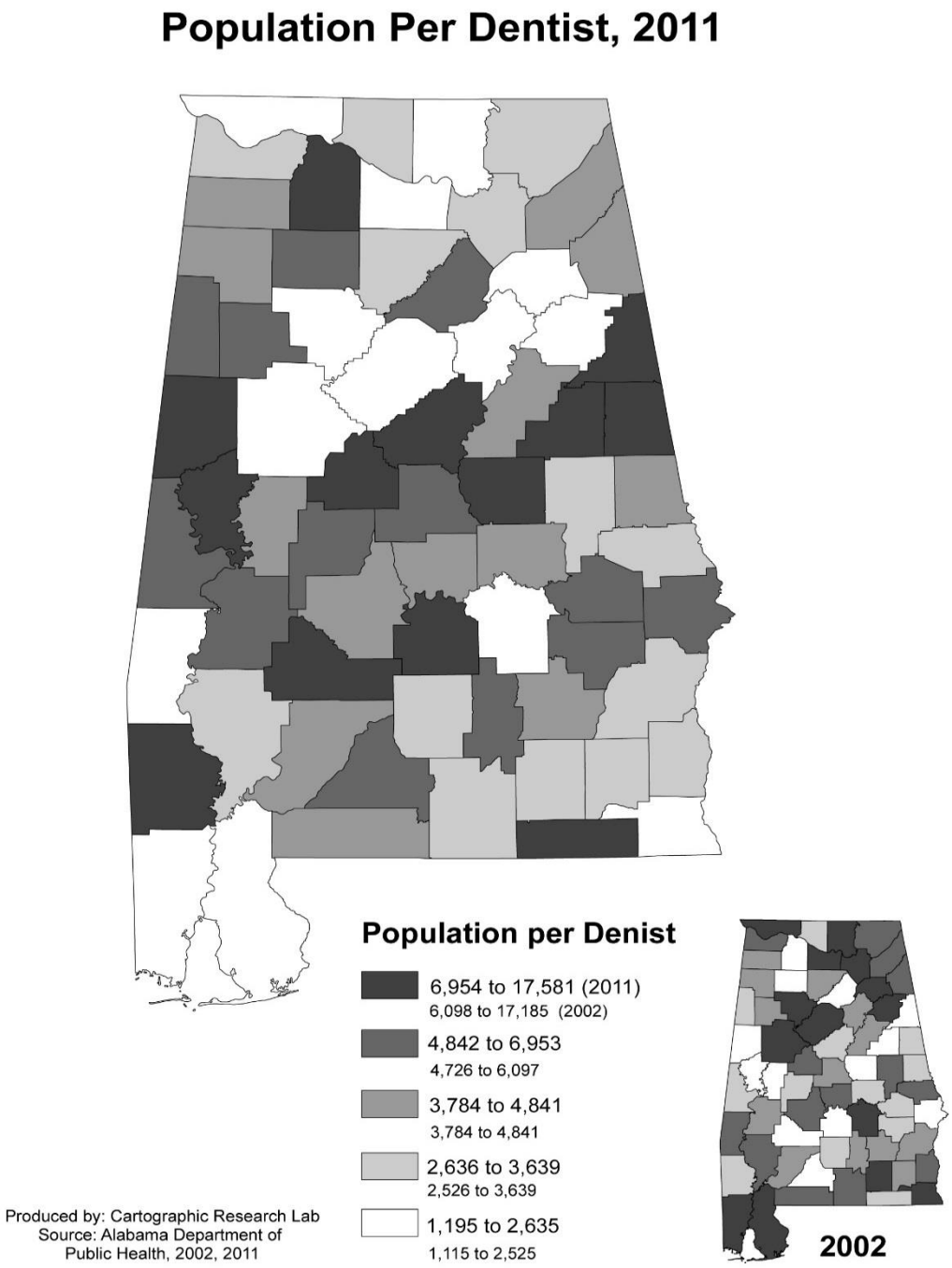

Population Per Dentist, 2011
Population per Denist
6,954 to 17,581 (2011)
6,098 to 17,185 (2002)
4,842 to 6,953
4,726 to 6,097
3,784 to 4,841
3,784 to 4,841
2,636 to 3,639
2,526 to 3,639
1,195 to 2,635
1,115 to 2,525
Produced by: Cartographic Research Lab
Source: Alabama Department of
Public Health, 2002, 2011
2002

Figure 3.7-18

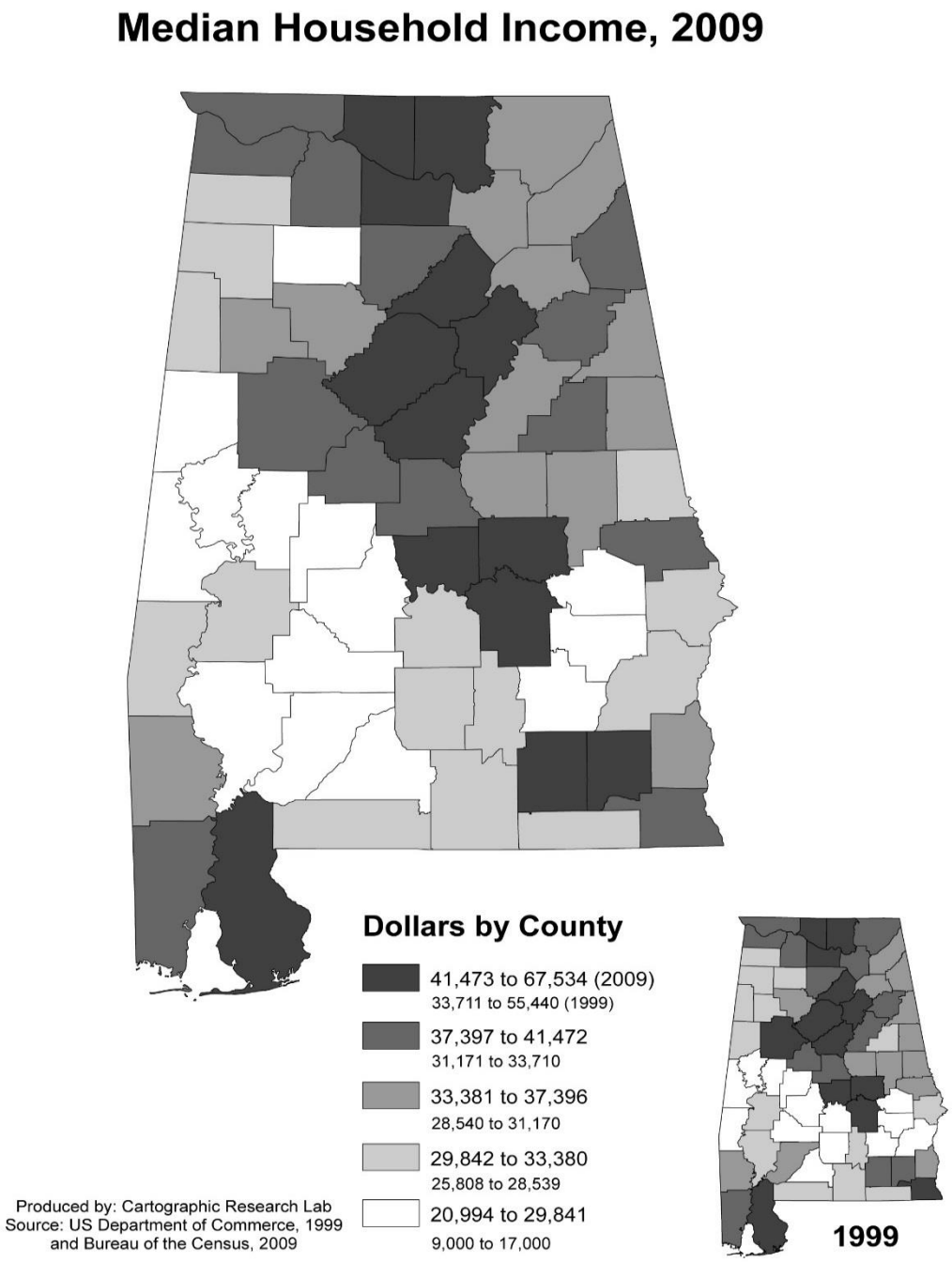
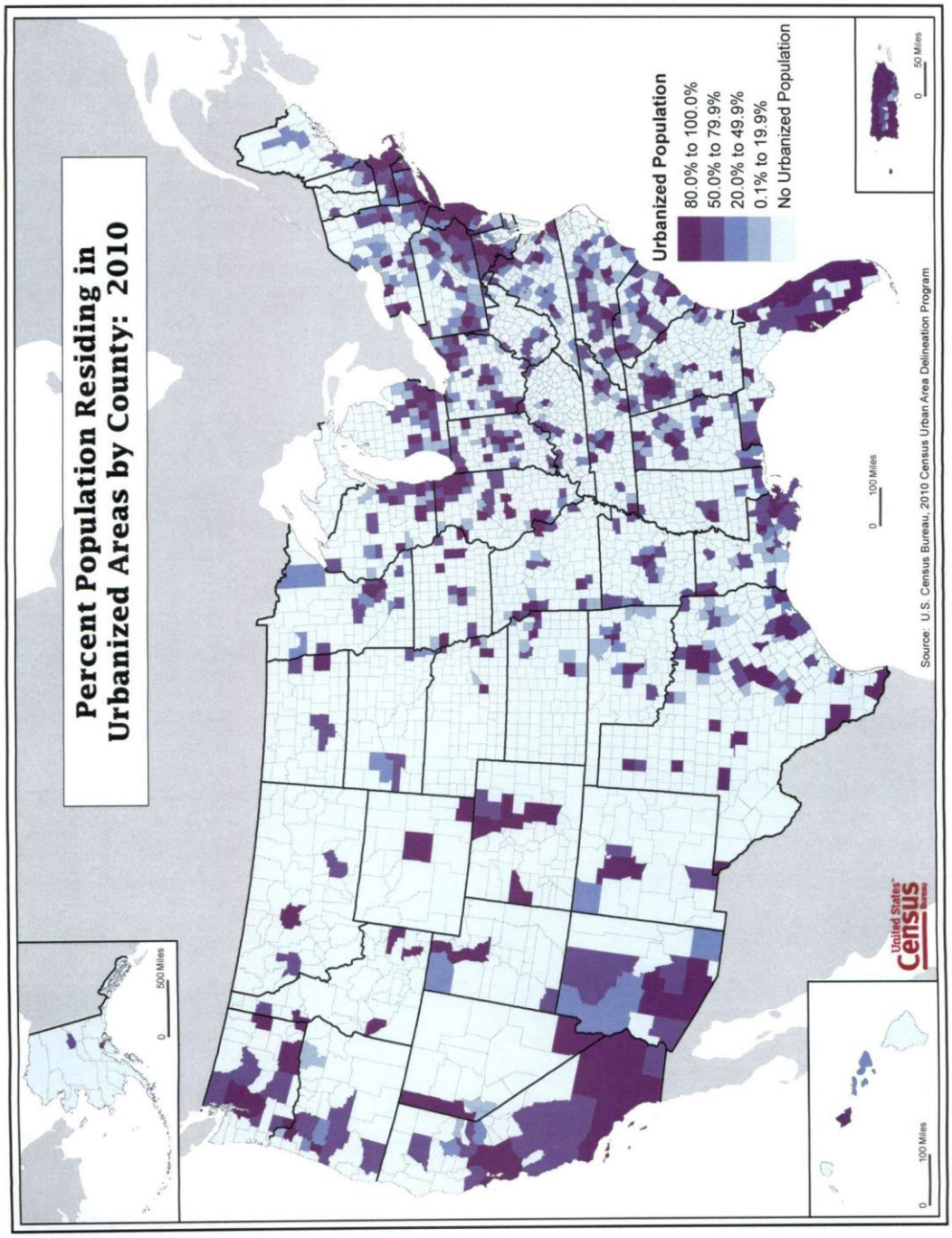

Median Household Income, 2009
Dollars by County
41,473 to 67,534 (2009)
33,711 to 55,440 (1999)
37,397 to 41,472
31,171 to 33,710
33,381 to 37,396
28,540 to 31,170
29,842 to 33,380
25,808 to 28,539
20,994 to 29,841
9,000 to 17,000
Produced by: Cartographic Research Lab
Source: US Department of Commerce, 1999
and Bureau of the Census, 2009
1999

Figure 3.7-19



Urban and Rural Population by County in Alabama, 2010

Source: U.S. Census 2010
Elmore County Total Population: 79303
Population – Urban: 36330 Percent: 45.81%
Rural: 42973 Percent: 54.19%
Land Area – Percent Urban: 5.42%
Rural: 94.58%

Figure 3.7-20

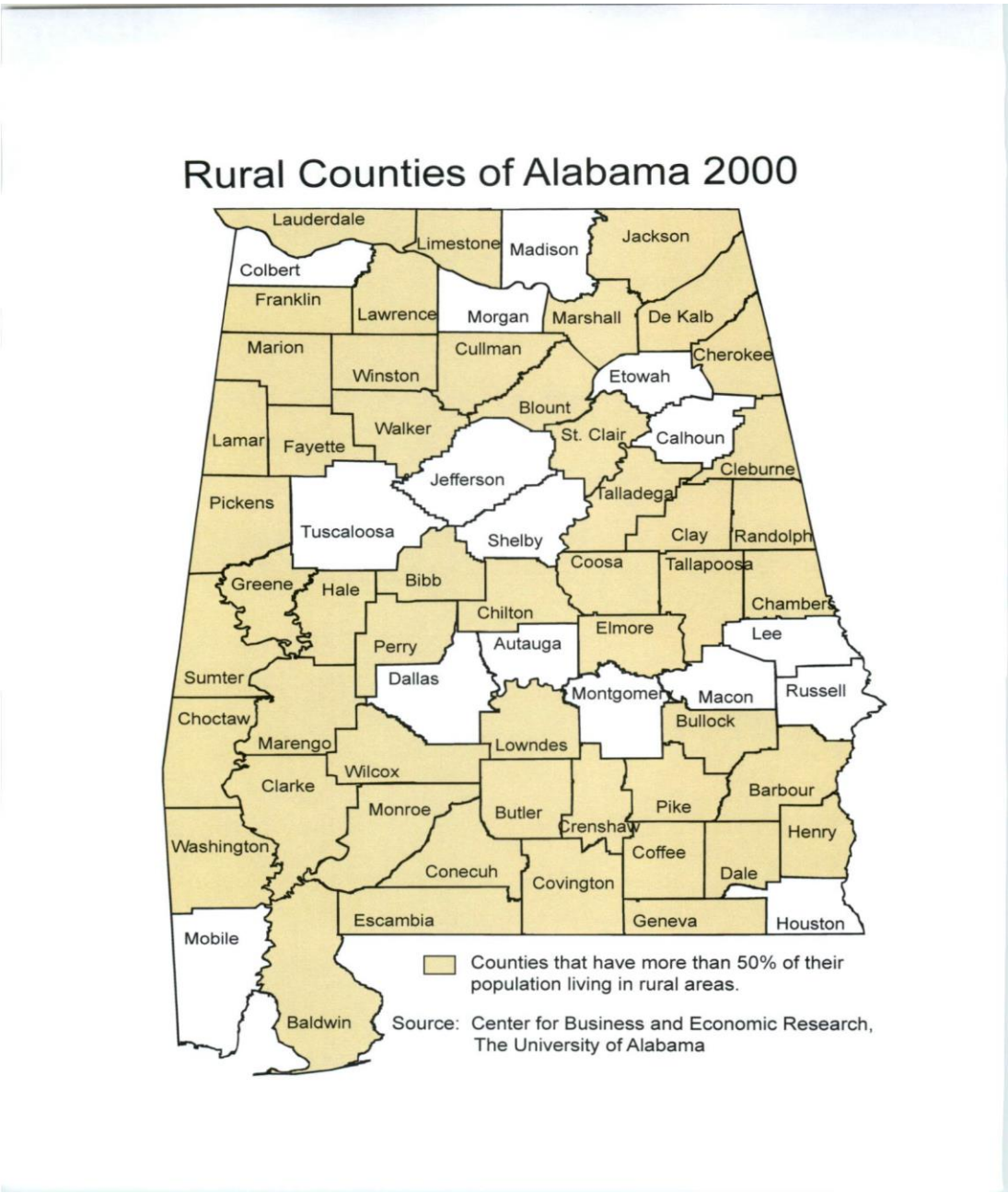
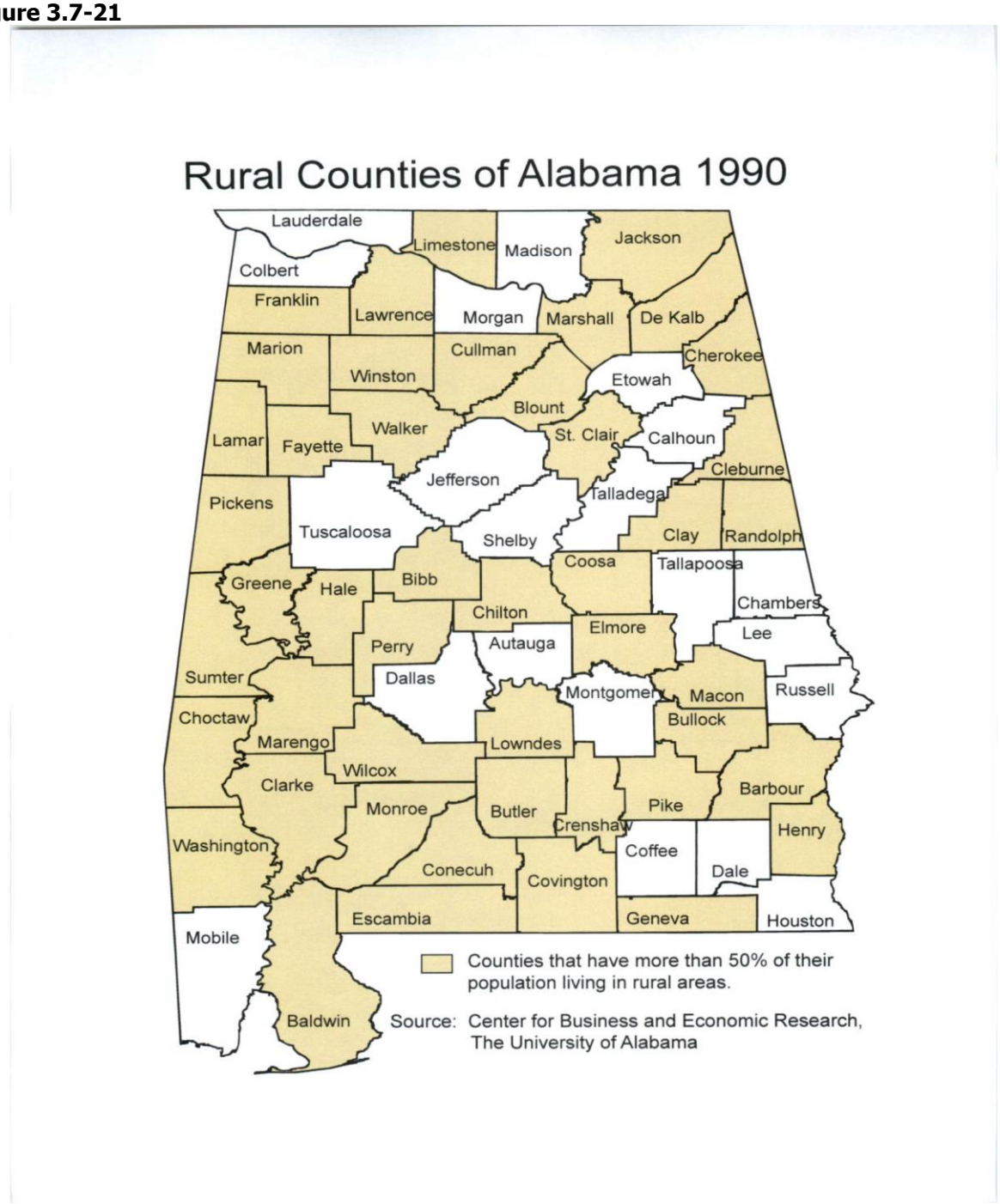


Figure 3.7-21



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3.8 Land and Development

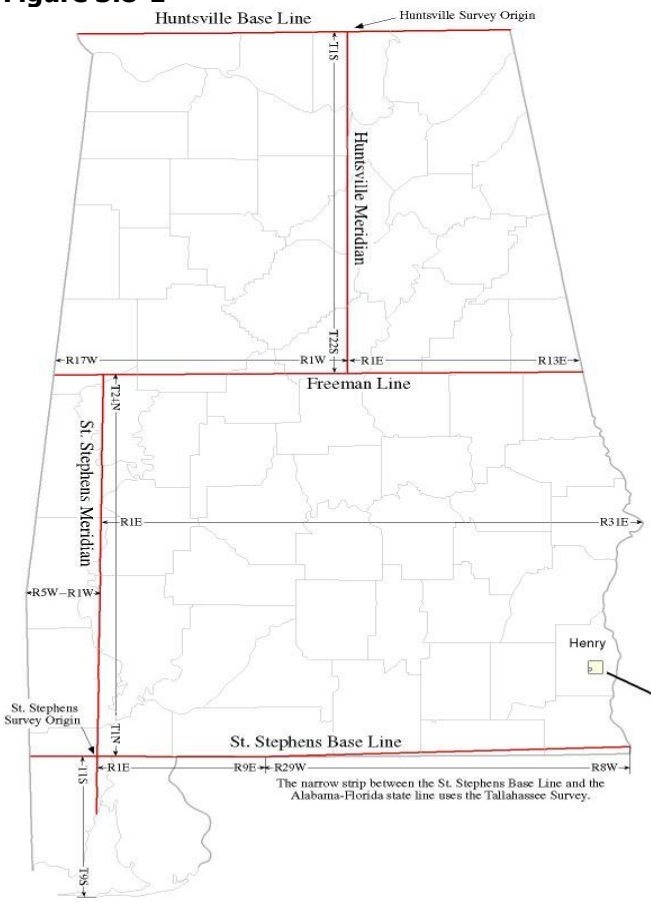
When the pioneers first settled in Elmore County, natural resources appeared infinite. They cleared forests, carved towns from the wilderness, and used waterways as arterials of commerce. Some lands were valued for certain uses more than others. The fall lines of the rivers were among the first areas to be cleared for agriculture and to provide power. The Tallapoosa falls in Tallassee was one of the first industrial sites. From the earliest days, the value of the land in the area was recognized and exploited for man's benefit. Throughout the years, the limitations of the resources in the county have created a heightened awareness of the benefits of land use and development regulations.

The comprehensive planning process has become an important element as the municipalities concerns with growth and growth management explore subdivision regulations, zoning, and economic development. This process designates the use and development of private land, including agricultural land, river corridors, forestland and residential and commercial areas.

The resources and natural systems of Elmore County are the most enduring and tangible assets for its communities and their economies and environment. The rivers, lakes, farm fields, marshes, scenic outlooks, wildflowers, wildlife, and forest are the county's most important resources.

Area intentionally left blank.

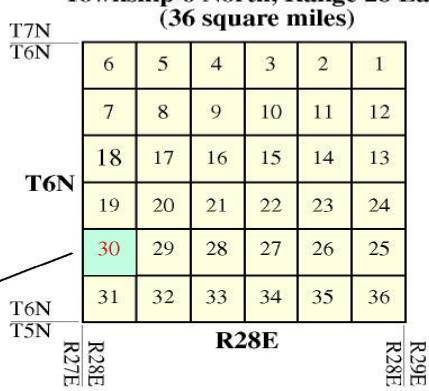
Figure 3.8-1



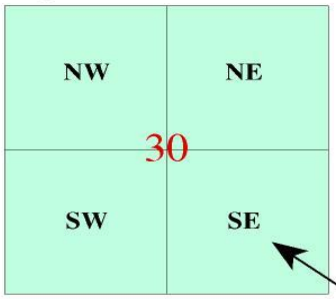
Public Land Survey

The United States Public Land Survey was established by an act of Congress in 1785 in order to despose of lands in the Western Territory of the new nation. In Alabama, two different surveys were used to subdivide parcels of land. In the northern half of the state, the Huntsville survey's origin was established by the Huntsville Meridian and Base Line. In the southern half of the state, the St. Stephens survey's origin was established by the St. Stephens Meridian and Base Line. The Freeman Line, as noted on the map to the left, is not a base line, but rather where the Huntsville and St. Stephens surveys meet. From the origins, grided lines were established at 6 mile intervals. The east-west lines are called townships and the north-south lines are called ranges. The intersection of the grided lines form rectangles of 36 square miles, also called townships. Each township is subdivided into 36 sections of approximately one square mile, and may be further subdivided into halves, quarters and the like. The same system of subdividing land is used on County Highway Maps produced by the Alabama Department of Transportation and U.S.G.S. 7.5 minute quadrangles.

Henry County, Alabama
Township 6 North, Range 28 East
(36 square miles)



Henry County, Alabama
Township 6 North, Range 28 East
Section 30
(1 square mile or 640 acres)



Henry County, Alabama
Township 6 North, Range 28 East
SE 1/4 of Section 30
(160 acres)

Produced by the Dept. of Geography
College of Arts and Sciences
The University of Alabama

Figure 3.8-2

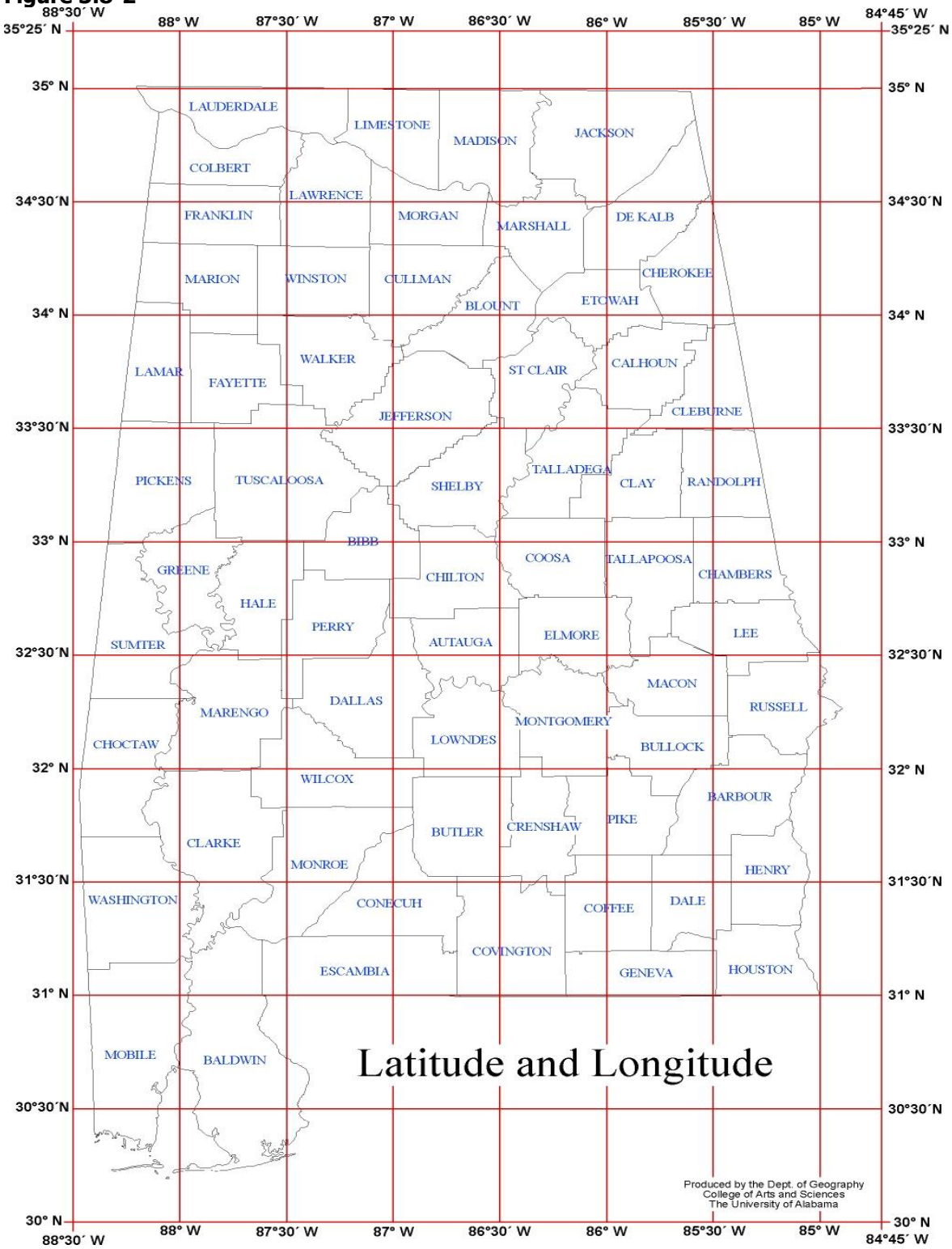

88°30´ W
88° W
87°30´ W
87° W
86°30´ W
86° W
85°30´ W
85° W
84°45´ W
35°25´ N
35° N
34°30´N
34° N
33°30´N
33° N
32°30´N
32° N
31°30´N
31° N
30°30´N
30° N
LAUDERDALE
LIMESTONE
MADISON
JACKSON
COLBERT
LAWRENCE
FRANKLIN
MORGAN
MARSHALL
DE KALB
MARION
WINSTON
CULLMAN
CHEROKEE
BLOUNT
ETOWAH
LAMAR
FAYETTE
WALKER
ST CLAIR
CALHOUN
JEFFERSON
CLEBURNE
PICKENS
TUSCALOOSA
SHELBY
TALLADEGA
CLAY
RANDOLPH
BIBB
GREENE
COOSA
TALLAPOOSA
CHILTON
CHAMBERS
HALE
PERRY
AUTAUGA
ELMORE
LEE
SUMTER
MACON
DALLAS
RUSSELL
MARENGO
MONTGOMERY
LOWNDES
CHOCTAW
BULLOCK
WILCOX
BARBOUR
BUTLER
CRENSHAW
PIKE
CLARKE
MONROE
HENRY
WASHINGTON
CONECUH
COFFEE
DALE
COVINGTON
ESCAMBIA
GENEVA
HOUSTON
MOBILE
BALDWIN
Latitude and Longitude
Produced by the Dept. of Geography
College of Arts and Sciences
The University of Alabama

Figure 3.8-3

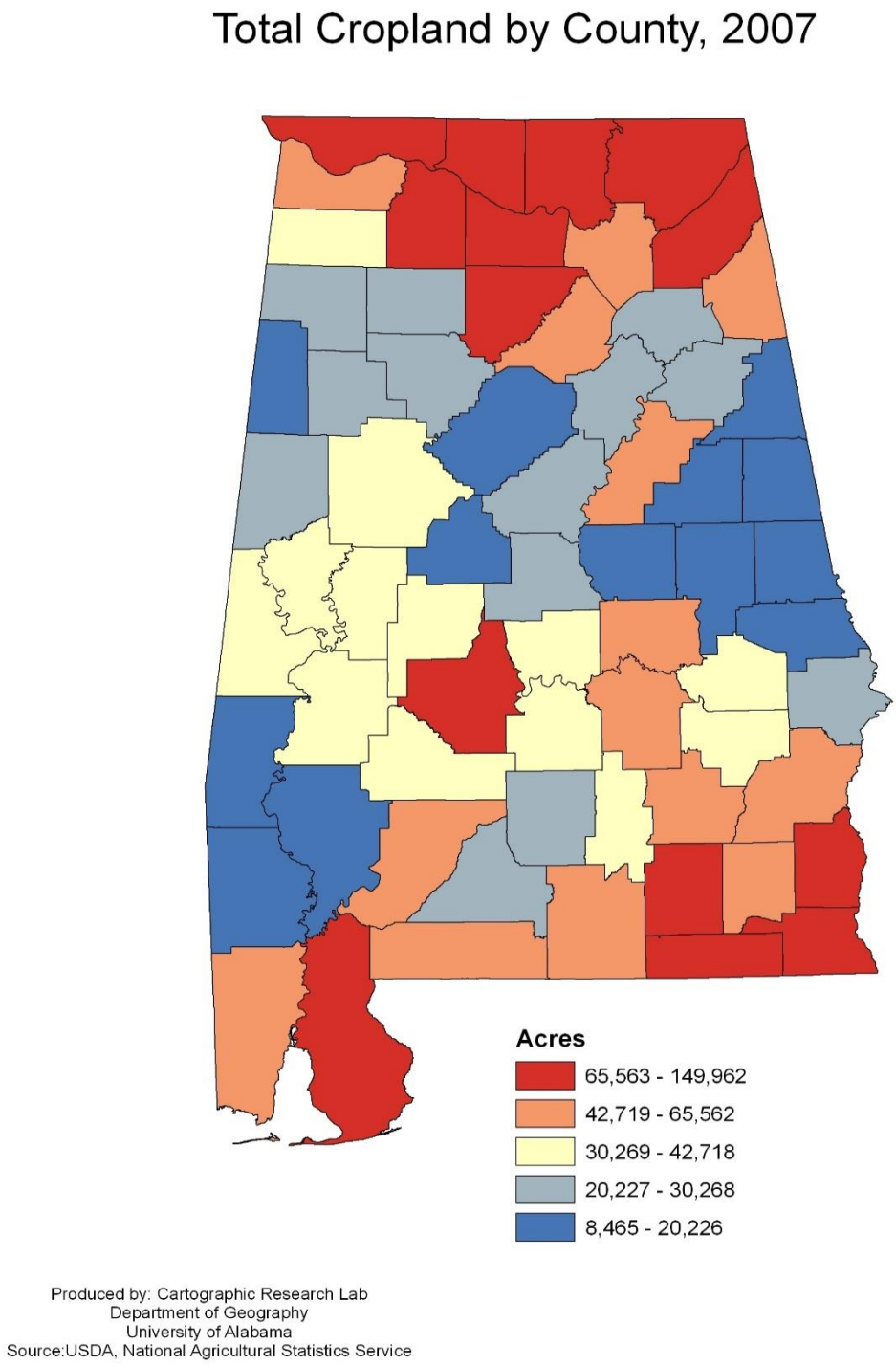

Total Cropland by County, 2007
Acres
65,563 - 149,962
42,719 - 65,562
30,269 - 42,718
20,227 - 30,268
8,465 - 20,226
Produced by: Cartographic Research Lab
Department of Geography
University of Alabama
Source:USDA, National Agricultural Statistics Service

Figure 3.8-4

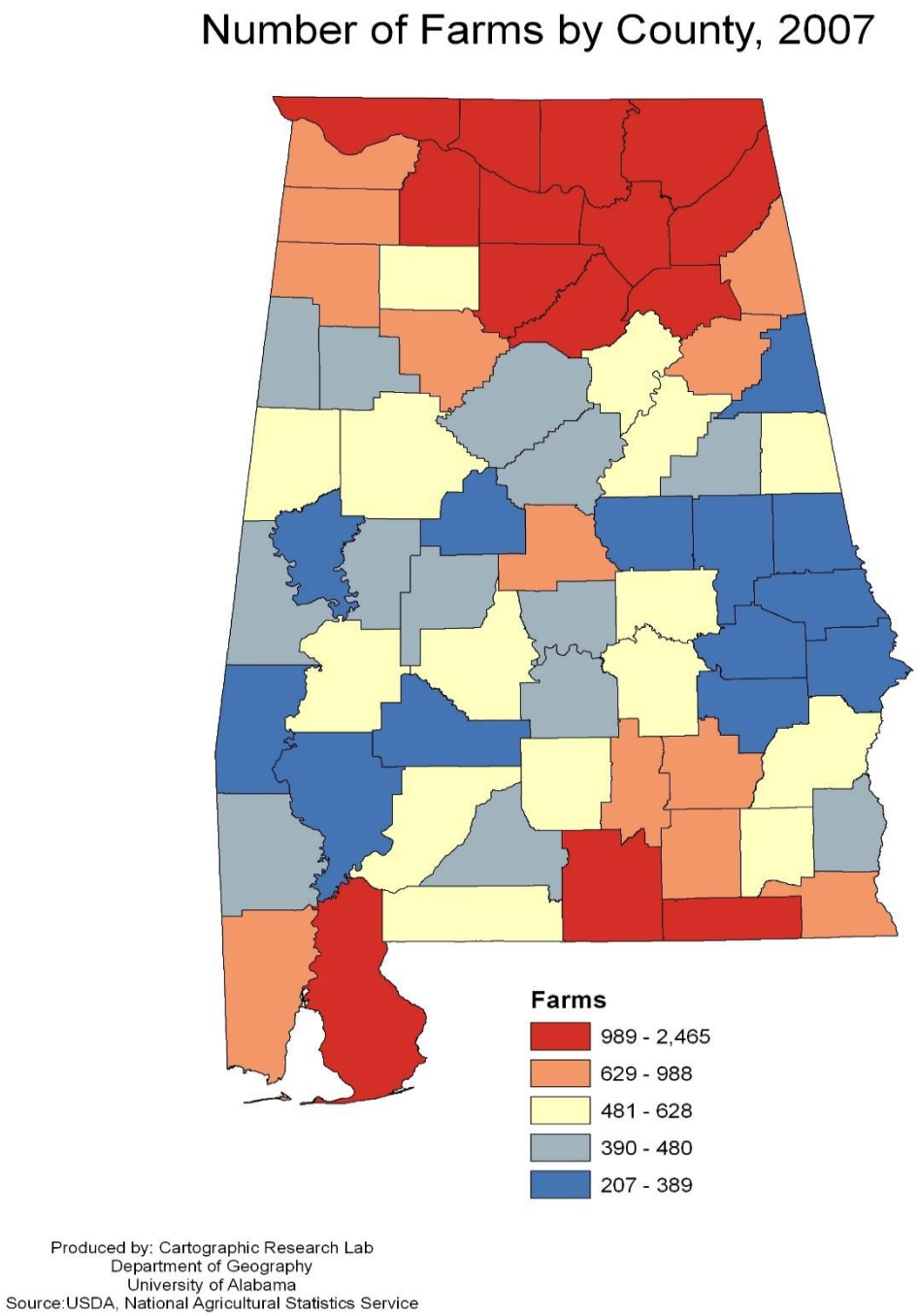

Number of Farms by County, 2007
Farms
989 - 2,465
629 - 988
481 - 628
390 - 480
207 - 389
Produced by: Cartographic Research Lab
Department of Geography
University of Alabama
Source:USDA, National Agricultural Statistics Service

Figure 3.8-5

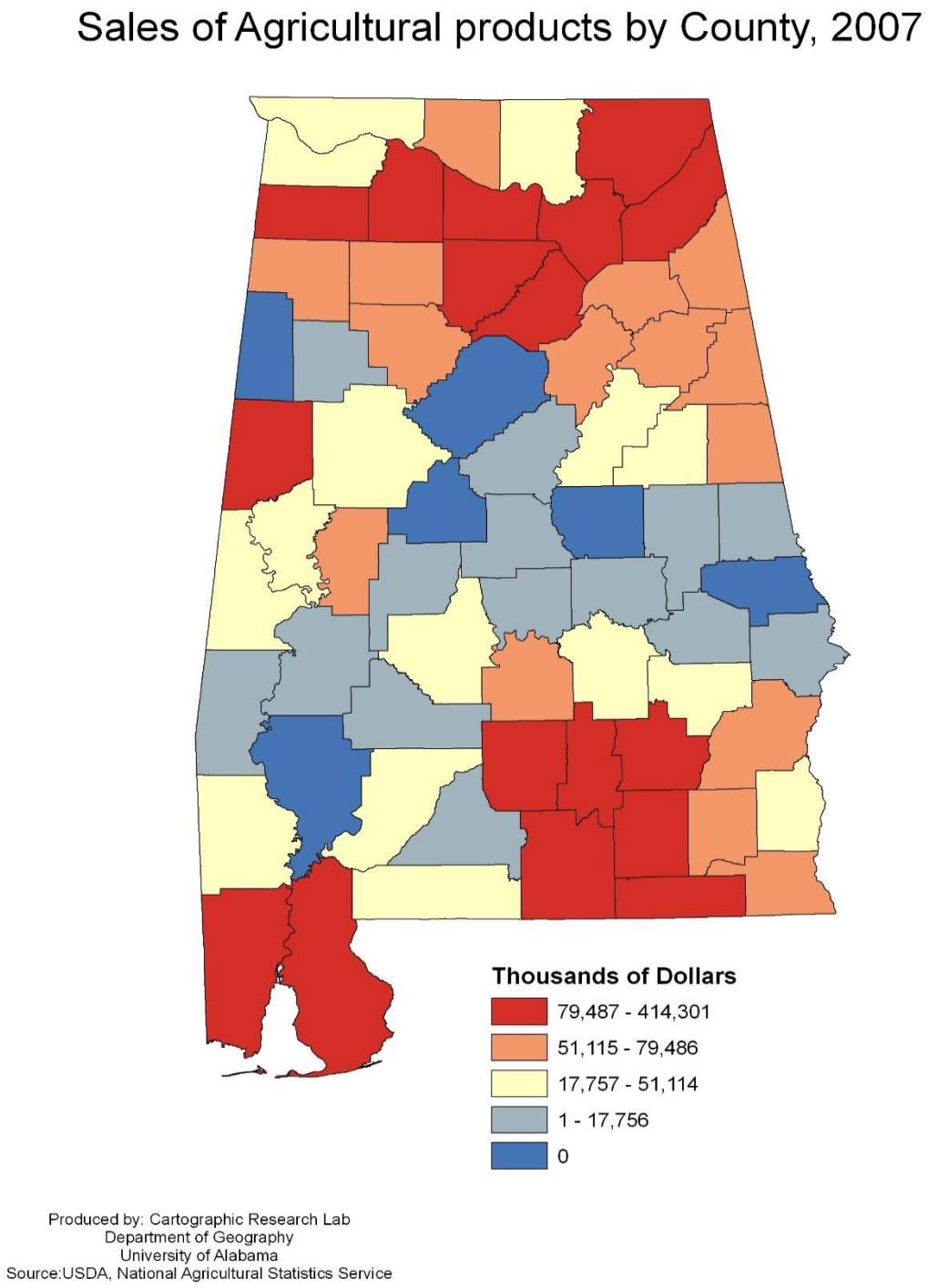
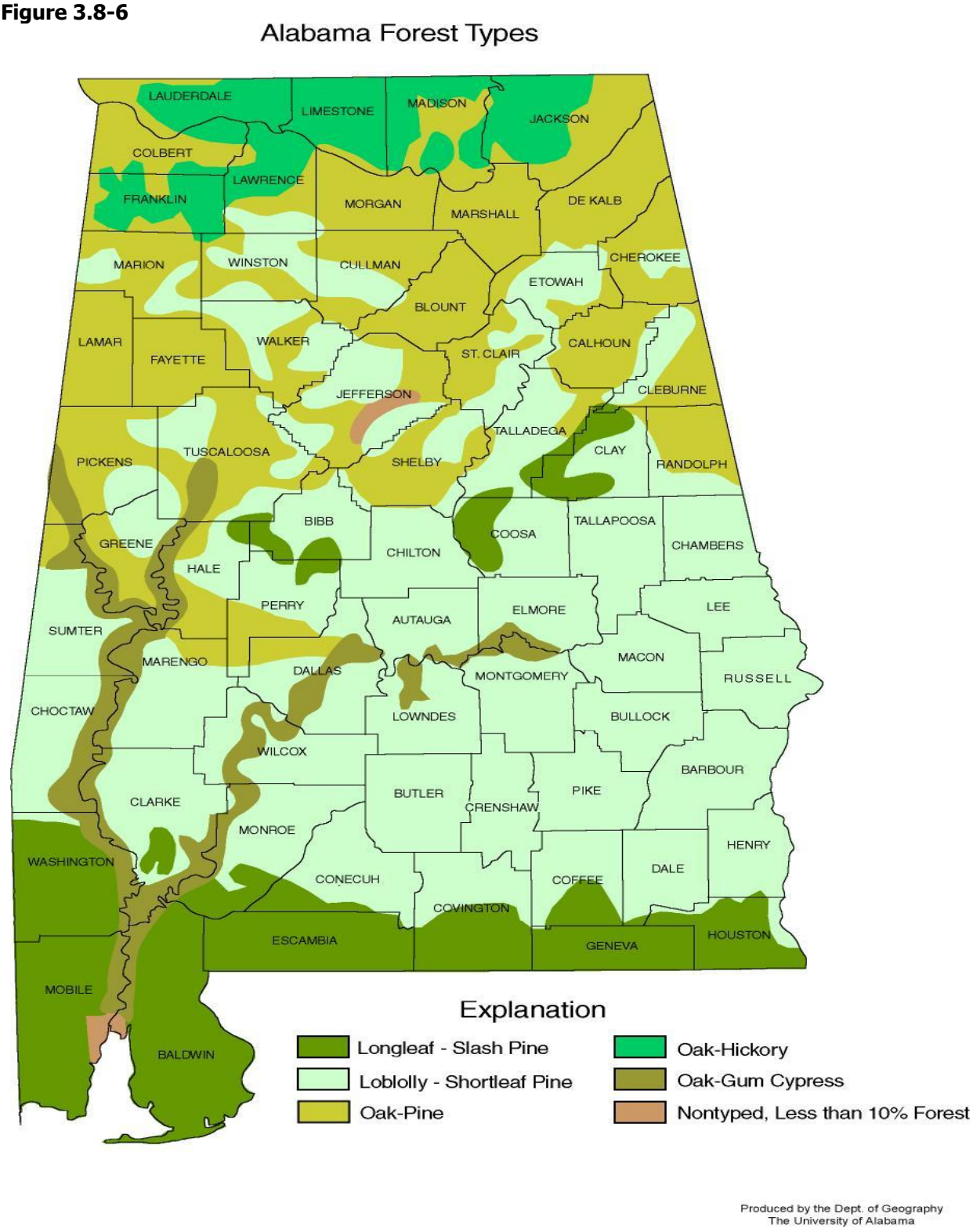

Sales of Agricultural products by County, 2007
Thousands of Dollars
79,487 - 414,301
51,115 - 79,486
17,757 - 51,114
1 - 17,756
0
Produced by: Cartographic Research Lab
Department of Geography
University of Alabama
Source:USDA, National Agricultural Statistics Service

Figure 3.8-6


Alabama Forest Types
LAUDERDALE
LIMESTONE
MADISON
JACKSON
COLBERT
LAWRENCE
FRANKLIN
MORGAN
MARSHALL
DE KALB
MARION
WINSTON
CULLMAN
CHEROKEE
ETOWAH
BLOUNT
LAMAR
FAYETTE
WALKER
ST. CLAIR
CALHOUN
JEFFERSON
CLEBURNE
TALLADEGA
PICKENS
TUSCALOOSA
SHELBY
CLAY
RANDOLPH
BIBB
TALLAPOOSA
GREENE
COOSA
CHILTON
CHAMBERS
HALE
PERRY
AUTAUGA
ELMORE
LEE
SUMTER
MARENGO
DALLAS
MONTGOMERY
MACON
RUSSELL
CHOCTAW
LOWNDES
BULLOCK
WILCOX
BARBOUR
CLARKE
BUTLER
CRENSHAW
PIKE
MONROE
HENRY
WASHINGTON
CONECUH
COFFEE
DALE
COVINGTON
ESCAMBIA
GENEVA
HOUSTON
MOBILE
BALDWIN
Explanation
Longleaf - Slash Pine
Loblolly - Shortleaf Pine
Oak-Pine
Oak-Hickory
Oak-Gum Cypress
Nontyped, Less than 10% Forest
Produced by the Dept. of Geography
The University of Alabama

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3.9 Housing and Community Development

Elmore County, Alabama, situated in the east-central part of the state and covers a total area of approximately 657.21 square miles, 621.26 square miles of land, and 35.96 square miles of water. Of the 397,606 land acres, 102,664 acres are farmland and 240,301 are timberland (as of June, 2013). About one-fourth of the land area in Elmore County is incorporated, while the majority is unincorporated. The county seat is Wetumpka, located 15 miles north of Montgomery and 75 miles southeast of Birmingham. Millbrook is the largest city in the county. According to the 2010 census, the population of Elmore County stood at 79,303, with a population density of 128.2 people per square mile. The Elmore County Federal Information Processing Standards (FIPS) Code is 051. The county is part of the Montgomery Metropolitan Area (also known as the Montgomery Metropolitan Statistical Area), which includes the counties of Autauga, Elmore, Lowndes, and Montgomery. Major highways include Interstate 65, U.S. Highway 82, U.S. Highway 231, State Route 9, State Route 14, and State Route 63. Other heavily traveled routes in the county include: State Routes 111, 143, 170, and 229. Additionally, Intestate 85 is only 12 miles from Wetumpka. Counties adjacent to Elmore include Coosa County (north), Tallapoosa County (northeast), Macon County (southeast), Montgomery County (south), Autauga County (west), and Chilton County (northwest).

According the 2010 U.S. Census, People QuickFacts: Housing, the following information was reported for Elmore County:

Table 3.9-1

People QuickFacts	Elmore County	Alabama
Housing units, 2013	32,936	2,189,938
Homeownership rate, 2008-2012	77.4	70.2%
Housing units in multi-unit structures, percent, 2008-2012	7.4%	15.8%
Median value of owner-occupied housing units, 2008-2012	$143,900	$122,300
Households, 2008-2012	28,143	1,837,576
Persons per household	2.62	2.54
Per capita money income in past 12 months (2012 dollars), 2008-2012	$24,007	$23,587
Median household income, 2008-2012	$55,514	$43,160
Persons below poverty level, percent, 2008-2012	13.0%	18.1%

The following excerpts are from the published report, *Alabama Economic Outlook 2013, Center for Business and Economic Research, The University of Alabama, Montgomery, pages 1 – 4:*

- "Manufacturing and professional and business services drove job growth in the Montgomery metro area during 2012. Total nonfarm employment of 165,600 in October was 100 workers above a year earlier; however the area still needs to create 14,800 jobs to be back at the 180,400 prerecession level of five years ago. An increase of 624 in the number of employed residents, coupled with a decline of around 230 in the civilian labor force, brought unemployment down from 8.5 percent in 2011 to 8.0 percent for October 2012, ranking 8th lowest among the 11 metro. Adding an estimated 35,336 underemployed workers to the 13,679 unemployed in October brings the Montgomery area's available pool to around 49,000. That's a sizeable number of potential employees for new and expanding business and industry prospects."
- "In manufacturing, where employment increased by 1,700 from January to October 2012 and accounted for 10.9 percent of nonfarm employment, the keyword was Hyundai."
- "Tallassee Hyundai suppliers expanding include Hanil USA, planning a $3 million investment that will create 60 jobs…"
- "Firms in professional and business services employed 20,600 across the Montgomery metro area in October 2012, the area's second largest sector with 12.4 percent of jobs."
- "Leisure and hospitality businesses in the Montgomery metro area employed 14,200 in October 2012, up 300 since January but down by 100 from October 2011."
- "The Poarch Band of Creek Indians began construction of a $246 million, 20-story hotel and casino that will add 285 rooms and a 90,000 square foot gaming floor to its adjoining Wind Creek Wetumpka hotel and casino. About 600 jobs will be created by the new project, bringing total employment to around 1,000."
- "Other projects completed or ongoing during 2012 will contribute to the quality of life and housing opportunities available to area residents. The recently-approved Atlanta Highway master Plan seeks to make that area of Montgomery more attractive and pedestrian and bike friendly."
- "Population in the four-county Montgomery metro area continued to increase at a faster pace than across the state; 3,405 new residents during the year ending July 1, 2011 amounted to a 0.9 percent gain. However, prices as measured by the FHFA House Price Index were down 2.3 percent in third quarter 2012 from their third quarter 2011 level. House prices in the Montgomery metro are 10.8 percent below their level five years ago, on average. Still, the areas real estate market appears to be on the upswing, with the total number of homes sold during the first 10 months of 2012 up 13.3 percent from the same period in 2011. And building permits for both single-family and multi-family homes rose during the first nine months of 2012 compared to the same period in 2011. Financially, Montgomery area residents are better off than the average Alabamian, with a 2011 per capita income of $36,450 ranking third among the 11 metros and the fourth highest FY2012 median family income of $60,100. At $39,020, the average annual wage was close to the state average and ranked fourth among the metros."

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Table 3.9-2

U.S. Census Bureau

AMERICAN FactFinder

QT-P11 | Households and Families: 2010

2010 Census Summary File 1

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see http://www.census.gov/prod/cen2010/doc/sf1.pdf.

Geography: Elmore County, Alabama

Subject	Number	Percent
HOUSEHOLD TYPE		
Total households	28,301	100.0
Family households [1]	21,003	74.2
Male householder	14,737	52.1
Female householder	6,266	22.1
Nonfamily households [2]	7,298	25.8
Male householder	3,518	12.4
Living alone	2,912	10.3
Female householder	3,780	13.4
Living alone	3,326	11.8
HOUSEHOLD SIZE		
Total households	28,301	100.0
1-person household	6,238	22.0
2-person household	9,888	34.9
3-person household	5,254	18.6
4-person household	4,153	14.7
5-person household	1,786	6.3
6-person household	637	2.3
7-or-more-person household	345	1.2
Average household size	2.61	(X)
Average family size	3.04	(X)
FAMILY TYPE AND PRESENCE OF RELATED AND OWN CHILDREN		
Families [3]	21,003	100.0
With related children under 18 years	10,327	49.2
With own children under 18 years	9,200	43.8
Under 6 years only	1,948	9.3
Under 6 and 6 to 17 years	1,735	8.3
6 to 17 years only	5,517	26.3
Husband-wife families	16,018	100.0
With related children under 18 years	7,014	43.8
With own children under 18 years	6,449	40.3
Under 6 years only	1,397	8.7
Under 6 and 6 to 17 years	1,311	8.2
6 to 17 years only	3,741	23.4
Female householder, no husband present families	3,698	100.0
With related children under 18 years	2,520	68.1
With own children under 18 years	2,076	56.1
Under 6 years only	392	10.6
Under 6 and 6 to 17 years	332	9.0
6 to 17 years only	1,352	36.6

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X Not applicable.
[1] A household that has at least one member of the household related to the householder by birth, marriage, or adoption is a "Family household." Same-sex couple households are included in the family households category if there is at least one additional person related to the householder by birth or adoption. Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households. Responses of "same-sex spouse" were edited during processing to "unmarried partner."
[2] "Nonfamily households" consist of people living alone and households which do not have any members related to the householder.
[3] "Families" consist of a householder and one or more other people related to the householder by birth, marriage, or adoption. They do not include same-sex married couples even if the marriage was performed in a state issuing marriage certificates for same-sex couples. Same-sex couples are included in the families category if there is at least one additional person related to the householder by birth or adoption. Responses of "same-sex spouse" were edited during processing to "unmarried partner." Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households.
Source: U.S. Census Bureau, 2010 Census.

Summary File 1, Tables P17, P18, P28, P29, P37, P38, and P39.

2 of 2 07/24/2014

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Table 3.9-3

U.S. Census Bureau

AMERICAN FactFinder

DP02 | SELECTED SOCIAL CHARACTERISTICS IN THE UNITED STATES

2008-2012 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Data and Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Subject	Alabama				Elmore County, Alabama
	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate
HOUSEHOLDS BY TYPE					
Total households	1,837,576	+/-5,762	1,837,576	(X)	28,143
Family households (families)	1,242,544	+/-5,793	67.6%	+/-0.2	20,866
With own children under 18 years	521,728	+/-4,875	28.4%	+/-0.2	9,467
Married-couple family	890,715	+/-6,515	48.5%	+/-0.3	15,885
With own children under 18 years	336,837	+/-4,599	18.3%	+/-0.2	6,666
Male householder, no wife present, family	75,330	+/-1,811	4.1%	+/-0.1	959
With own children under 18 years	32,960	+/-1,352	1.8%	+/-0.1	512
Female householder, no husband present, family	276,499	+/-3,156	15.0%	+/-0.2	4,022
With own children under 18 years	151,931	+/-2,282	8.3%	+/-0.1	2,289
Nonfamily households	595,032	+/-4,419	32.4%	+/-0.2	7,277
Householder living alone	520,356	+/-4,374	28.3%	+/-0.2	6,567
65 years and over	186,678	+/-3,139	10.2%	+/-0.2	2,264
Households with one or more people under 18 years	597,337	+/-5,183	32.5%	+/-0.2	10,531
Households with one or more people 65 years and over	475,330	+/-2,538	25.9%	+/-0.1	6,663
Average household size	2.54	+/-0.01	(X)	(X)	2.62
Average family size	3.12	+/-0.01	(X)	(X)	3.10
RELATIONSHIP					
Population in households	4,662,328	*****	4,662,328	(X)	73,640
Householder	1,837,576	+/-5,762	39.4%	+/-0.1	28,143
Spouse	890,570	+/-6,370	19.1%	+/-0.1	15,942
Child	1,410,806	+/-5,565	30.3%	+/-0.1	23,170
Other relatives	337,028	+/-6,320	7.2%	+/-0.1	4,647
Nonrelatives	186,348	+/-4,539	4.0%	+/-0.1	1,738
Unmarried partner	65,409	+/-1,700	1.4%	+/-0.1	790
MARITAL STATUS					
Males 15 years and over	1,841,356	+/-822	1,841,356	(X)	31,067
Never married	584,355	+/-4,261	31.7%	+/-0.2	9,299
Now married, except separated	957,174	+/-5,742	52.0%	+/-0.3	16,386
Separated	39,467	+/-1,675	2.1%	+/-0.1	804

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Subject	Alabama				Elmore County, Alabama
	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate
Widowed	52,899	+/-1,533	2.9%	+/-0.1	922
Divorced	207,461	+/-3,259	11.3%	+/-0.2	3,656
Females 15 years and over	2,003,035	+/-723	2,003,035	(X)	32,972
Never married	517,693	+/-3,948	25.8%	+/-0.2	7,174
Now married, except separated	937,087	+/-6,686	46.8%	+/-0.3	17,561
Separated	61,290	+/-1,849	3.1%	+/-0.1	1,059
Widowed	222,434	+/-2,411	11.1%	+/-0.1	3,399
Divorced	264,531	+/-3,599	13.2%	+/-0.2	3,779
FERTILITY					
Number of women 15 to 50 years old who had a birth in the past 12 months	68,685	+/-1,707	68,685	(X)	983
Unmarried women (widowed, divorced, and never married)	28,804	+/-1,404	41.9%	+/-1.6	330
Per 1,000 unmarried women	47	+/-2	(X)	(X)	36
Per 1,000 women 15 to 50 years old	59	+/-1	(X)	(X)	48
Per 1,000 women 15 to 19 years old	32	+/-3	(X)	(X)	27
Per 1,000 women 20 to 34 years old	111	+/-3	(X)	(X)	93
Per 1,000 women 35 to 50 years old	20	+/-1	(X)	(X)	18
GRANDPARENTS					
Number of grandparents living with own grandchildren under 18 years	118,622	+/-2,794	118,622	(X)	1,948
Responsible for grandchildren	67,115	+/-2,079	56.6%	+/-1.1	961
Years responsible for grandchildren					
Less than 1 year	12,677	+/-1,029	10.7%	+/-0.8	194
1 or 2 years	15,381	+/-1,015	13.0%	+/-0.8	157
3 or 4 years	11,307	+/-966	9.5%	+/-0.8	274
5 or more years	27,750	+/-1,406	23.4%	+/-1.1	336
Number of grandparents responsible for own grandchildren under 18 years	67,115	+/-2,079	67,115	(X)	961
Who are female	42,804	+/-1,278	63.8%	+/-0.8	614
Who are married	46,980	+/-2,005	70.0%	+/-1.3	681
SCHOOL ENROLLMENT					
Population 3 years and over enrolled in school	1,220,805	+/-4,779	1,220,805	(X)	19,842
Nursery school, preschool	68,619	+/-1,830	5.6%	+/-0.1	1,450
Kindergarten	64,873	+/-1,694	5.3%	+/-0.1	1,128
Elementary school (grades 1-8)	509,551	+/-2,536	41.7%	+/-0.2	8,443
High school (grades 9-12)	255,665	+/-2,136	20.9%	+/-0.2	4,912
College or graduate school	322,097	+/-4,360	26.4%	+/-0.3	3,909
EDUCATIONAL ATTAINMENT					
Population 25 years and over	3,166,424	+/-969	3,166,424	(X)	53,090
Less than 9th grade	187,882	+/-3,270	5.9%	+/-0.1	1,923
9th to 12th grade, no diploma	363,148	+/-5,025	11.5%	+/-0.2	5,406
High school graduate (includes equivalency)	991,406	+/-5,920	31.3%	+/-0.2	18,197
Some college, no degree	691,686	+/-5,541	21.8%	+/-0.2	12,537
Associate's degree	227,301	+/-4,116	7.2%	+/-0.1	3,821
Bachelor's degree	448,117	+/-5,213	14.2%	+/-0.2	7,340
Graduate or professional degree	256,884	+/-3,947	8.1%	+/-0.1	3,866
Percent high school graduate or higher	(X)	(X)	82.6%	+/-0.2	(X)
Percent bachelor's degree or higher	(X)	(X)	22.3%	+/-0.2	(X)
VETERAN STATUS					
Civilian population 18 years and over	3,630,798	+/-1,025	3,630,798	(X)	60,177
Civilian veterans	398,343	+/-3,572	11.0%	+/-0.1	8,224

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Subject	Alabama				Elmore County, Alabama
	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate
DISABILITY STATUS OF THE CIVILIAN NONINSTITUTIONALIZED POPULATION					
Total Civilian Noninstitutionalized Population	4,693,822	+/-956	4,693,822	(X)	73,216
With a disability	764,306	+/-5,584	16.3%	+/-0.1	11,008
Under 18 years	1,128,220	+/-382	1,128,220	(X)	18,649
With a disability	55,746	+/-1,633	4.9%	+/-0.1	1,079
18 to 64 years	2,921,943	+/-1,185	2,921,943	(X)	45,496
With a disability	427,742	+/-4,380	14.6%	+/-0.2	6,317
65 years and over	643,659	+/-592	643,659	(X)	9,071
With a disability	280,818	+/-2,252	43.6%	+/-0.4	3,612
RESIDENCE 1 YEAR AGO					
Population 1 year and over	4,720,103	+/-1,456	4,720,103	(X)	78,623
Same house	4,005,867	+/-11,104	84.9%	+/-0.2	67,046
Different house in the U.S.	698,628	+/-11,147	14.8%	+/-0.2	11,373
Same county	429,927	+/-8,349	9.1%	+/-0.2	4,553
Different county	268,701	+/-6,240	5.7%	+/-0.1	6,820
Same state	155,210	+/-4,799	3.3%	+/-0.1	5,485
Different state	113,491	+/-3,843	2.4%	+/-0.1	1,335
Abroad	15,608	+/-1,325	0.3%	+/-0.1	204
PLACE OF BIRTH					
Total population	4,777,326	*****	4,777,326	(X)	79,330
Native	4,610,592	+/-2,629	96.5%	+/-0.1	77,561
Born in United States	4,574,045	+/-2,567	95.7%	+/-0.1	76,808
State of residence	3,354,931	+/-8,355	70.2%	+/-0.2	57,541
Different state	1,219,114	+/-8,146	25.5%	+/-0.2	19,267
Born in Puerto Rico, U.S. Island areas, or born abroad to American parent(s)	36,547	+/-1,276	0.8%	+/-0.1	753
Foreign born	166,734	+/-2,629	3.5%	+/-0.1	1,769
U.S. CITIZENSHIP STATUS					
Foreign-born population	166,734	+/-2,629	166,734	(X)	1,769
Naturalized U.S. citizen	51,002	+/-1,801	30.6%	+/-1.0	479
Not a U.S. citizen	115,732	+/-2,495	69.4%	+/-1.0	1,290
YEAR OF ENTRY					
Population born outside the United States	203,281	+/-2,567	203,281	(X)	2,522
Native	36,547	+/-1,276	36,547	(X)	753
Entered 2010 or later	609	+/-195	1.7%	+/-0.5	0
Entered before 2010	35,938	+/-1,256	98.3%	+/-0.5	753
Foreign born	166,734	+/-2,629	166,734	(X)	1,769
Entered 2010 or later	6,868	+/-1,016	4.1%	+/-0.6	18
Entered before 2010	159,866	+/-2,662	95.9%	+/-0.6	1,751
WORLD REGION OF BIRTH OF FOREIGN BORN					
Foreign-born population, excluding population born at sea	166,734	+/-2,629	166,734	(X)	1,769
Europe	18,476	+/-1,019	11.1%	+/-0.5	300
Asia	45,086	+/-1,287	27.0%	+/-0.7	298
Africa	6,768	+/-858	4.1%	+/-0.5	14
Oceania	670	+/-195	0.4%	+/-0.1	0
Latin America	92,441	+/-1,953	55.4%	+/-0.9	1,083
Northern America	3,293	+/-391	2.0%	+/-0.2	74

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Subject	Alabama				Elmore County, Alabama
	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate
LANGUAGE SPOKEN AT HOME					
Population 5 years and over	4,472,235	+/-477	4,472,235	(X)	74,466
English only	4,241,429	+/-2,902	94.8%	+/-0.1	71,694
Language other than English	230,806	+/-2,819	5.2%	+/-0.1	2,772
Speak English less than "very well"	107,021	+/-2,511	2.4%	+/-0.1	1,195
Spanish	149,070	+/-2,092	3.3%	+/-0.1	1,863
Speak English less than "very well"	79,814	+/-2,171	1.8%	+/-0.1	938
Other Indo-European languages	37,843	+/-1,554	0.8%	+/-0.1	472
Speak English less than "very well"	7,720	+/-726	0.2%	+/-0.1	131
Asian and Pacific Islander languages	34,670	+/-1,383	0.8%	+/-0.1	341
Speak English less than "very well"	17,114	+/-1,138	0.4%	+/-0.1	126
Other languages	9,223	+/-1,128	0.2%	+/-0.1	96
Speak English less than "very well"	2,373	+/-617	0.1%	+/-0.1	0
ANCESTRY					
Total population	4,777,326	*****	4,777,326	(X)	79,330
American	679,068	+/-8,524	14.2%	+/-0.2	12,245
Arab	9,717	+/-1,142	0.2%	+/-0.1	9
Czech	4,388	+/-524	0.1%	+/-0.1	30
Danish	4,728	+/-705	0.1%	+/-0.1	83
Dutch	51,863	+/-2,072	1.1%	+/-0.1	946
English	420,527	+/-5,717	8.8%	+/-0.1	7,500
French (except Basque)	84,575	+/-2,906	1.8%	+/-0.1	1,608
French Canadian	9,148	+/-833	0.2%	+/-0.1	267
German	357,091	+/-4,832	7.5%	+/-0.1	7,005
Greek	7,646	+/-761	0.2%	+/-0.1	106
Hungarian	4,905	+/-533	0.1%	+/-0.1	93
Irish	465,704	+/-6,280	9.7%	+/-0.1	9,712
Italian	82,806	+/-2,574	1.7%	+/-0.1	1,614
Lithuanian	2,097	+/-399	0.0%	+/-0.1	36
Norwegian	15,374	+/-1,098	0.3%	+/-0.1	231
Polish	31,992	+/-1,799	0.7%	+/-0.1	642
Portuguese	3,454	+/-543	0.1%	+/-0.1	44
Russian	8,007	+/-733	0.2%	+/-0.1	78
Scotch-Irish	80,688	+/-2,414	1.7%	+/-0.1	1,735
Scottish	92,374	+/-3,047	1.9%	+/-0.1	1,878
Slovak	1,968	+/-468	0.0%	+/-0.1	47
Subsaharan African	35,634	+/-1,912	0.7%	+/-0.1	212
Swedish	18,950	+/-1,184	0.4%	+/-0.1	319
Swiss	4,816	+/-765	0.1%	+/-0.1	42
Ukrainian	2,076	+/-351	0.0%	+/-0.1	0
Welsh	18,835	+/-1,349	0.4%	+/-0.1	329
West Indian (excluding Hispanic origin groups)	8,013	+/-999	0.2%	+/-0.1	54

Subject	Elmore County, Alabama		
	Margin of Error	Percent	Percent Margin of Error
HOUSEHOLDS BY TYPE			
Total households	+/-663	28,143	(X)
Family households (families)	+/-639	74.1%	+/-1.7
With own children under 18 years	+/-583	33.6%	+/-1.8
Married-couple family	+/-648	56.4%	+/-2.0
With own children under 18 years	+/-534	23.7%	+/-1.7
Male householder, no wife present, family	+/-194	3.4%	+/-0.7
With own children under 18 years	+/-144	1.8%	+/-0.5
Female householder, no husband present, family	+/-395	14.3%	+/-1.4
With own children under 18 years	+/-348	8.1%	+/-1.2
Nonfamily households	+/-531	25.9%	+/-1.7
Householder living alone	+/-518	23.3%	+/-1.7
65 years and over	+/-234	8.0%	+/-0.9
Households with one or more people under 18 years	+/-612	37.4%	+/-1.8
Households with one or more people 65 years and over	+/-229	23.7%	+/-0.8
Average household size	+/-0.04	(X)	(X)
Average family size	+/-0.06	(X)	(X)
RELATIONSHIP			
Population in households	+/-1,089	73,640	(X)
Householder	+/-663	38.2%	+/-0.6
Spouse	+/-630	21.6%	+/-0.8
Child	+/-704	31.5%	+/-1.0
Other relatives	+/-605	6.3%	+/-0.8
Nonrelatives	+/-335	2.4%	+/-0.4
Unmarried partner	+/-202	1.1%	+/-0.3
MARITAL STATUS			
Males 15 years and over	+/-139	31,067	(X)
Never married	+/-511	29.9%	+/-1.6
Now married, except separated	+/-690	52.7%	+/-2.3
Separated	+/-233	2.6%	+/-0.7
Widowed	+/-185	3.0%	+/-0.6
Divorced	+/-408	11.8%	+/-1.3
Females 15 years and over	+/-185	32,972	(X)
Never married	+/-522	21.8%	+/-1.6
Now married, except separated	+/-733	53.3%	+/-2.2
Separated	+/-256	3.2%	+/-0.8
Widowed	+/-285	10.3%	+/-0.9
Divorced	+/-395	11.5%	+/-1.2
FERTILITY			
Number of women 15 to 50 years old who had a birth in the past 12 months	+/-223	983	(X)
Unmarried women (widowed, divorced, and never married)	+/-117	33.6%	+/-10.5
Per 1,000 unmarried women	+/-13	(X)	(X)
Per 1,000 women 15 to 50 years old	+/-11	(X)	(X)
Per 1,000 women 15 to 19 years old	+/-16	(X)	(X)
Per 1,000 women 20 to 34 years old	+/-23	(X)	(X)
Per 1,000 women 35 to 50 years old	+/-9	(X)	(X)
GRANDPARENTS			
Number of grandparents living with own grandchildren under 18 years	+/-344	1,948	(X)
Responsible for grandchildren	+/-210	49.3%	+/-8.3

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Subject	Elmore County, Alabama		
	Margin of Error	Percent	Percent Margin of Error
Years responsible for grandchildren			
Less than 1 year	+/-134	10.0%	+/-6.3
1 or 2 years	+/-79	8.1%	+/-4.0
3 or 4 years	+/-127	14.1%	+/-6.2
5 or more years	+/-114	17.2%	+/-6.2
Number of grandparents responsible for own grandchildren under 18 years	+/-210	961	(X)
Who are female	+/-153	63.9%	+/-6.4
Who are married	+/-189	70.9%	+/-9.3
SCHOOL ENROLLMENT			
Population 3 years and over enrolled in school	+/-588	19,842	(X)
Nursery school, preschool	+/-263	7.3%	+/-1.3
Kindergarten	+/-256	5.7%	+/-1.3
Elementary school (grades 1-8)	+/-338	42.6%	+/-1.8
High school (grades 9-12)	+/-287	24.8%	+/-1.4
College or graduate school	+/-458	19.7%	+/-1.9
EDUCATIONAL ATTAINMENT			
Population 25 years and over	+/-101	53,090	(X)
Less than 9th grade	+/-355	3.6%	+/-0.7
9th to 12th grade, no diploma	+/-564	10.2%	+/-1.1
High school graduate (includes equivalency)	+/-804	34.3%	+/-1.5
Some college, no degree	+/-773	23.6%	+/-1.5
Associate's degree	+/-446	7.2%	+/-0.8
Bachelor's degree	+/-492	13.8%	+/-0.9
Graduate or professional degree	+/-435	7.3%	+/-0.8
Percent high school graduate or higher	(X)	86.2%	+/-1.3
Percent bachelor's degree or higher	(X)	21.1%	+/-1.3
VETERAN STATUS			
Civilian population 18 years and over	+/-172	60,177	(X)
Civilian veterans	+/-542	13.7%	+/-0.9
DISABILITY STATUS OF THE CIVILIAN NONINSTITUTIONALIZED POPULATION			
Total Civilian Noninstitutionalized Population	+/-1,079	73,216	(X)
With a disability	+/-753	15.0%	+/-1.0
Under 18 years	+/-40	18,649	(X)
With a disability	+/-284	5.8%	+/-1.5
18 to 64 years	+/-1,051	45,496	(X)
With a disability	+/-565	13.9%	+/-1.2
65 years and over	+/-142	9,071	(X)
With a disability	+/-264	39.8%	+/-3.0
RESIDENCE 1 YEAR AGO			
Population 1 year and over	+/-152	78,623	(X)
Same house	+/-1,246	85.3%	+/-1.6
Different house in the U.S.	+/-1,259	14.5%	+/-1.6
Same county	+/-788	5.8%	+/-1.0
Different county	+/-968	8.7%	+/-1.2
Same state	+/-861	7.0%	+/-1.1
Different state	+/-346	1.7%	+/-0.4
Abroad	+/-122	0.3%	+/-0.2

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Subject	Elmore County, Alabama		
	Margin of Error	Percent	Percent Margin of Error
PLACE OF BIRTH			
Total population	*****	79,330	(X)
Native	+/-275	97.8%	+/-0.3
Born in United States	+/-328	96.8%	+/-0.4
State of residence	+/-1,183	72.5%	+/-1.5
Different state	+/-1,206	24.3%	+/-1.5
Born in Puerto Rico, U.S. Island areas, or born abroad to American parent(s)	+/-167	0.9%	+/-0.2
Foreign born	+/-275	2.2%	+/-0.3
U.S. CITIZENSHIP STATUS			
Foreign-born population	+/-275	1,769	(X)
Naturalized U.S. citizen	+/-162	27.1%	+/-7.8
Not a U.S. citizen	+/-229	72.9%	+/-7.8
YEAR OF ENTRY			
Population born outside the United States	+/-328	2,522	(X)
Native	+/-167	753	(X)
Entered 2010 or later	+/-28	0.0%	+/-4.2
Entered before 2010	+/-167	100.0%	+/-4.2
Foreign born	+/-275	1,769	(X)
Entered 2010 or later	+/-27	1.0%	+/-1.5
Entered before 2010	+/-272	99.0%	+/-1.5
WORLD REGION OF BIRTH OF FOREIGN BORN			
Foreign-born population, excluding population born at sea	+/-275	1,769	(X)
Europe	+/-113	17.0%	+/-5.3
Asia	+/-110	16.8%	+/-5.7
Africa	+/-24	0.8%	+/-1.4
Oceania	+/-28	0.0%	+/-1.8
Latin America	+/-192	61.2%	+/-6.9
Northern America	+/-46	4.2%	+/-2.5
LANGUAGE SPOKEN AT HOME			
Population 5 years and over	+/-52	74,466	(X)
English only	+/-320	96.3%	+/-0.4
Language other than English	+/-331	3.7%	+/-0.4
Speak English less than "very well"	+/-281	1.6%	+/-0.4
Spanish	+/-261	2.5%	+/-0.4
Speak English less than "very well"	+/-256	1.3%	+/-0.3
Other Indo-European languages	+/-209	0.6%	+/-0.3
Speak English less than "very well"	+/-115	0.2%	+/-0.2
Asian and Pacific Islander languages	+/-114	0.5%	+/-0.2
Speak English less than "very well"	+/-60	0.2%	+/-0.1
Other languages	+/-73	0.1%	+/-0.1
Speak English less than "very well"	+/-28	0.0%	+/-0.1
ANCESTRY			
Total population	*****	79,330	(X)
American	+/-980	15.4%	+/-1.2
Arab	+/-16	0.0%	+/-0.1
Czech	+/-34	0.0%	+/-0.1
Danish	+/-48	0.1%	+/-0.1
Dutch	+/-275	1.2%	+/-0.3
English	+/-812	9.5%	+/-1.0
French (except Basque)	+/-357	2.0%	+/-0.5
French Canadian	+/-177	0.3%	+/-0.2

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Subject	Elmore County, Alabama		
	Margin of Error	Percent	Percent Margin of Error
German	+/-768	8.8%	+/-1.0
Greek	+/-96	0.1%	+/-0.1
Hungarian	+/-81	0.1%	+/-0.1
Irish	+/-936	12.2%	+/-1.2
Italian	+/-433	2.0%	+/-0.5
Lithuanian	+/-39	0.0%	+/-0.1
Norwegian	+/-123	0.3%	+/-0.2
Polish	+/-250	0.8%	+/-0.3
Portuguese	+/-37	0.1%	+/-0.1
Russian	+/-66	0.1%	+/-0.1
Scotch-Irish	+/-489	2.2%	+/-0.6
Scottish	+/-337	2.4%	+/-0.4
Slovak	+/-70	0.1%	+/-0.1
Subsaharan African	+/-125	0.3%	+/-0.2
Swedish	+/-134	0.4%	+/-0.2
Swiss	+/-67	0.1%	+/-0.1
Ukrainian	+/-28	0.0%	+/-0.1
Welsh	+/-138	0.4%	+/-0.2
West Indian (excluding Hispanic origin groups)	+/-46	0.1%	+/-0.1

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

Fertility data are not available for certain geographic areas due to problems with data collection. See Errata Note #92 for details.

The Census Bureau introduced a new set of disability questions in the 2008 ACS questionnaire. Accordingly, comparisons of disability data from 2008 or later with data from prior years are not recommended. For more information on these questions and their evaluation in the 2006 ACS Content Test, see the Evaluation Report Covering Disability.

While the 2008-2012 American Community Survey (ACS) data generally reflect the December 2009 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Source: U.S. Census Bureau, 2008-2012 American Community Survey

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

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3.10 Employment and Industry

Over the past two decades, Elmore County has transitioned away from an economy based on agriculture. Elmore County is one of the fastest growing counties in the State of Alabama. According to data retrieved June 30, 2013 from the U.S. Decennial Census, Elmore County created 1110 jobs over the previous four years (2010-2013).

According to the .org website, Encyclopedia of Alabama: Elmore County, Employment:
The workforce in present-day Elmore County is divided among the following occupational categories:

- Educational Services, Health Care, and Social Assistance: 16.8%
- Manufacturing: 13.6%
- Retail Trade: 11.3%
- Public Administration: 10.0%
- Construction: 9.4%
- Professional, Scientific, Management, Administration, and Waste Management: 8.8%
- Arts, Entertainment, Recreation, Accommodation and Food Services: 6.9%
- Other Services, except Public Administration: 6.7%
- Transportation, Warehousing, and Utilities: 6.4%
- Finance, Insurance, Real Estate, Rental, and Leasing: 6.2%
- Wholesale Trade: 2.6%
- Information: 1.4%
- Agriculture, Forestry, Fishing and Hunting, and Extractive: .09%

Table 3.10-1
According to the Elmore County Economic Development Authority's (ECEDA) 2013 Media Kit, Elmore County's top employers are:

Company	Product	# Employees
Elmore County Schools	Education	1300
GKN Aerospace	Aerospace Components	955
Wal-Mart Stores	Retail	733 (85 added Jul 2014: 818)
Neptune	Water Meters	540
Creek Casino Wetumpka	Casino	465
Tallassee Community Hospital	Health Care	325
MADIX, Inc.	Store Shelving	312
Hanil	Break Wires/Tubes	279
Bass Pro Shops	Retail	237
Elmore Community Hospital	Health Care	230
Elmore County Commission	Government	220
Frontier Yarns	Textile Spinning	125
Information Transport Solutions	IT	125

AES Industries	Steel Roof Curbs	110
Target	Retail	108
YESAC Corporation	Automation Equipment	67

Employer numbers are updated during periodic reviews with each employer.

Elmore County has a unique economic location for both automotive and aerospace manufacturing. Four of the world's largest automotive assembly plants (Hyundai Motors, KIA Motors, Mercedes, and Honda) are located within a two hour drive and two of them are less than an hour drive from the industrial parks. Well-known aerospace companies such as Lockheed Martin, Sikorsky Helicopters, Bell Helicopters, Northrop Grumman and Pemco have significant investments in Elmore County.

Figure 3.10-1

Vehicle Assembly Plants in Alabama and Mississippi with a 50 Mile Buffer

Table 3.10-2

U.S. Census Bureau

AMERICAN FactFinder

S0801 | COMMUTING CHARACTERISTICS BY SEX

2008-2012 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Data and Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Subject	Elmore County, Alabama				
	Total		Male		Female
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate
Workers 16 years and over	34,134	+/-1,073	17,215	+/-868	16,919
MEANS OF TRANSPORTATION TO WORK					
Car, truck, or van	95.4%	+/-0.9	95.2%	+/-1.2	95.6%
Drove alone	85.7%	+/-1.5	84.8%	+/-1.9	86.7%
Carpooled	9.7%	+/-1.3	10.4%	+/-1.7	8.9%
In 2-person carpool	8.3%	+/-1.3	9.0%	+/-1.7	7.6%
In 3-person carpool	1.2%	+/-0.4	1.1%	+/-0.5	1.4%
In 4-or-more person carpool	0.2%	+/-0.1	0.3%	+/-0.2	0.0%
Workers per car, truck, or van	1.06	+/-0.01	1.06	+/-0.01	1.05
Public transportation (excluding taxicab)	0.1%	+/-0.1	0.1%	+/-0.1	0.1%
Walked	0.6%	+/-0.3	0.8%	+/-0.5	0.5%
Bicycle	0.1%	+/-0.1	0.2%	+/-0.2	0.0%
Taxicab, motorcycle, or other means	1.0%	+/-0.5	1.2%	+/-0.6	0.8%
Worked at home	2.8%	+/-0.7	2.5%	+/-0.8	3.0%
PLACE OF WORK					
Worked in state of residence	98.7%	+/-0.4	98.0%	+/-0.7	99.5%
Worked in county of residence	33.9%	+/-2.2	30.7%	+/-2.7	37.1%
Worked outside county of residence	64.8%	+/-2.2	67.3%	+/-2.6	62.3%
Worked outside state of residence	1.3%	+/-0.4	2.0%	+/-0.7	0.5%
Living in a place	58.3%	+/-1.9	57.4%	+/-2.2	59.2%
Worked in place of residence	8.3%	+/-1.0	6.0%	+/-1.1	10.7%
Worked outside place of residence	50.0%	+/-1.9	51.5%	+/-2.3	48.5%
Not living in a place	41.7%	+/-1.9	42.6%	+/-2.2	40.8%
Living in 12 selected states	0.0%	+/-0.1	0.0%	+/-0.2	0.0%
Worked in minor civil division of residence	0.0%	+/-0.1	0.0%	+/-0.2	0.0%
Worked outside minor civil division of residence	0.0%	+/-0.1	0.0%	+/-0.2	0.0%
Not living in 12 selected states	100.0%	+/-0.1	100.0%	+/-0.2	100.0%
Workers 16 years and over who did not work at home	33,194	+/-1,072	16,784	+/-878	16,410
TIME LEAVING HOME TO GO TO WORK					
12:00 a.m. to 4:59 a.m.	6.0%	+/-1.2	8.3%	+/-1.8	3.7%
5:00 a.m. to 5:29 a.m.	4.8%	+/-0.9	6.9%	+/-1.4	2.6%

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Subject	Elmore County, Alabama				
	Total		Male		Female
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate
5:30 a.m. to 5:59 a.m.	5.6%	+/-0.8	7.7%	+/-1.3	3.4%
6:00 a.m. to 6:29 a.m.	11.6%	+/-1.2	15.5%	+/-2.1	7.7%
6:30 a.m. to 6:59 a.m.	17.0%	+/-1.4	16.8%	+/-1.6	17.3%
7:00 a.m. to 7:29 a.m.	21.3%	+/-1.5	17.5%	+/-2.1	25.2%
7:30 a.m. to 7:59 a.m.	11.0%	+/-1.2	8.9%	+/-1.5	13.1%
8:00 a.m. to 8:29 a.m.	5.5%	+/-0.9	4.1%	+/-0.9	6.9%
8:30 a.m. to 8:59 a.m.	2.1%	+/-0.6	1.0%	+/-0.6	3.2%
9:00 a.m. to 11:59 p.m.	15.0%	+/-1.4	13.2%	+/-2.0	17.0%
TRAVEL TIME TO WORK					
Less than 10 minutes	8.5%	+/-1.1	7.3%	+/-1.3	9.8%
10 to 14 minutes	7.5%	+/-1.0	6.2%	+/-1.3	8.8%
15 to 19 minutes	12.4%	+/-1.5	12.0%	+/-1.9	12.8%
20 to 24 minutes	16.6%	+/-1.5	17.2%	+/-2.1	15.9%
25 to 29 minutes	9.0%	+/-1.1	9.6%	+/-1.6	8.5%
30 to 34 minutes	18.6%	+/-1.7	20.4%	+/-2.2	16.7%
35 to 44 minutes	9.3%	+/-1.2	7.8%	+/-1.2	10.9%
45 to 59 minutes	12.4%	+/-1.4	12.4%	+/-1.9	12.3%
60 or more minutes	5.7%	+/-1.0	7.1%	+/-1.3	4.2%
Mean travel time to work (minutes)	28.3	+/-0.8	29.5	+/-1.0	27.1
VEHICLES AVAILABLE					
Workers 16 years and over in households	34,133	+/-1,073	17,214	+/-868	16,919
No vehicle available	1.1%	+/-0.4	1.4%	+/-0.6	0.9%
1 vehicle available	17.0%	+/-1.9	14.0%	+/-2.1	20.1%
2 vehicles available	41.3%	+/-2.3	42.6%	+/-2.6	40.1%
3 or more vehicles available	40.5%	+/-2.4	42.1%	+/-2.7	38.9%
PERCENT IMPUTED					
Means of transportation to work	5.9%	(X)	(X)	(X)	(X)
Private vehicle occupancy	7.6%	(X)	(X)	(X)	(X)
Place of work	7.7%	(X)	(X)	(X)	(X)
Time leaving home to go to work	9.6%	(X)	(X)	(X)	(X)
Travel time to work	8.7%	(X)	(X)	(X)	(X)
Vehicles available	1.5%	(X)	(X)	(X)	(X)

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Subject	Elmore County, Alabama Female Margin of Error
Workers 16 years and over	+/-671
MEANS OF TRANSPORTATION TO WORK	
Car, truck, or van	+/-1.2
Drove alone	+/-1.9
Carpooled	+/-1.6
In 2-person carpool	+/-1.5
In 3-person carpool	+/-0.6
In 4-or-more person carpool	+/-0.1
Workers per car, truck, or van	+/-0.01
Public transportation (excluding taxicab)	+/-0.1
Walked	+/-0.3
Bicycle	+/-0.2
Taxicab, motorcycle, or other means	+/-0.5
Worked at home	+/-1.0
PLACE OF WORK	
Worked in state of residence	+/-0.4
Worked in county of residence	+/-3.0
Worked outside county of residence	+/-3.0
Worked outside state of residence	+/-0.4
Living in a place	+/-2.5
Worked in place of residence	+/-1.6
Worked outside place of residence	+/-2.4
Not living in a place	+/-2.5
Living in 12 selected states	+/-0.2
Worked in minor civil division of residence	+/-0.2
Worked outside minor civil division of residence	+/-0.2
Not living in 12 selected states	+/-0.2
Workers 16 years and over who did not work at home	+/-679
TIME LEAVING HOME TO GO TO WORK	
12:00 a.m. to 4:59 a.m.	+/-1.3
5:00 a.m. to 5:29 a.m.	+/-1.0
5:30 a.m. to 5:59 a.m.	+/-0.8
6:00 a.m. to 6:29 a.m.	+/-1.4
6:30 a.m. to 6:59 a.m.	+/-2.3
7:00 a.m. to 7:29 a.m.	+/-2.0
7:30 a.m. to 7:59 a.m.	+/-1.8
8:00 a.m. to 8:29 a.m.	+/-1.4
8:30 a.m. to 8:59 a.m.	+/-0.8
9:00 a.m. to 11:59 p.m.	+/-1.8
TRAVEL TIME TO WORK	
Less than 10 minutes	+/-1.6
10 to 14 minutes	+/-1.6
15 to 19 minutes	+/-2.0
20 to 24 minutes	+/-1.8
25 to 29 minutes	+/-1.6
30 to 34 minutes	+/-2.2
35 to 44 minutes	+/-1.8
45 to 59 minutes	+/-1.9
60 or more minutes	+/-1.1
Mean travel time to work (minutes)	+/-0.9
VEHICLES AVAILABLE	

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Area intentionally left blank.

Subject	Elmore County, Alabama
	Female
	Margin of Error
Workers 16 years and over in households	+/-671
No vehicle available	+/-0.4
1 vehicle available	+/-2.5
2 vehicles available	+/-2.7
3 or more vehicles available	+/-3.0
PERCENT IMPUTED	
Means of transportation to work	(X)
Private vehicle occupancy	(X)
Place of work	(X)
Time leaving home to go to work	(X)
Travel time to work	(X)
Vehicles available	(X)

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

The 12 selected states are Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

Workers include members of the Armed Forces and civilians who were at work last week.

While the 2008-2012 American Community Survey (ACS) data generally reflect the December 2009 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Source: U.S. Census Bureau, 2008-2012 American Community Survey

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

Figure 3.10-2

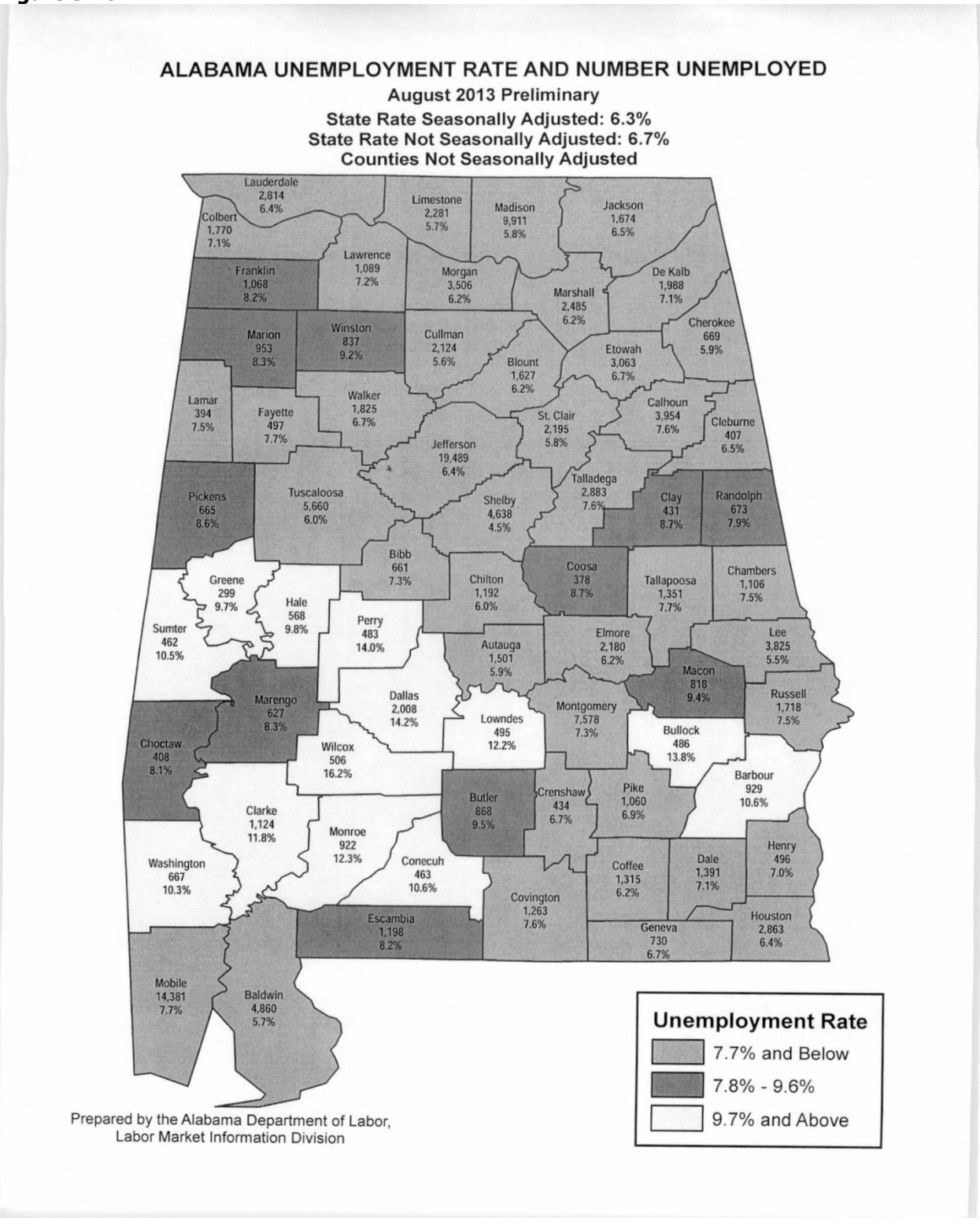

ALABAMA UNEMPLOYMENT RATE AND NUMBER UNEMPLOYED
August 2013 Preliminary
State Rate Seasonally Adjusted: 6.3%
State Rate Not Seasonally Adjusted: 6.7%
Counties Not Seasonally Adjusted
Lauderdale 2,814 6.4%
Colbert 1,770 7.1%
Limestone 2,281 5.7%
Madison 9,911 5.8%
Jackson 1,674 6.5%
Franklin 1,068 8.2%
Lawrence 1,089 7.2%
Morgan 3,506 6.2%
Marshall 2,485 6.2%
De Kalb 1,988 7.1%
Marion 953 8.3%
Winston 837 9.2%
Cullman 2,124 5.6%
Blount 1,627 6.2%
Etowah 3,063 6.7%
Cherokee 669 5.9%
Lamar 394 7.5%
Fayette 497 7.7%
Walker 1,825 6.7%
St. Clair 2,195 5.8%
Calhoun 3,954 7.6%
Cleburne 407 6.5%
Jefferson 19,489 6.4%
Pickens 665 8.6%
Tuscaloosa 5,660 6.0%
Shelby 4,638 4.5%
Talladega 2,883 7.6%
Clay 431 8.7%
Randolph 673 7.9%
Bibb 661 7.3%
Greene 299 9.7%
Hale 568 9.8%
Chilton 1,192 6.0%
Coosa 378 8.7%
Tallapoosa 1,351 7.7%
Chambers 1,106 7.5%
Sumter 462 10.5%
Perry 483 14.0%
Autauga 1,501 5.9%
Elmore 2,180 6.2%
Lee 3,825 5.5%
Macon 818 9.4%
Marengo 627 8.3%
Dallas 2,008 14.2%
Lowndes 495 12.2%
Montgomery 7,578 7.3%
Russell 1,718 7.5%
Bullock 486 13.8%
Choctaw 408 8.1%
Wilcox 506 16.2%
Barbour 929 10.6%
Butler 868 9.5%
Crenshaw 434 6.7%
Pike 1,060 6.9%
Clarke 1,124 11.8%
Monroe 922 12.3%
Henry 496 7.0%
Washington 667 10.3%
Conecuh 463 10.6%
Coffee 1,315 6.2%
Dale 1,391 7.1%
Covington 1,263 7.6%
Escambia 1,198 8.2%
Geneva 730 6.7%
Houston 2,863 6.4%
Mobile 14,381 7.7%
Baldwin 4,860 5.7%
Unemployment Rate
7.7% and Below
7.8% - 9.6%
9.7% and Above
Prepared by the Alabama Department of Labor,
Labor Market Information Division

Figure 3.10-3

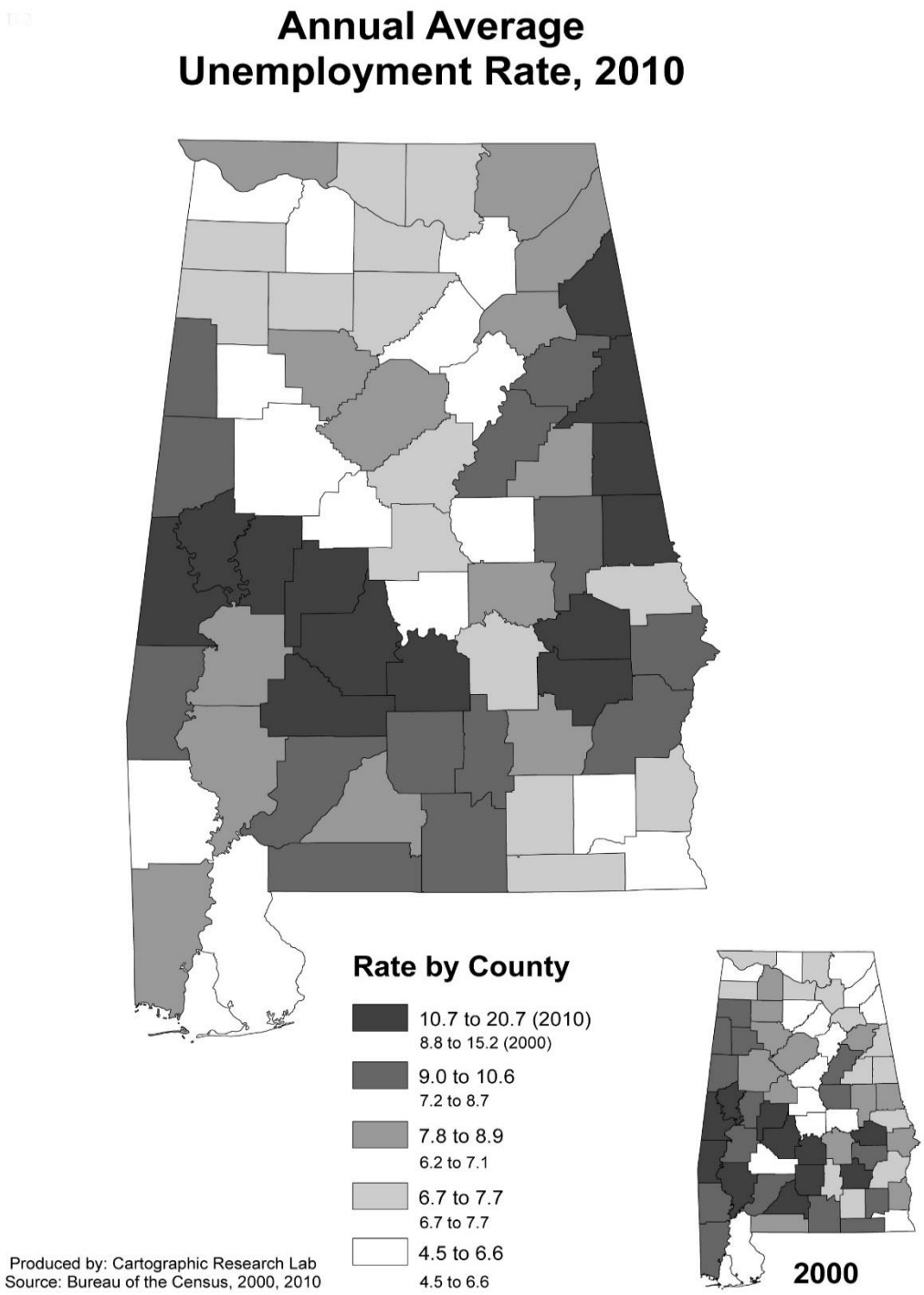

Annual Average
Unemployment Rate, 2010
Rate by County
10.7 to 20.7 (2010)
8.8 to 15.2 (2000)
9.0 to 10.6
7.2 to 8.7
7.8 to 8.9
6.2 to 7.1
6.7 to 7.7
6.7 to 7.7
4.5 to 6.6
4.5 to 6.6
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Figure 3.10-4

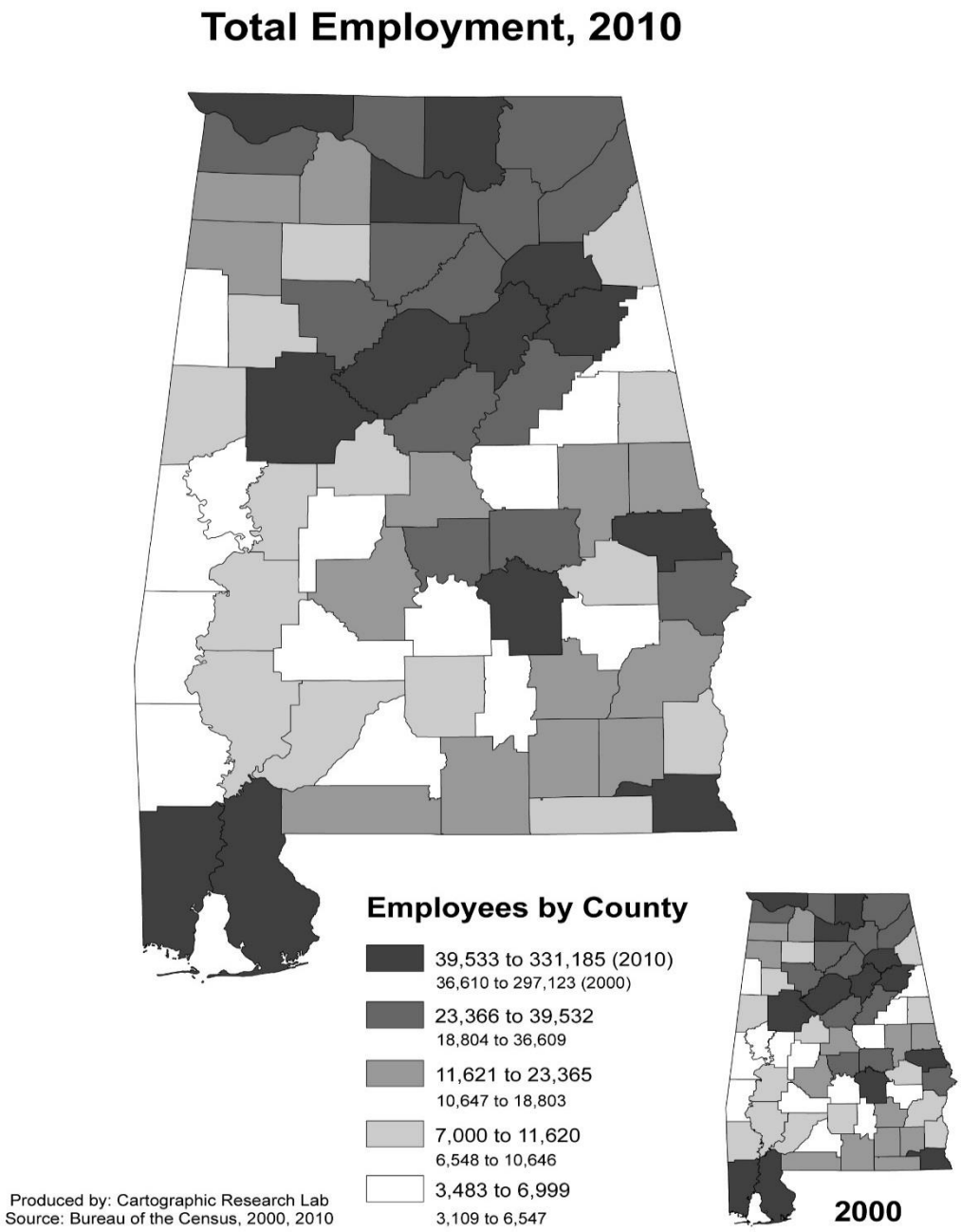

Total Employment, 2010
Employees by County
39,533 to 331,185 (2010)
36,610 to 297,123 (2000)
23,366 to 39,532
18,804 to 36,609
11,621 to 23,365
10,647 to 18,803
7,000 to 11,620
6,548 to 10,646
3,483 to 6,999
3,109 to 6,547
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Figure 3.10-5

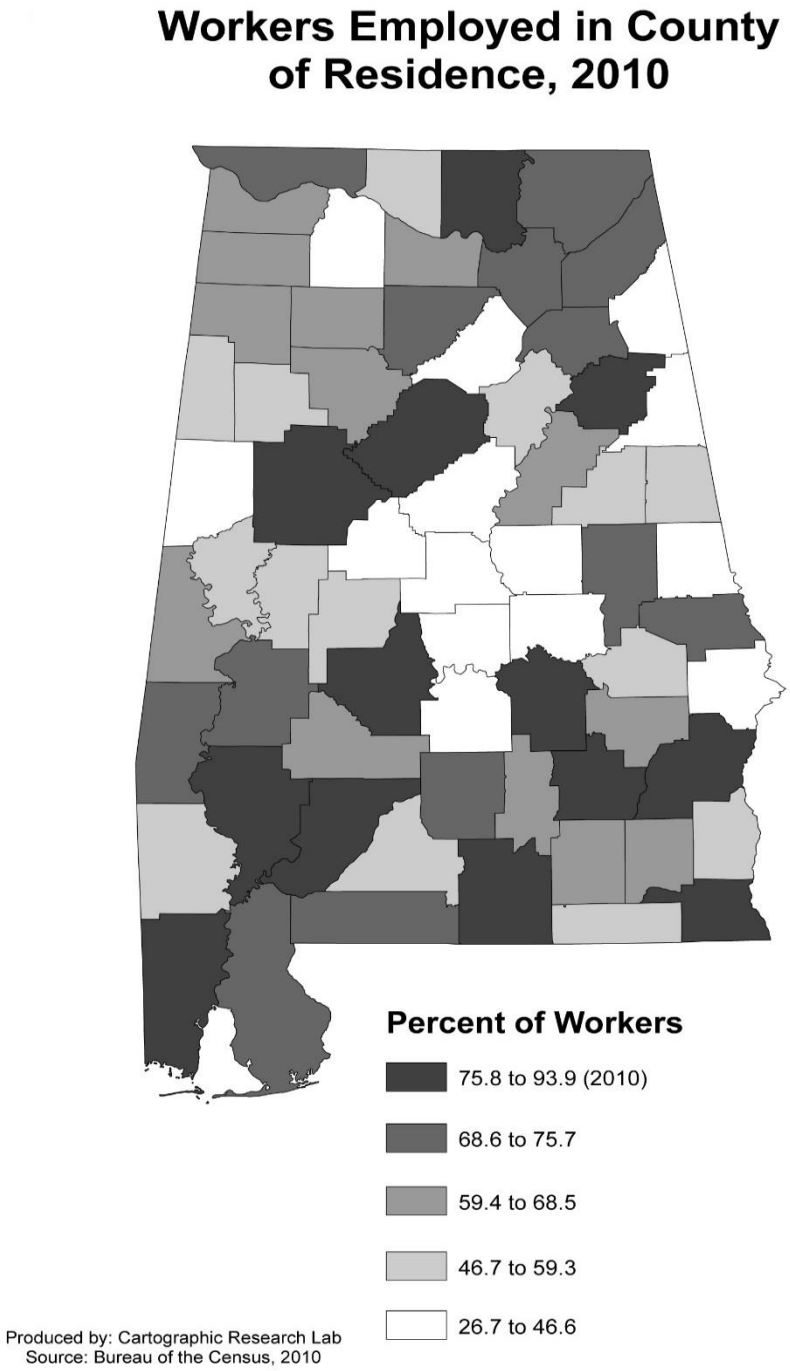

Workers Employed in County of Residence, 2010
Percent of Workers
75.8 to 93.9 (2010)
68.6 to 75.7
59.4 to 68.5
46.7 to 59.3
26.7 to 46.6
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2010

Figure 3.10-6

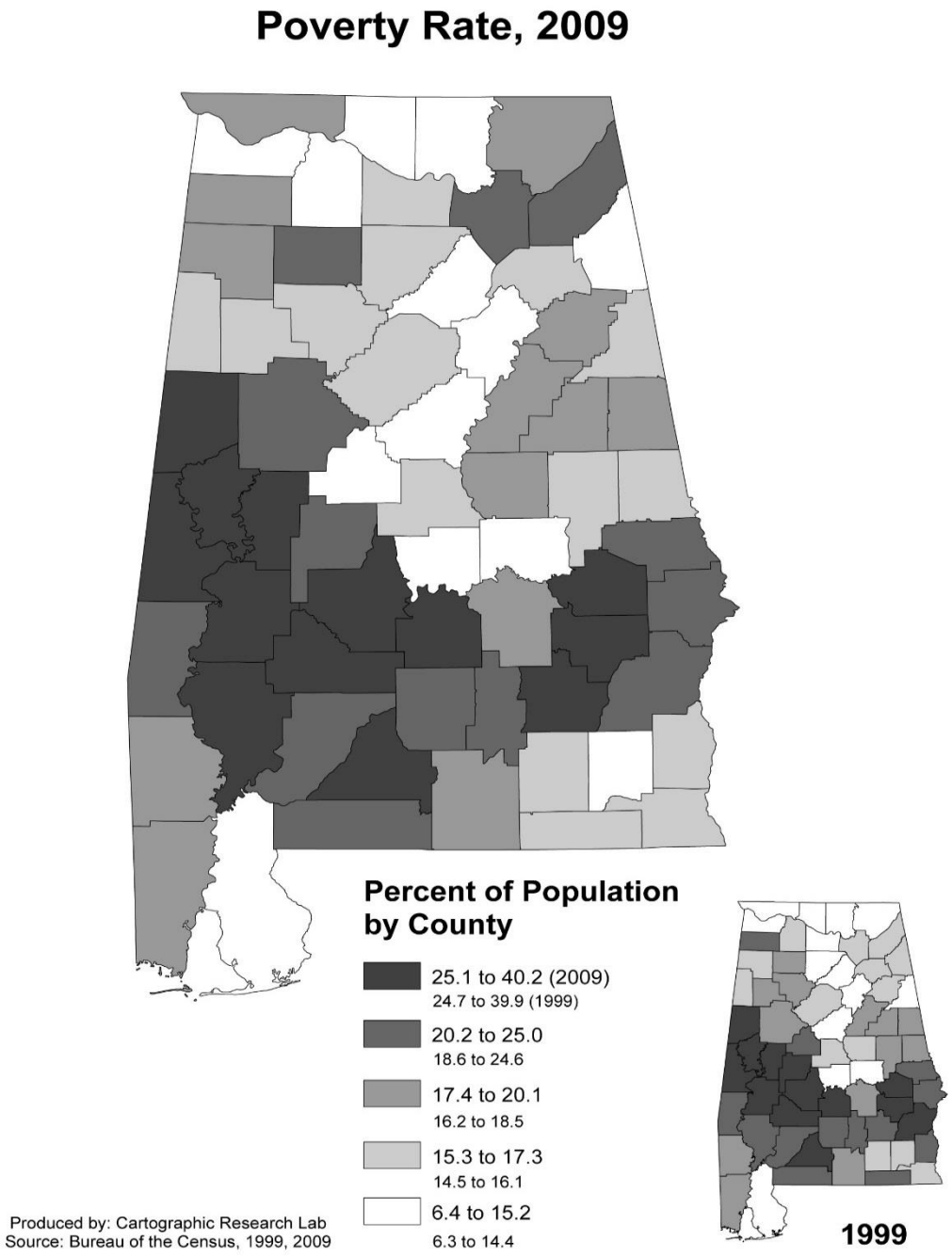

Poverty Rate, 2009
Percent of Population by County
25.1 to 40.2 (2009)
24.7 to 39.9 (1999)
20.2 to 25.0
18.6 to 24.6
17.4 to 20.1
16.2 to 18.5
15.3 to 17.3
14.5 to 16.1
6.4 to 15.2
6.3 to 14.4
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 1999, 2009
1999

Figure 3.10-7

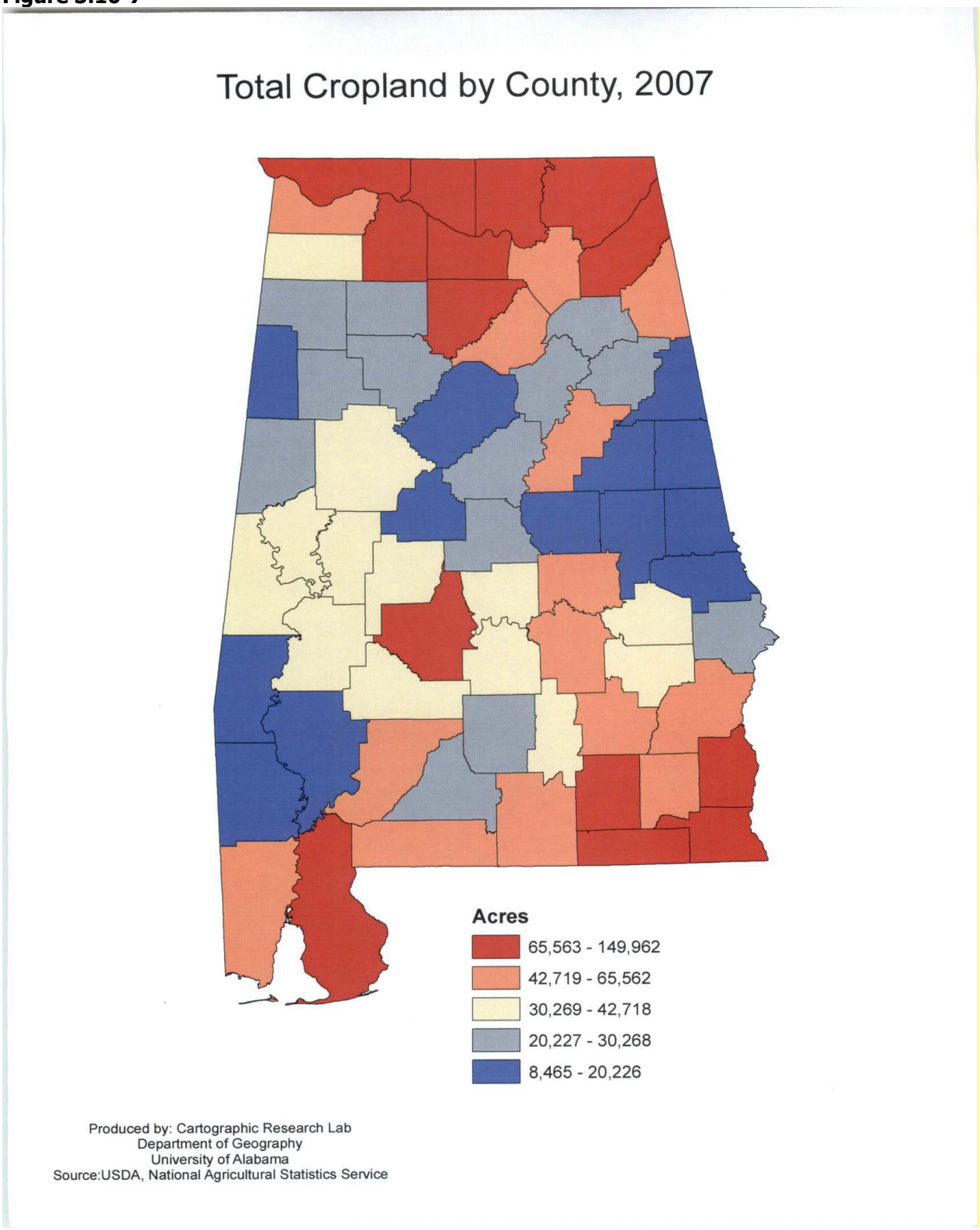

Total Cropland by County, 2007
Acres
65,563 - 149,962
42,719 - 65,562
30,269 - 42,718
20,227 - 30,268
8,465 - 20,226
Produced by: Cartographic Research Lab
Department of Geography
University of Alabama
Source:USDA, National Agricultural Statistics Service

Figure 3.10-8

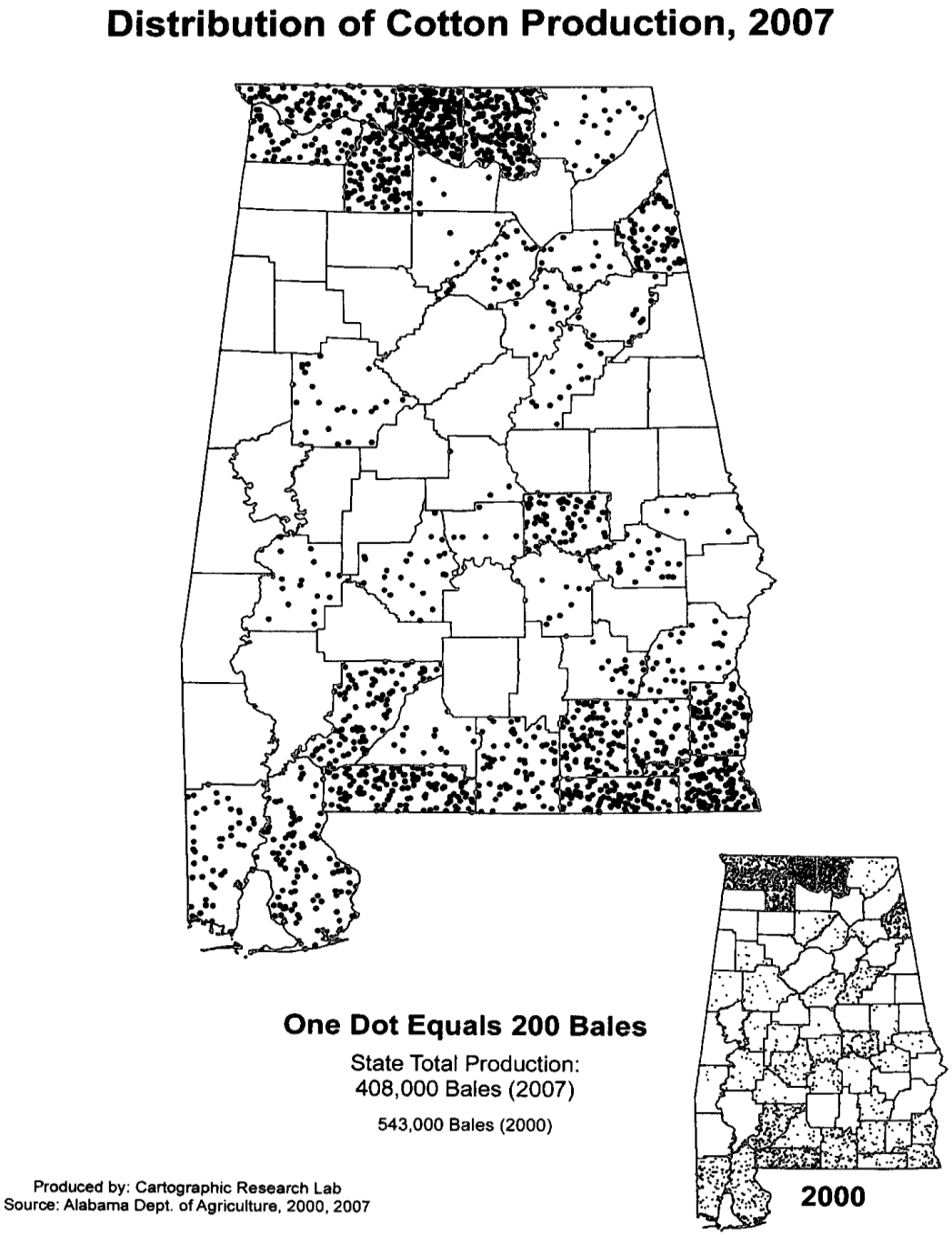

Distribution of Cotton Production, 2007
One Dot Equals 200 Bales
State Total Production:
408,000 Bales (2007)
543,000 Bales (2000)
Produced by: Cartographic Research Lab
Source: Alabama Dept. of Agriculture, 2000, 2007
2000

Figure 3.10-9

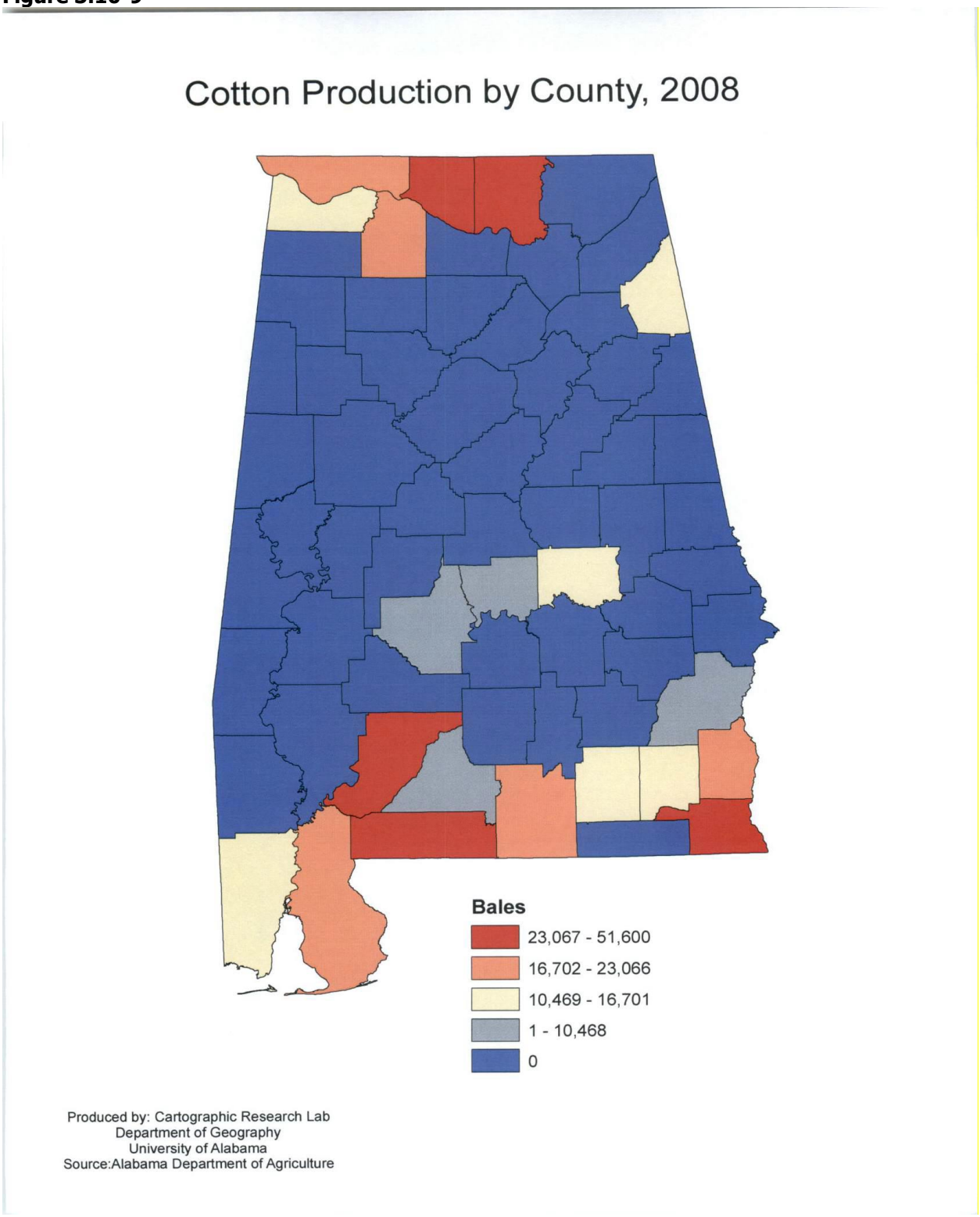
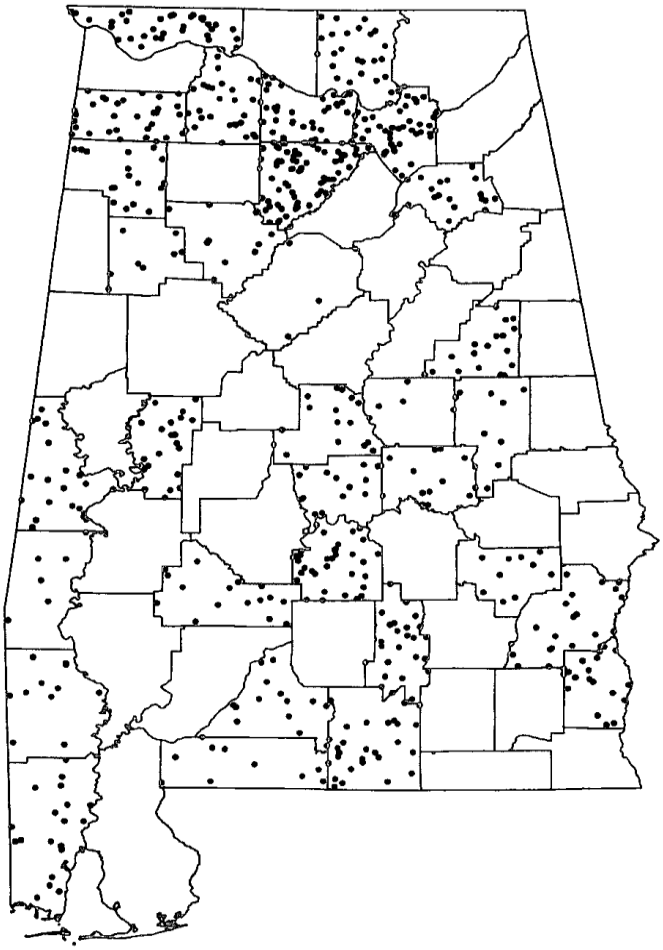

Cotton Production by County, 2008
Bales
23,067 - 51,600
16,702 - 23,066
10,469 - 16,701
1 - 10,468
0
Produced by: Cartographic Research Lab
Department of Geography
University of Alabama
Source:Alabama Department of Agriculture

Figure 3.10-10

Distribution of Beef Cattle, 2007



One Dot Equals 500 Head

State Total Production:
679,000 Head (2007)
793,000 Head (2000)

Produced by: Cartographic Research Lab
Source: Alabama Dept. of Agriculture, 2007

Table 3.10-3

Table 392. Major U.S. Weather Disasters: 2008 to 2010

[3.0 represents $3,000,000,000. Covers only weather-related disasters costing $1 billion or more]

Event	Description	Time period	Estimated cost [1] (bil dol.)	Deaths (number)
2010 Midwest Tornadoes and Severe Weather	An outbreak of tornadoes, hail, and severe thunderstorms occurred across OK, KS, and TX. Oklahoma was hardest hit with over 1.5 billion in damages.	May, 2010	Over 3.0	3
Mid-South Flooding and Severe Weather	Flooding, hail, tornadoes, and severe thunderstorms occurred across TN, AR, AL, KY, MS, and GA. Flooding in the Nashville, TN area alone contributed over 1.0 billion in damages. Western and Middle Tennessee were hardest hit with local rainfall amounts of 18–20 inches to the south and west of Greater Nashville.	April–May 2010	Over 2.3	32
Northeast Flooding	Heavy rainfall over portions of the Northeast in late March caused extensive flooding across RI, CT, MA, NJ, NY, and PA. The event caused the worst flooding in Rhode Island's history.	March, 2010	Over 1.5	11
2009 Southwest/Great Plains drought	Drought conditions occurred during much of the year causing agricultural losses in TX, OK, KS, CA, NM, and AZ. The largest losses occurred in TX and CA.	Entire year 2009	Over 5.0	–
Western wildfires	Residual and sustained drought conditions across western and south-central states resulted in thousands of fires. Most affected states include CA, AZ, NM, TX, OK, and UT.	Summer–Fall 2009	Over 1.0	10
Midwest, South, and Eastern Severe weather	Sustained outbreak of thunderstorms and high winds in TX, OK, MO, NE, KS, AR, AL, MS, TN, NC, SC, KY, and PA.	June, 2009	Over 1.1	–
South/Southeast Tornadoes/Severe weather	Outbreak of tornadoes, hail and severe thunderstorms in AL, AR, GA, KY, MO, SC, TN; with 65 tornadoes confirmed.	April, 2009	Over 1.2	6
Midwest/Southeast Tornadoes	Outbreak of tornadoes in NE, KS, OK, IA, TX LA, MS, AL, GA, TN, KY; with 56 tornadoes confirmed.	March, 2009	Over 1.0	–
Southeast/Ohio Valley Severe weather	Complex of severe thunderstorms and high winds in TN, KY, CK, OH, VA, WV, and PA. The majority of the damage occurred in OK and OH.	February, 2009	Over 1.4	10
2008 Widespread drought	Severe drought and heat caused agricultural losses in areas of the south and west. Record low lake levels. Includes states of CA, GA, NC, SC, TN, and TX.	Entire year 2008	Over 2.0	–
Hurricane Ike	Category 2 hurricane made landfall in Texas as the largest(in size) Atlantic hurricane on record, causing wind and considerable surge in coastal and significant flooding damage in AR, IL, IN, KY, LA, MO, OH, PA, and TX.	September 2008	Over 27.0	82
Hurricane Gustav	Category 2 hurricane made landfall in Louisiana causing significant wind, storm surge and flood damage in AL, AR, LA, and MS.	September 2008	5.0	43
Hurricane Dolly	Category 2 hurricane made landfall in southern Texas causing considerable wind and flooding damage in TX and NM.	July, 2008	Over 1.2	3
U.S. wildfires	Drought conditions across numerous western, central and southeastern states(15) resulted in thousands of wildfires, national acreage burned exceeding 5.2 million acres (mainly in the west).	Summer–Fall 2008	Over 2.0	16
Midwest flood	Heavy rainfall and flooding caused significant agricultural loss and property damage in seven states with Iowa being hardest hit with widespread rainfall totals ranging from 4 to 16 inches.	June, 2008	Over 15.0	24
Midwest/Mid-Atlantic storms	An outbreak of tornadoes and thunderstorms over the states of IA, IL, IN, KS, NE, MD, MI, MN, MO, OK, VA, WI, WV.	June, 2008	Over 1.1	18
Midwest/Ohio Valley storms	Outbreak of tornadoes over the Midwest/Ohio Valley over the region (IL, IN, IA KS, MN, NE, OK, WY, and CO), with 235 tornadoes confirmed.	May, 2008	Over 2.4	13
Southeast/Midwest tornadoes	Series of tornadoes and severe thunderstorms across the Southeast and Midwest states (AL, AR, IN, KY, MS, OH, TN, TX) with 87 tornadoes confirmed.	February, 2008	Over 1.0	57

– Represents zero. [1] Represents actual dollar costs at the time of event and is not adjusted for inflation.

Source: U.S. National Oceanic and Atmospheric Administration, National Climatic Data Center, "Billion Dollar U.S. Weather Disasters, 1980–2010" (released January 2011). See also <http://www.ncdc.noaa.gov/oa/reports/billionz.html>.

238 Geography and Environment

U.S. Census Bureau, Statistical Abstract of the United States: 2012

Figure 3.10-11

3.11 Education

The Elmore County Board Of Education

The Elmore County Board of Education operates one of the fastest growing school systems in the State of Alabama with 15 schools, 1,300 employees (557 teachers), and an enrollment of over 11,085 students. The number continues to grow. The school system consists of five attendance zones: Eclectic, Holtville, Millbrook, Redland, and Wetumpka. In the last 10 years, new schools and/or additional classrooms have been constructed in every community. All schools are accredited by the Alabama State Department of Education and the Southern Association of Colleges and Schools.

Airport Road Intermediate School	Millbrook
Coosada Elementary School	Millbrook
Eclectic Elementary School	Eclectic
Eclectic Middle School	Eclectic
Elmore County High School	Eclectic
Elmore County Technical Center	Wetumpka
Holtville Elementary School	Holtville
Holtville High School	Holtville
Holtville Middle School	Holtville
Millbrook Middle Junior High School	Millbrook
Redland Elementary School	Redland
Stanhope Elmore High School	Millbrook
Wetumpka Elementary School	Wetumpka
Wetumpka High School	Wetumpka
Wetumpka Middle School	Wetumpka

The Tallassee City School System

The Tallassee City School System consists of three schools--all accredited by the Southern Association of Colleges and Schools. The school system currently enrolls approximately 1910 students, supported by approximately 206 faculty members. School Year 2013-2014 additions to infrastructure include a new field house and weight room for Tallassee High School.

Tallassee Elementary School
Southside Middle School
Tallassee High School

Private Schools

A number of private schools in Elmore County also offer education and employment opportunities. Private schools include:

Adullam House	Wetumpka
Chapman Academy	Millbrook
Edgewood Academy	Wetumpka
Emerald Mountain Christian School	Wetumpka
New Life Christian Academy	Millbrook
Prattville Christian Academy	Prattville
Victory Baptist School	Millbrook

Local Colleges and Universities

Residents of Elmore County have a dozen choices from which to pursue either higher levels of education or employment, all within proximity to the county. Campuses are located in Alexander City, Auburn, Montgomery, Troy, and Tuskegee.

Figure 3.11-1

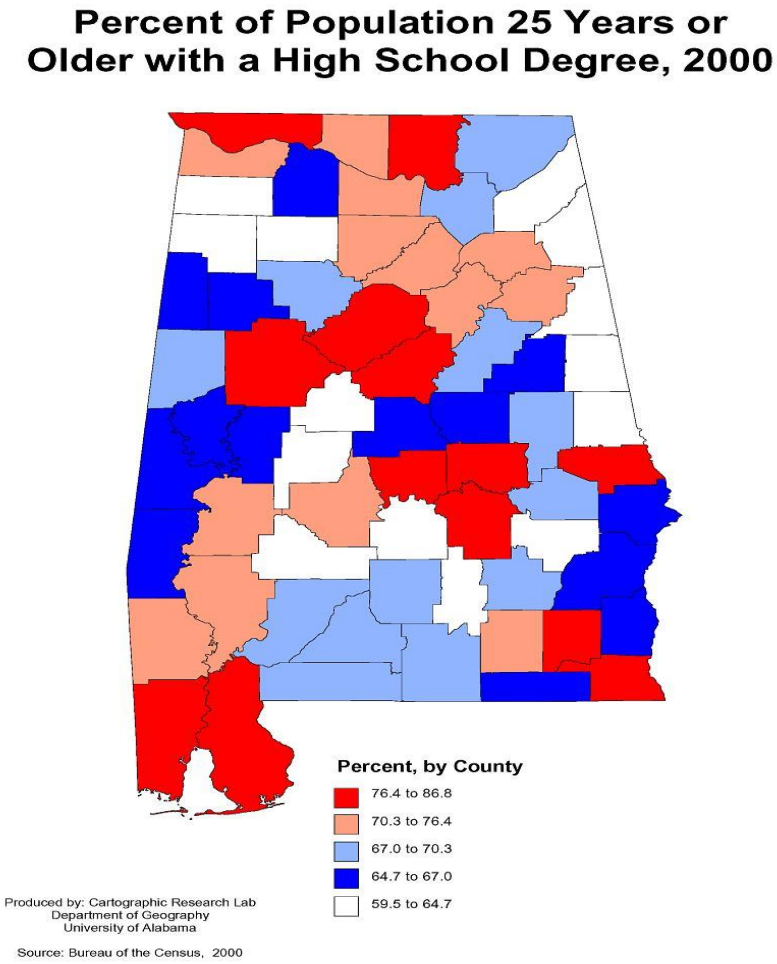


Figure 3.11-2

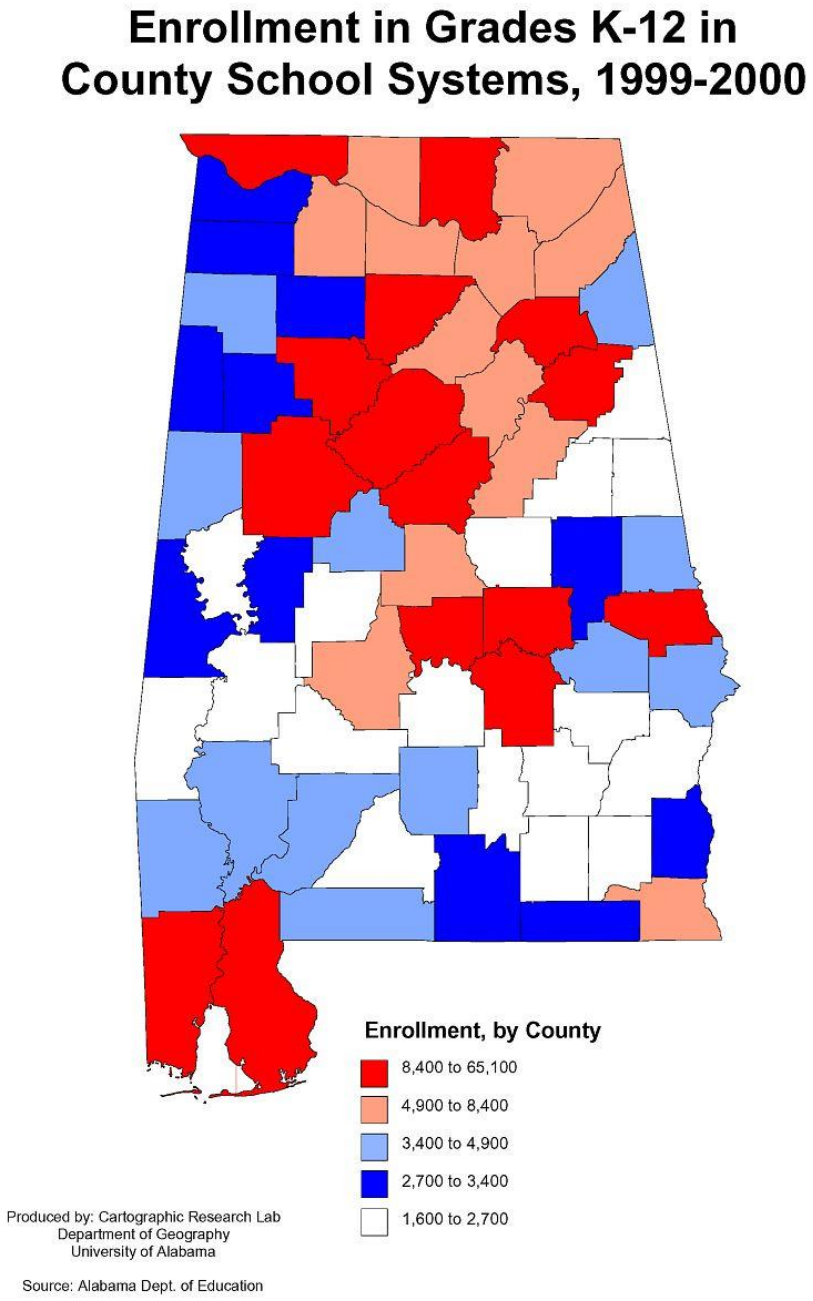
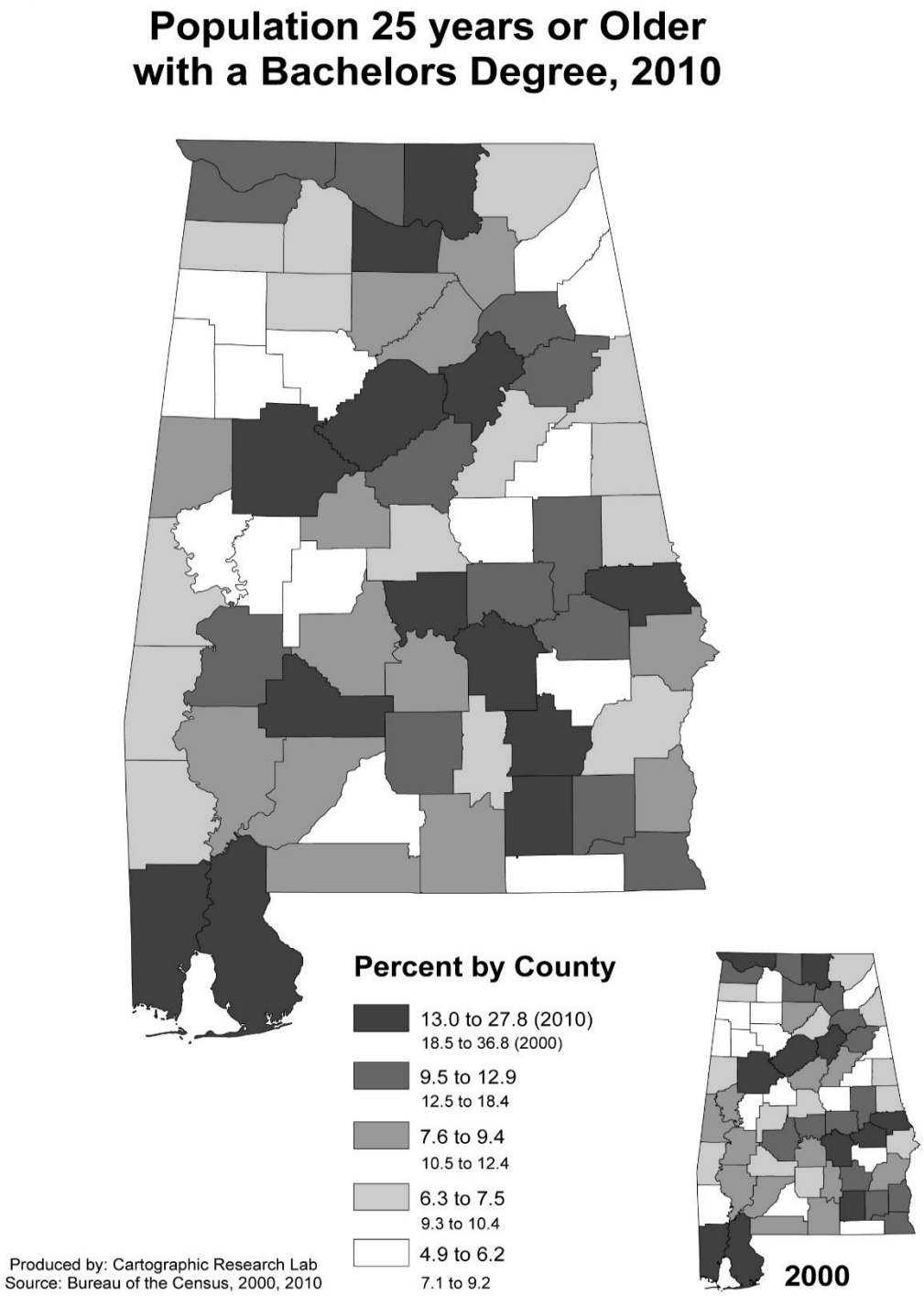

Enrollment in Grades K-12 in
County School Systems, 1999-2000
Enrollment, by County
8,400 to 65,100
4,900 to 8,400
3,400 to 4,900
2,700 to 3,400
1,600 to 2,700
Produced by: Cartographic Research Lab
Department of Geography
University of Alabama
Source: Alabama Dept. of Education

Figure 3.11-3


Population 25 years or Older
with a Bachelors Degree, 2010
Percent by County
13.0 to 27.8 (2010)
18.5 to 36.8 (2000)
9.5 to 12.9
12.5 to 18.4
7.6 to 9.4
10.5 to 12.4
6.3 to 7.5
9.3 to 10.4
4.9 to 6.2
7.1 to 9.2
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

3.12 Transportation and Commuting Patterns

Elmore County, Alabama, situated in the east-central part of the state and covers a total area of approximately 657.21 square miles, 621.26 square miles of land, and 35.96 square miles of water. Of the 397,606 land acres, 102,664 acres are farmland and 240,301 are timberland (as of June, 2013). About one-fourth of the land area in Elmore County is incorporated, while the majority is unincorporated. The county seat is Wetumpka, located 15 miles north of Montgomery and 75 miles southeast of Birmingham. Millbrook is the largest city in the county. According to the 2010 census, the population of Elmore County stood at 79,303, with a population density of 128.2 people per square mile. The Elmore County Federal Information Processing Standards (FIPS) Code is 051.

Elmore County is part of the Montgomery Metropolitan Area (also known as the Montgomery Metropolitan Statistical Area), which includes the counties of Autauga, Elmore, Lowndes, and Montgomery.

Elmore County's 1,052-mile road system includes 798 paved road miles (up from 752 last update), 175 unpaved road miles (down from 300 last update), and 127 bridges. In Elmore County, the transportation choices are limited to mostly private automobiles traveling over federal, state, and local highways and roads. The road system performs two basic functions: (1) providing general mobility for the residents, and (2) accommodating the movements of industry, agricultural and forest products to market. The transportation system for the most part has been modified to accommodate large volumes of traffic on a daily basis, throughout the tri-county area.

Counties adjacent to Elmore include Coosa County (north), Tallapoosa County (northeast), Macon County (southeast), Montgomery County (south), Autauga County (west), and Chilton County (northwest).

The major transportation arteries within Elmore County include Interstate Highway 65, U.S. Highway 231 and Alabama Highways 9, 14, 63, 111, 143, 170 and 229 (See Elmore County Map). Additionally, Intestate 85 is only 12 miles from Wetumpka. These roadways may pose some difficulty, as evacuation routes for Elmore County, as well as surrounding counties during a state of emergency. U. S. Highway 231 is the only complete north/south route through the county, and State 14 is the only east/west route. State 14 is a two-lane highway with several river and stream crossings, which could result in a transportation issue if one or more of the bridges are impassable.

As daily transit rises, there is an increased risk that a natural hazard event will disrupt the travel plans of residents across the county. Localized flooding can render roads unusable. Natural hazards can disrupt automobile traffic and shut down local transportation systems.

Area intentionally left blank.

Table 3.12-1

U.S. Census Bureau

AMERICAN FactFinder

S0801 | COMMUTING CHARACTERISTICS BY SEX

2008-2012 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Data and Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Subject	Elmore County, Alabama				
	Total		Male		Female
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate
Workers 16 years and over	34,134	+/-1,073	17,215	+/-868	16,919
MEANS OF TRANSPORTATION TO WORK					
Car, truck, or van	95.4%	+/-0.9	95.2%	+/-1.2	95.6%
Drove alone	85.7%	+/-1.5	84.8%	+/-1.9	86.7%
Carpooled	9.7%	+/-1.3	10.4%	+/-1.7	8.9%
In 2-person carpool	8.3%	+/-1.3	9.0%	+/-1.7	7.6%
In 3-person carpool	1.2%	+/-0.4	1.1%	+/-0.5	1.4%
In 4-or-more person carpool	0.2%	+/-0.1	0.3%	+/-0.2	0.0%
Workers per car, truck, or van	1.06	+/-0.01	1.06	+/-0.01	1.05
Public transportation (excluding taxicab)	0.1%	+/-0.1	0.1%	+/-0.1	0.1%
Walked	0.6%	+/-0.3	0.8%	+/-0.5	0.5%
Bicycle	0.1%	+/-0.1	0.2%	+/-0.2	0.0%
Taxicab, motorcycle, or other means	1.0%	+/-0.5	1.2%	+/-0.6	0.8%
Worked at home	2.8%	+/-0.7	2.5%	+/-0.8	3.0%
PLACE OF WORK					
Worked in state of residence	98.7%	+/-0.4	98.0%	+/-0.7	99.5%
Worked in county of residence	33.9%	+/-2.2	30.7%	+/-2.7	37.1%
Worked outside county of residence	64.8%	+/-2.2	67.3%	+/-2.6	62.3%
Worked outside state of residence	1.3%	+/-0.4	2.0%	+/-0.7	0.5%
Living in a place	58.3%	+/-1.9	57.4%	+/-2.2	59.2%
Worked in place of residence	8.3%	+/-1.0	6.0%	+/-1.1	10.7%
Worked outside place of residence	50.0%	+/-1.9	51.5%	+/-2.3	48.5%
Not living in a place	41.7%	+/-1.9	42.6%	+/-2.2	40.8%
Living in 12 selected states	0.0%	+/-0.1	0.0%	+/-0.2	0.0%
Worked in minor civil division of residence	0.0%	+/-0.1	0.0%	+/-0.2	0.0%
Worked outside minor civil division of residence	0.0%	+/-0.1	0.0%	+/-0.2	0.0%
Not living in 12 selected states	100.0%	+/-0.1	100.0%	+/-0.2	100.0%
Workers 16 years and over who did not work at home	33,194	+/-1,072	16,784	+/-878	16,410
TIME LEAVING HOME TO GO TO WORK					
12:00 a.m. to 4:59 a.m.	6.0%	+/-1.2	8.3%	+/-1.8	3.7%
5:00 a.m. to 5:29 a.m.	4.8%	+/-0.9	6.9%	+/-1.4	2.6%

1 of 4 07/24/2014

Subject	Elmore County, Alabama				
	Total		Male		Female
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate
5:30 a.m. to 5:59 a.m.	5.6%	+/-0.8	7.7%	+/-1.3	3.4%
6:00 a.m. to 6:29 a.m.	11.6%	+/-1.2	15.5%	+/-2.1	7.7%
6:30 a.m. to 6:59 a.m.	17.0%	+/-1.4	16.8%	+/-1.6	17.3%
7:00 a.m. to 7:29 a.m.	21.3%	+/-1.5	17.5%	+/-2.1	25.2%
7:30 a.m. to 7:59 a.m.	11.0%	+/-1.2	8.9%	+/-1.5	13.1%
8:00 a.m. to 8:29 a.m.	5.5%	+/-0.9	4.1%	+/-0.9	6.9%
8:30 a.m. to 8:59 a.m.	2.1%	+/-0.6	1.0%	+/-0.6	3.2%
9:00 a.m. to 11:59 p.m.	15.0%	+/-1.4	13.2%	+/-2.0	17.0%
TRAVEL TIME TO WORK					
Less than 10 minutes	8.5%	+/-1.1	7.3%	+/-1.3	9.8%
10 to 14 minutes	7.5%	+/-1.0	6.2%	+/-1.3	8.8%
15 to 19 minutes	12.4%	+/-1.5	12.0%	+/-1.9	12.8%
20 to 24 minutes	16.6%	+/-1.5	17.2%	+/-2.1	15.9%
25 to 29 minutes	9.0%	+/-1.1	9.6%	+/-1.6	8.5%
30 to 34 minutes	18.6%	+/-1.7	20.4%	+/-2.2	16.7%
35 to 44 minutes	9.3%	+/-1.2	7.8%	+/-1.2	10.9%
45 to 59 minutes	12.4%	+/-1.4	12.4%	+/-1.9	12.3%
60 or more minutes	5.7%	+/-1.0	7.1%	+/-1.3	4.2%
Mean travel time to work (minutes)	28.3	+/-0.8	29.5	+/-1.0	27.1
VEHICLES AVAILABLE					
Workers 16 years and over in households	34,133	+/-1,073	17,214	+/-868	16,919
No vehicle available	1.1%	+/-0.4	1.4%	+/-0.6	0.9%
1 vehicle available	17.0%	+/-1.9	14.0%	+/-2.1	20.1%
2 vehicles available	41.3%	+/-2.3	42.6%	+/-2.6	40.1%
3 or more vehicles available	40.5%	+/-2.4	42.1%	+/-2.7	38.9%
PERCENT IMPUTED					
Means of transportation to work	5.9%	(X)	(X)	(X)	(X)
Private vehicle occupancy	7.6%	(X)	(X)	(X)	(X)
Place of work	7.7%	(X)	(X)	(X)	(X)
Time leaving home to go to work	9.6%	(X)	(X)	(X)	(X)
Travel time to work	8.7%	(X)	(X)	(X)	(X)
Vehicles available	1.5%	(X)	(X)	(X)	(X)

Subject	Elmore County, Alabama Female Margin of Error
Workers 16 years and over	+/-671
MEANS OF TRANSPORTATION TO WORK	
Car, truck, or van	+/-1.2
Drove alone	+/-1.9
Carpooled	+/-1.6
In 2-person carpool	+/-1.5
In 3-person carpool	+/-0.6
In 4-or-more person carpool	+/-0.1
Workers per car, truck, or van	+/-0.01
Public transportation (excluding taxicab)	+/-0.1
Walked	+/-0.3
Bicycle	+/-0.2
Taxicab, motorcycle, or other means	+/-0.5
Worked at home	+/-1.0
PLACE OF WORK	
Worked in state of residence	+/-0.4
Worked in county of residence	+/-3.0
Worked outside county of residence	+/-3.0
Worked outside state of residence	+/-0.4
Living in a place	+/-2.5
Worked in place of residence	+/-1.6
Worked outside place of residence	+/-2.4
Not living in a place	+/-2.5
Living in 12 selected states	+/-0.2
Worked in minor civil division of residence	+/-0.2
Worked outside minor civil division of residence	+/-0.2
Not living in 12 selected states	+/-0.2
Workers 16 years and over who did not work at home	+/-679
TIME LEAVING HOME TO GO TO WORK	
12:00 a.m. to 4:59 a.m.	+/-1.3
5:00 a.m. to 5:29 a.m.	+/-1.0
5:30 a.m. to 5:59 a.m.	+/-0.8
6:00 a.m. to 6:29 a.m.	+/-1.4
6:30 a.m. to 6:59 a.m.	+/-2.3
7:00 a.m. to 7:29 a.m.	+/-2.0
7:30 a.m. to 7:59 a.m.	+/-1.8
8:00 a.m. to 8:29 a.m.	+/-1.4
8:30 a.m. to 8:59 a.m.	+/-0.8
9:00 a.m. to 11:59 p.m.	+/-1.8
TRAVEL TIME TO WORK	
Less than 10 minutes	+/-1.6
10 to 14 minutes	+/-1.6
15 to 19 minutes	+/-2.0
20 to 24 minutes	+/-1.8
25 to 29 minutes	+/-1.6
30 to 34 minutes	+/-2.2
35 to 44 minutes	+/-1.8
45 to 59 minutes	+/-1.9
60 or more minutes	+/-1.1
Mean travel time to work (minutes)	+/-0.9
VEHICLES AVAILABLE	

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Subject	Elmore County, Alabama Female Margin of Error
Workers 16 years and over in households	+/-671
No vehicle available	+/-0.4
1 vehicle available	+/-2.5
2 vehicles available	+/-2.7
3 or more vehicles available	+/-3.0
PERCENT IMPUTED	
Means of transportation to work	(X)
Private vehicle occupancy	(X)
Place of work	(X)
Time leaving home to go to work	(X)
Travel time to work	(X)
Vehicles available	(X)

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

The 12 selected states are Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

Workers include members of the Armed Forces and civilians who were at work last week.

While the 2008-2012 American Community Survey (ACS) data generally reflect the December 2009 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Source: U.S. Census Bureau, 2008-2012 American Community Survey

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

Figure 3.12-1

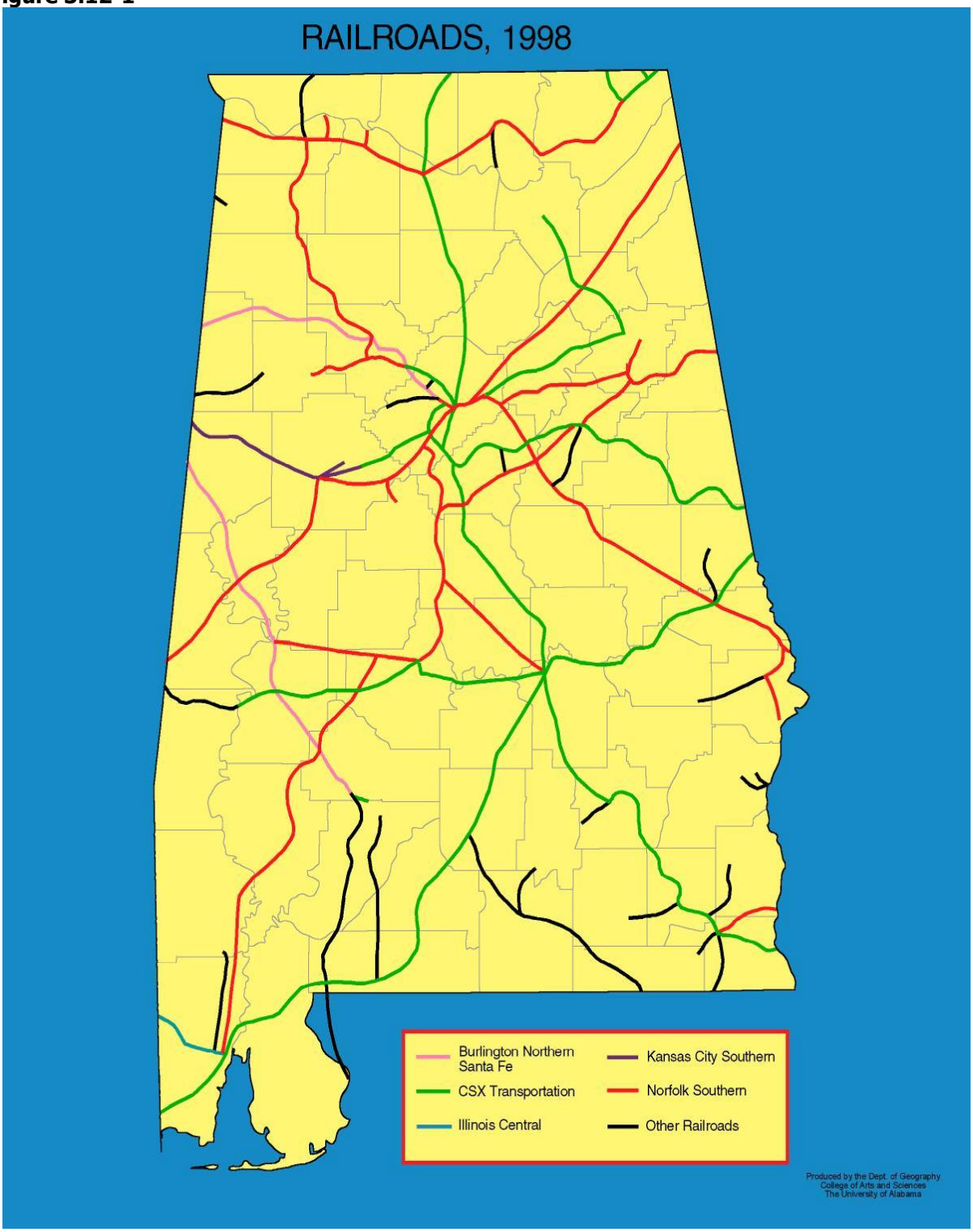
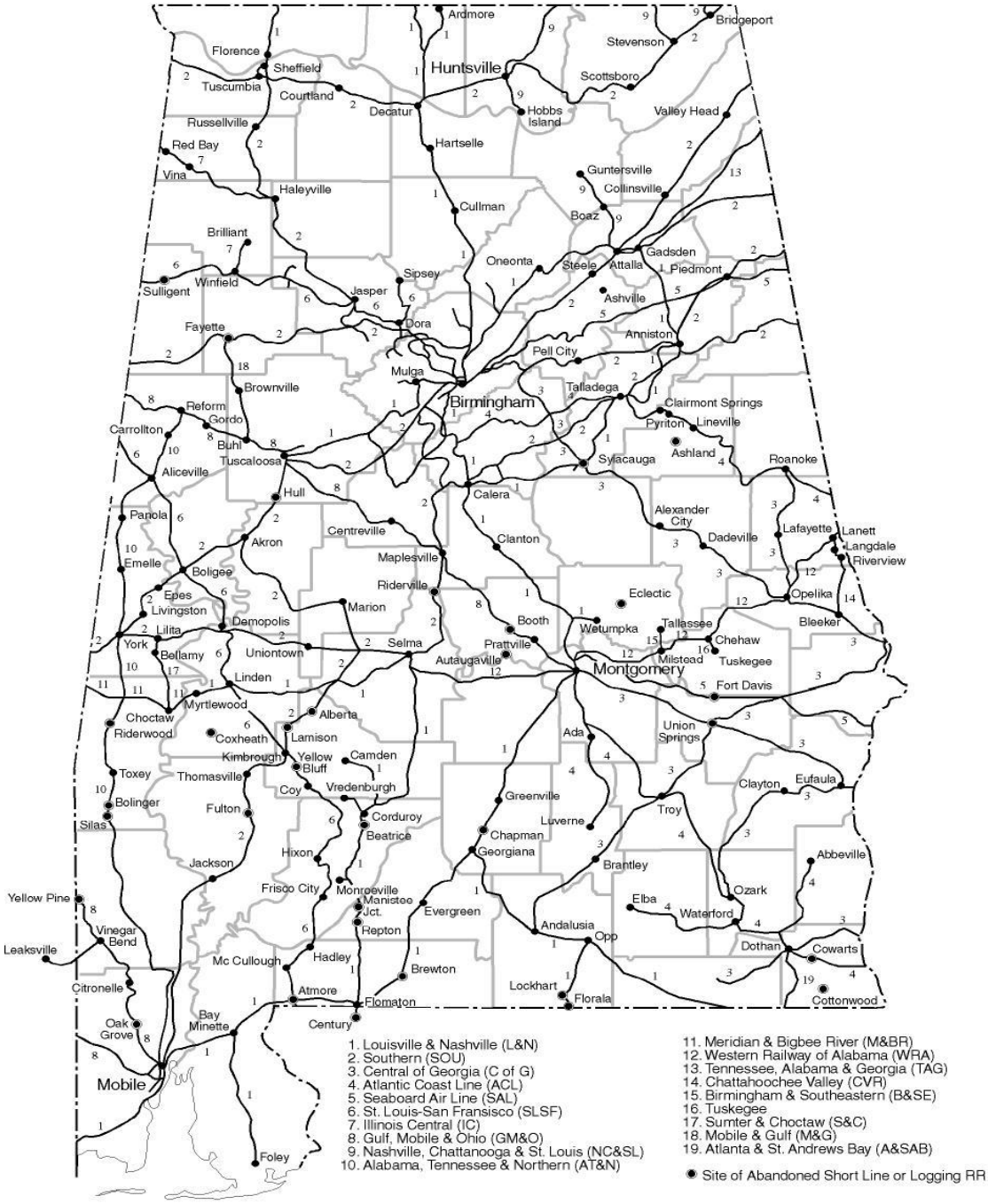

RAILROADS, 1998
Burlington Northern Santa Fe
CSX Transportation
Illinois Central
Kansas City Southern
Norfolk Southern
Other Railroads
Produced by the Dept. of Geography
College of Arts and Sciences
The University of Alabama

Figure 3.12-2

Alabama's Railway System, ca. 1950's



Produced by the Cartographic Research Lab.
Modified from Wayne Cline's *Alabama Railroads*,
University of Alabama Press. Used with permission.

Figure 3.12-3

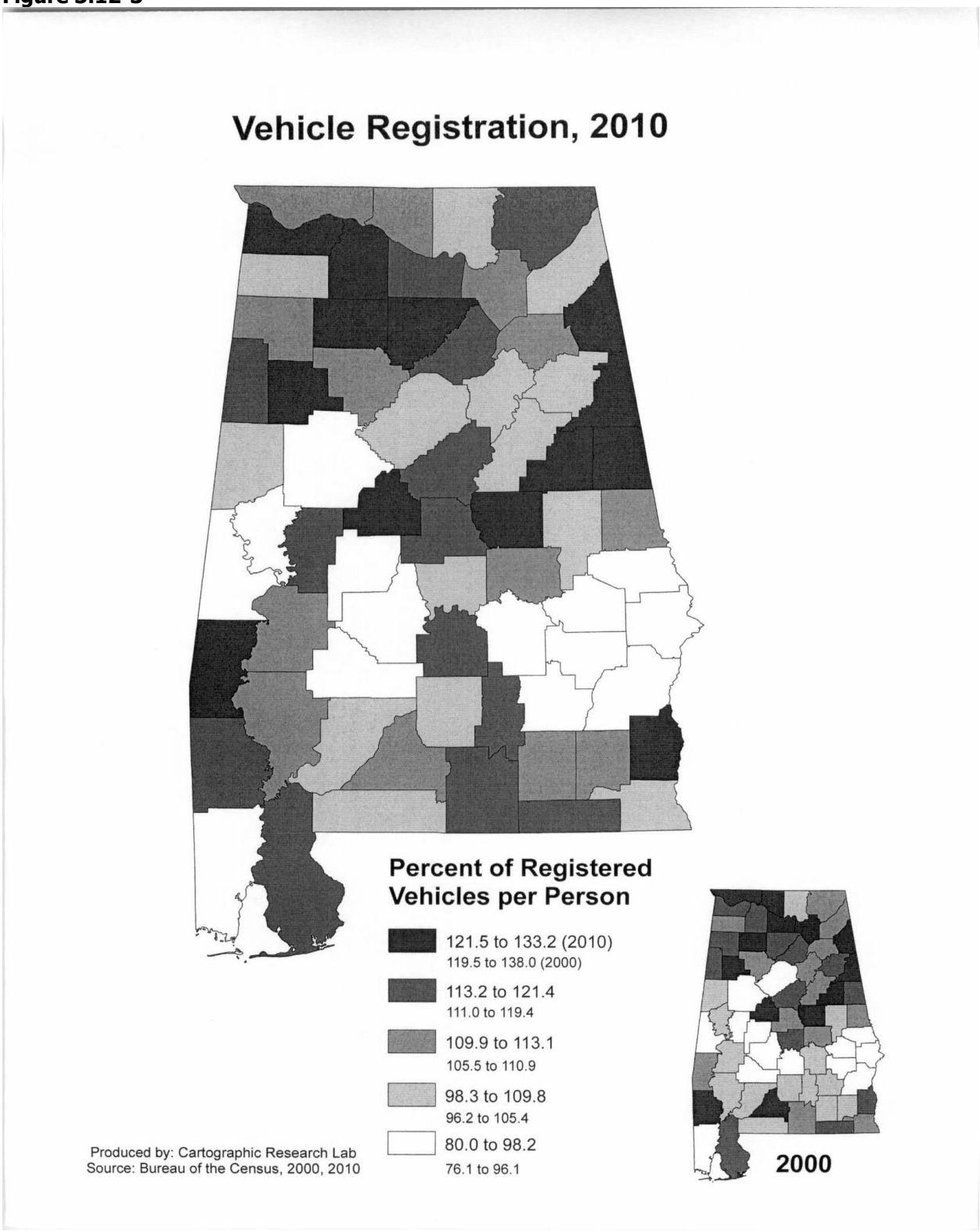

Vehicle Registration, 2010
Percent of Registered Vehicles per Person
121.5 to 133.2 (2010)
119.5 to 138.0 (2000)
113.2 to 121.4
111.0 to 119.4
109.9 to 113.1
105.5 to 110.9
98.3 to 109.8
96.2 to 105.4
80.0 to 98.2
76.1 to 96.1
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Figure 3.12-4

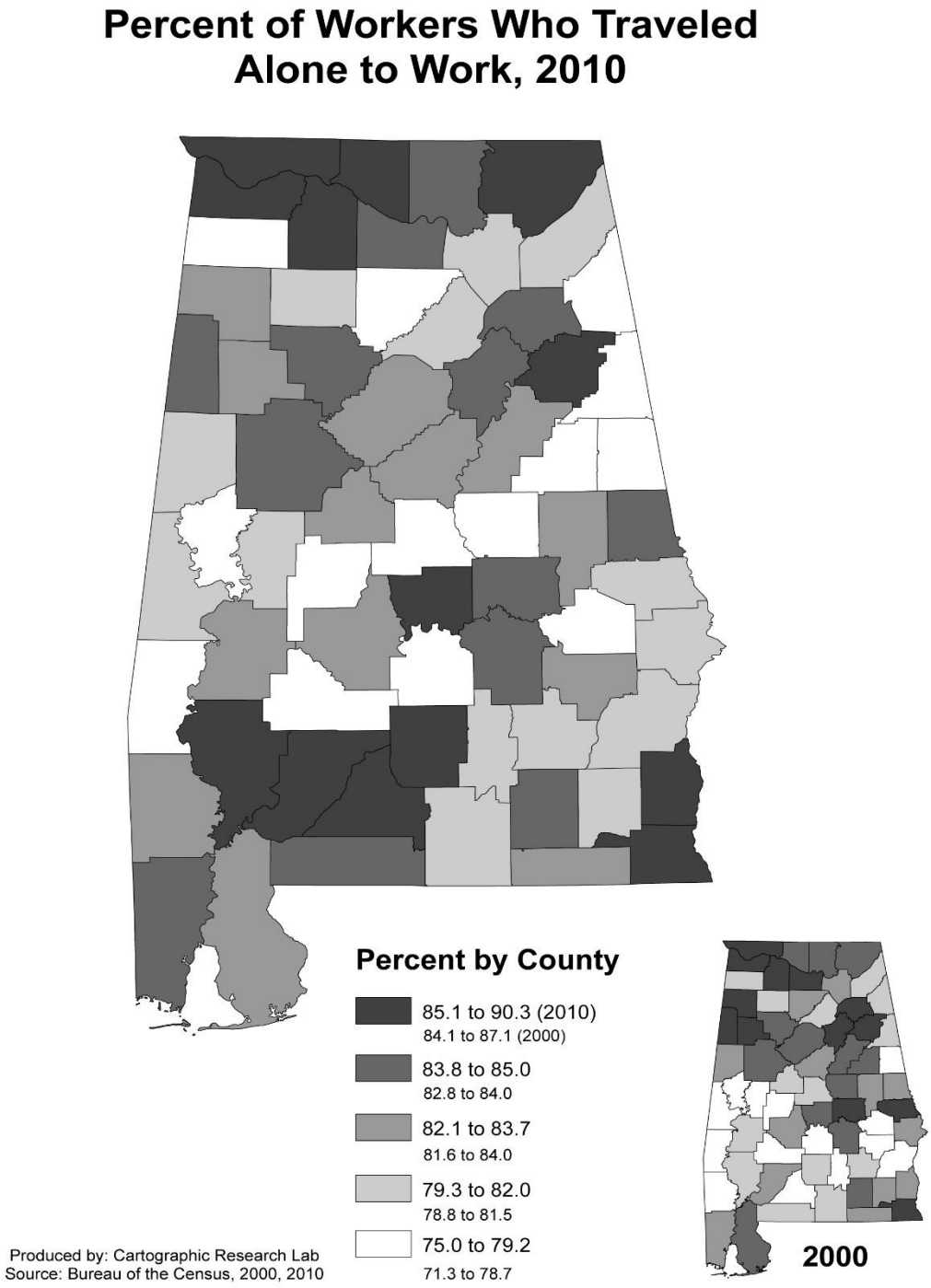

Percent of Workers Who Traveled Alone to Work, 2010
Percent by County
85.1 to 90.3 (2010)
84.1 to 87.1 (2000)
83.8 to 85.0
82.8 to 84.0
82.1 to 83.7
81.6 to 84.0
79.3 to 82.0
78.8 to 81.5
75.0 to 79.2
71.3 to 78.7
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Figure 3.12-5

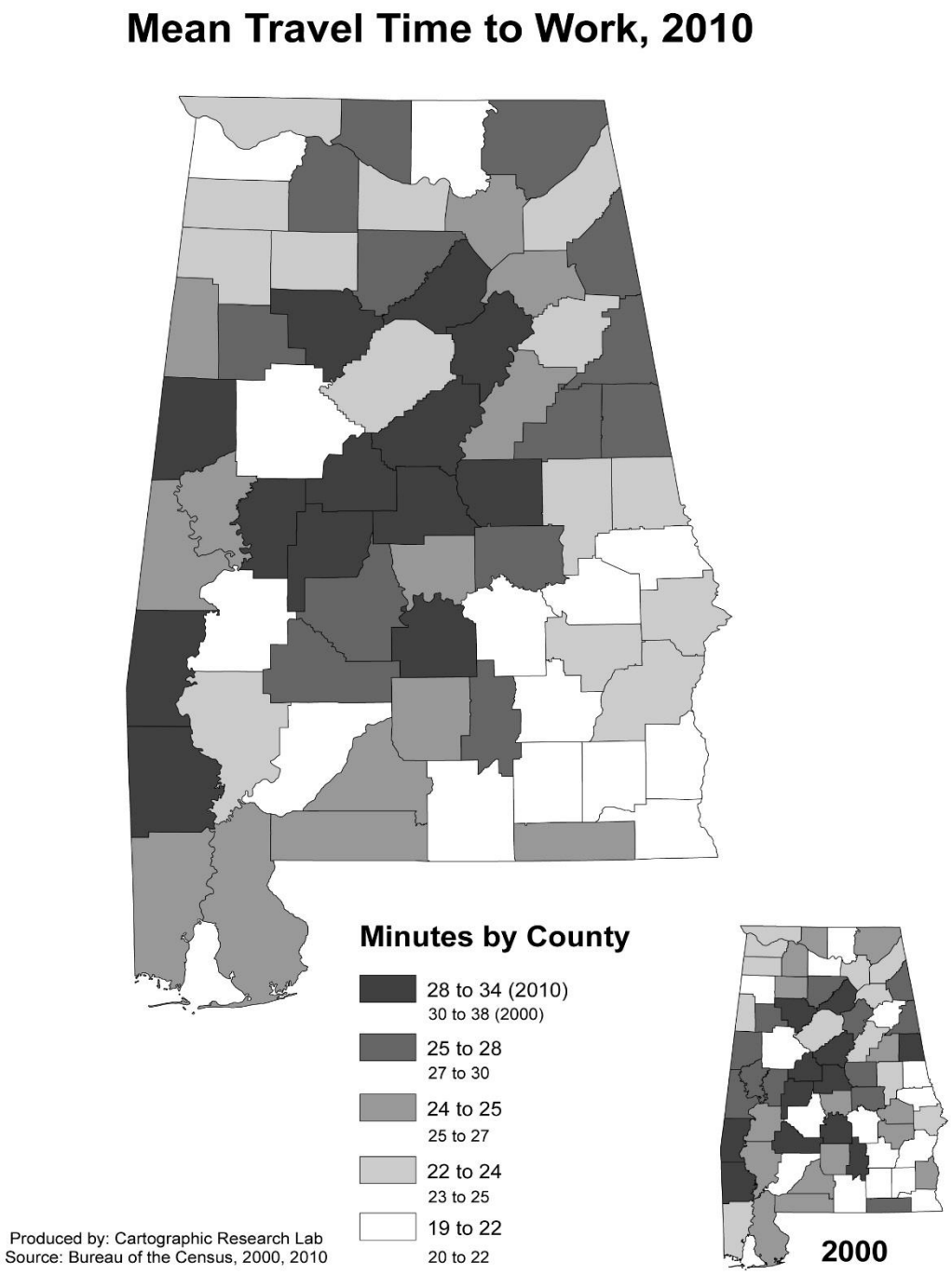

Mean Travel Time to Work, 2010
Minutes by County
28 to 34 (2010)
30 to 38 (2000)
25 to 28
27 to 30
24 to 25
25 to 27
22 to 24
23 to 25
19 to 22
20 to 22
Produced by: Cartographic Research Lab
Source: Bureau of the Census, 2000, 2010
2000

Table 3.12-2

Selected Automobile Accident Statistics

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ALPHABETICAL ORDER

	COUNTY	2009 TOT. ACC.	INJURIES	DEATHS	ACC. PER 100 DRIVERS	2000 TOT. ACC.	INJURIES	DEATHS	ACC. PER 100 DRIVERS
1	AUTAUGA	1,232	398	14	2.88	1,224	387	11	3.68
2	BALDWIN	3,873	1,316	28	2.62	3,430	1,175	33	3.06
3	BARBOUR	488	215	4	2.17	660	285	5	2.86
4	BIBB	254	78	4	1.36	195	94	6	1.19
5	BLOUNT	886	339	15	1.94	989	438	18	2.46
6	BULLOCK	154	74	4	1.73	148	105	6	1.60
7	BUTLER	506	171	4	3.02	648	242	8	3.86
8	CALHOUN	3,749	1,214	25	3.90	3,354	1,102	27	3.71
9	CHAMBERS	691	231	7	2.47	872	275	8	3.00
10	CHEROKEE	484	216	5	2.26	490	248	4	2.51
11	CHILTON	817	308	15	2.36	1,073	442	15	3.45
12	CHOCTAW	159	71	7	1.41	230	93	8	1.83
13	CLARKE	382	175	5	1.84	460	236	13	2.15
14	CLAY	167	81	3	1.47	227	103	2	1.98
15	CLEBURNE	430	198	7	3.56	402	170	9	3.56
16	COFFEE	1,224	301	8	3.06	899	274	9	2.59
17	COLBERT	1,338	45	5	3.00	1,640	563	10	3.71
18	CONECUH	339	138	11	3.14	452	203	18	4.07
19	COOSA	240	107	2	2.49	228	151	5	2.33
20	COVINGTON	626	204	10	2.04	633	287	6	2.09
21	CRENSHAW	225	75	2	2.01	198	93	8	1.82
22	CULLMAN	1,930	508	24	2.97	2,382	821	17	3.84
23	DALE	935	287	7	2.35	831	337	12	2.17
24	DALLAS	1,124	376	12	3.28	1,385	614	7	3.90
25	DE KALB	1,226	401	10	2.20	1,596	592	17	3.12
26	ELMORE	1,694	546	19	2.65	1,638	656	12	3.16
27	ESCAMBIA	722	295	9	2.32	894	393	12	2.91
28	ETOWAH	2,895	932	15	3.41	2,957	996	18	3.55
29	FAYETTE	223	129	3	1.58	315	162	4	2.11
30	FRANKLIN	622	262	7	2.47	672	268	13	2.70
31	GENEVA	361	111	7	1.65	410	193	5	1.98
32	GREENE	296	121	4	4.07	334	160	3	4.40
33	HALE	225	115	5	1.78	257	92	2	1.98
34	HENRY	240	81	1	1.70	277	128	6	2.11
35	HOUSTON	3,237	968	18	4.00	3,468	1,274	17	4.97
36	JACKSON	872	392	18	2.01	1,061	479	16	2.45
37	JEFFERSON	20,752	4,560	83	3.91	25,330	6,383	92	4.82
38	LAMAR	132	88	4	1.11	157	82	5	1.22
39	LAUDERDALE	2,037	530	12	2.67	2,159	754	11	3.03
40	LAWRENCE	544	243	12	1.95	633	293	5	2.31
41	LEE	4,167	1,015	22	3.65	3,710	1,097	24	4.00
42	LIMESTONE	1,652	513	18	2.49	1,762	720	22	3.38
43	LOWNDES	282	128	5	3.11	318	155	8	3.13
44	MACON	623	320	5	3.47	705	266	8	3.71
45	MADISON	9,710	2,545	41	3.60	9,104	2,936	46	4.19
46	MARENGO	325	162	6	1.93	281	191	9	1.63
47	MARION	477	212	6	1.89	584	248	14	2.30
48	MARSHALL	2,369	824	25	3.21	2,405	849	19	3.69
49	MOBILE	11,815	2,938	58	3.60	13,990	4,045	76	4.54
50	MONROE	351	155	9	1.91	386	188	5	2.07
51	MONTGOMERY	8,415	2,004	22	4.61	9,644	2,917	53	5.50
52	MORGAN	2,972	841	16	3.10	3,304	943	18	3.77
53	PERRY	103	44	6	1.21	160	111	1	1.78
54	PICKENS	234	125	3	1.46	286	160	9	1.75
55	PIKE	860	284	14	3.14	746	235	8	3.15
56	RANDOLPH	386	148	4	2.09	401	158	4	2.26
57	RUSSELL	1,952	656	12	4.67	1,971	803	12	5.08
58	ST. CLAIR	1,488	616	9	2.22	1,611	634	20	3.16
59	SHELBY	4,581	937	21	2.99	4,190	1,086	11	3.76
60	SUMTER	264	133	3	2.33	317	144	6	2.82
61	TALLADEGA	1,909	711	26	2.87	1,997	688	24	3.13
62	TALLAPOOSA	761	261	7	2.23	884	362	14	2.67
63	TUSCALOOSA	7,042	2,074	36	4.40	6,870	2,089	35	5.18
64	WALKER	1,875	651	16	3.43	2,126	801	32	3.73
65	WASHINGTON	177	81	1	1.27	193	126	6	1.40
66	WILCOX	128	92	3	1.40	250	175	2	2.53
67	WINSTON	326	189	7	1.62	336	147	7	1.68
	ALABAMA	123,575	35,559	856	2.58	133,739	43,917	996	2.99

RANK ORDER

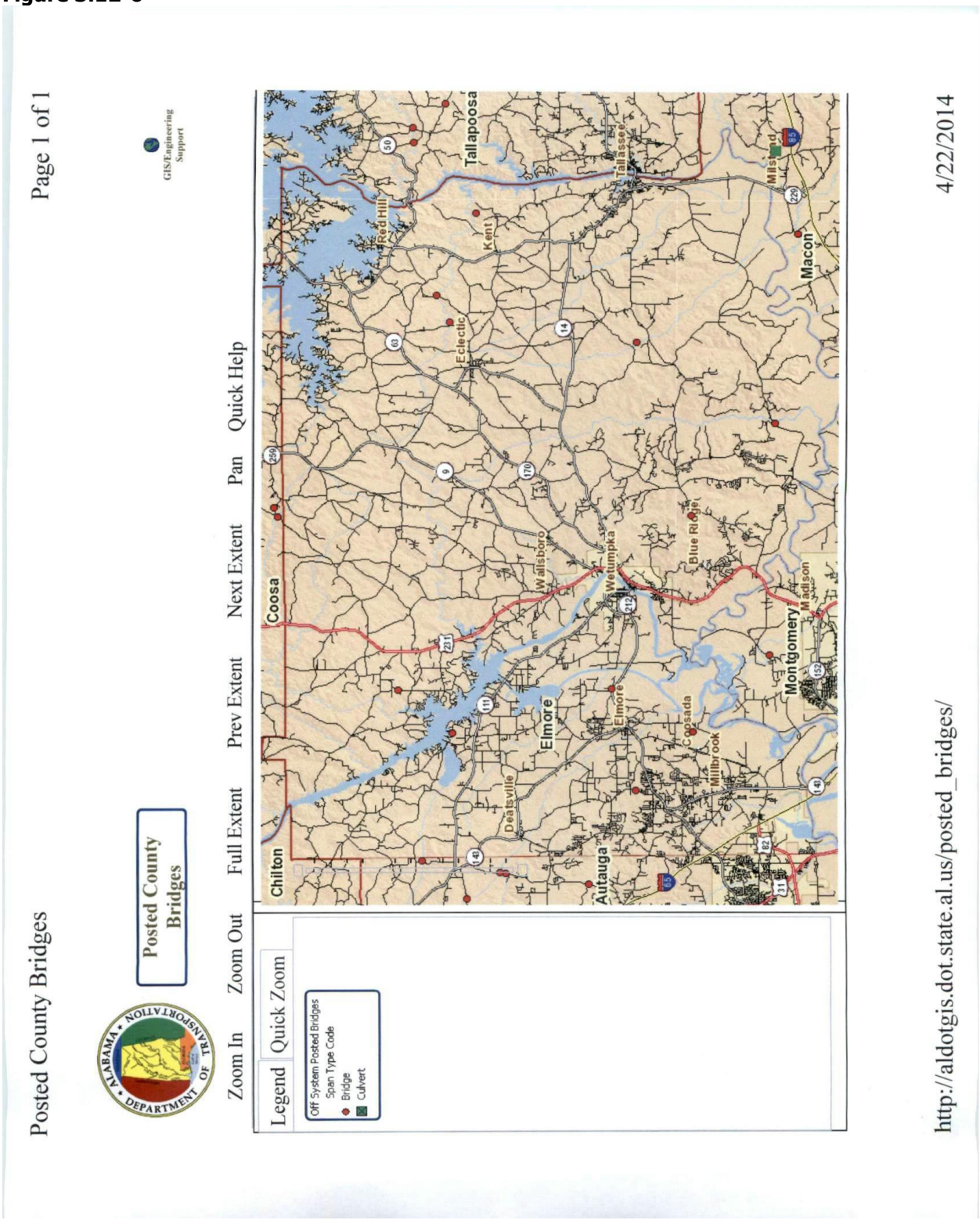
	COUNTY	2009 TOT. ACC.	INJURIES	DEATHS	ACC. PER 100 DRIVERS
1	RUSSELL	1,952	656	12	4.67
2	MONTGOMERY	8,415	2,004	22	4.61
3	TUSCALOOSA	7,042	2,074	36	4.40
4	GREENE	296	121	4	4.07
5	HOUSTON	3,237	968	18	4.00
6	JEFFERSON	20,752	4,560	83	3.91
7	CALHOUN	3,749	1,214	25	3.90
8	LEE	4,167	1,015	22	3.65
9	MOBILE	11,815	2,938	58	3.60
10	MADISON	9,710	2,545	41	3.60
11	CLEBURNE	430	198	7	3.56
12	MACON	623	320	5	3.47
13	WALKER	1,875	651	16	3.43
14	ETOWAH	2,895	932	15	3.41
15	DALLAS	1,124	376	12	3.28
16	MARSHALL	2,369	824	25	3.21
17	CONECUH	339	138	11	3.14
18	PIKE	860	284	14	3.14
19	LOWNDES	282	128	5	3.11
20	MORGAN	2,972	841	16	3.10
21	COFFEE	1,224	301	8	3.06
22	BUTLER	506	171	4	3.02
23	COLBERT	1,338	45	5	3.00
24	SHELBY	4,581	937	21	2.99
25	CULLMAN	1,930	508	24	2.97
26	AUTAUGA	1,232	398	14	2.88
27	TALLADEGA	1,909	711	26	2.87
28	LAUDERDALE	2,037	530	12	2.67
29	ELMORE	1,694	546	19	2.65
30	BALDWIN	3,873	1,316	28	2.62
31	LIMESTONE	1,652	513	18	2.49
32	COOSA	240	107	2	2.49
33	FRANKLIN	622	262	7	2.47
34	CHAMBERS	691	231	7	2.47
35	CHILTON	817	308	15	2.36
36	DALE	935	287	7	2.35
37	SUMTER	264	133	3	2.33
38	ESCAMBIA	722	295	9	2.32
39	CHEROKEE	484	216	5	2.26
40	TALLAPOOSA	761	261	7	2.23
41	ST. CLAIR	1,488	616	9	2.22
42	DE KALB	1,226	401	10	2.20
43	BARBOUR	488	215	4	2.17
44	RANDOLPH	386	148	4	2.09
45	COVINGTON	626	204	10	2.04
46	JACKSON	872	392	18	2.01
47	CRENSHAW	225	75	2	2.01
48	LAWRENCE	544	243	12	1.95
49	BLOUNT	886	339	15	1.94
50	MARENGO	325	162	6	1.93
51	MONROE	351	155	9	1.91
52	MARION	477	212	6	1.89
53	CLARKE	382	175	5	1.84
54	HALE	225	115	5	1.78
55	BULLOCK	154	74	4	1.73
56	HENRY	240	81	1	1.70
57	GENEVA	361	111	7	1.65
58	WINSTON	326	189	7	1.62
59	FAYETTE	223	129	3	1.58
60	CLAY	167	81	3	1.47
61	PICKENS	234	125	3	1.46
62	CHOCTAW	159	71	7	1.41
63	WILCOX	128	92	3	1.40
64	BIBB	254	78	4	1.36
65	WASHINGTON	177	81	1	1.27
66	PERRY	103	44	6	1.21
67	LAMAR	132	88	4	1.11
	ALABAMA	123,575	35,559	856	2.58

*Accident per Driver is the total number of accidents divided by the population of people 15 and Up times 100

PRODUCED BY: CARTOGRAPHIC RESEARCH LAB

SOURCE: ALABAMA HIGHWAY DEPARTMENT, 2000, 2010

Figure 3.12-6


Posted County Bridges
Page 1 of 1
GIS/Engineering Support
Posted County Bridges
ALABAMA DEPARTMENT OF TRANSPORTATION
Zoom In
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Next Extent
Pan
Quick Help
Legend
Quick Zoom
Off System Posted Bridges
Span Type Code
Bridge
Culvert
Chilton
Coosa
Tallapoosa
Red Hill
Kent
Eclectic
Tallassee
Millbrook
Macon
Elmore
Wetumpka
Deatsville
Autauga
Montgomery
Madison
Blue Ridge
Coosada
Elmore
Wallsboro
4/22/2014
http://aldotgis.dot.state.al.us/posted_bridges/

3.13 County/City/Town Profiles

This subsection provides informational profiles by way of tables and maps for:

- The County of Elmore
- The Towns of: Coosada, Deatsville, Eclectic, and Elmore
- The Cities of Millbrook (Elmore County portion), Prattville (Elmore County portion), Tallassee (Elmore County portion) and Wetumpka

Table 3.13-1 (See: Table 6.7-1 & 6.7-1.1) **Quick Reference Overview**

Government	Population 2010 Census	Water Service	Electric Service	Sewer Service	Fire Service	Master Plan	Building Codes & Enforcement	Zoning Regs & Enforcement	Sub-Division Regs	NFIP Participation & Enforcement
Elmore County	79303	11 Different Systems	Rural Electric Association	No	20 VFDs	No	No	No	Yes	Yes
Coosada	1224	Tri-Community & Elmore Water Authority	Alabama Power & Central AL Electric Co-op	Partial	Coosada VFD	Yes	Yes	Yes	Yes	Yes
Deatsville	1154	Marbury Water System & Elmore Water Authority	Alabama Power & Central AL Electric Co-op	No	Deatsville & Lightwood VFDs	No	No	No	Yes, Agreement with Elmore Co	No
Eclectic	1001	Eclectic Water Works	Alabama Power	Partial	Eclectic & Kowaliga VFDs	Yes	Yes	Yes	Yes	Not Eligible
Elmore	1262	Elmore Water Authority	Alabama Power & Central AL Electric Co-op	Partial	Elmore VFD	Yes	Yes	Yes	Yes	Yes
Millbrook (Part)	14640	Elmore Water Authority & Millbrook Utilities & Tri-Community	Alabama Power & Central AL Electric Co-op	Partial	Millbrook VFD	Yes	Yes	Yes	Yes	Yes
Tallassee (Part)	4819	City of Tallassee & Friendship Water Works	Alabama Power	Partial	Tallassee, Red Hill, & Friendship VFDs	Yes	Yes	Yes	Yes	Yes
Wetumpka	6528	Wetumpka Water Works & CEW&SA	Alabama Power & Central AL Electric Co-op	Partial	Wetumpka, Buyck, Elmore, Redland, Holtville/ Slapout, Santuck	No	Yes	Yes	Yes	Yes
Poarch Band of Creek Indians				Yes	PCI, Wetumpk	Yes	No	No	No	No

Table 3.13-2

U.S. Census Bureau

AMERICAN FactFinder

DP03 | SELECTED ECONOMIC CHARACTERISTICS

2008-2012 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Data and Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Subject	Deatsville CCD, Elmore County, Alabama				Eclectic CCD, Elmore County, Alabama
	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate
EMPLOYMENT STATUS					
Population 16 years and over	8,427	+/-946	8,427	(X)	5,579
In labor force	3,329	+/-374	39.5%	+/-5.6	3,422
Civilian labor force	3,291	+/-373	39.1%	+/-5.5	3,407
Employed	3,072	+/-348	36.5%	+/-5.1	3,117
Unemployed	219	+/-102	2.6%	+/-1.2	290
Armed Forces	38	+/-39	0.5%	+/-0.5	15
Not in labor force	5,098	+/-939	60.5%	+/-5.6	2,157
Civilian labor force	3,291	+/-373	3,291	(X)	3,407
Percent Unemployed	(X)	(X)	6.7%	+/-2.9	(X)
Females 16 years and over	2,802	+/-250	2,802	(X)	3,028
In labor force	1,572	+/-222	56.1%	+/-6.6	1,702
Civilian labor force	1,572	+/-222	56.1%	+/-6.6	1,702
Employed	1,509	+/-218	53.9%	+/-6.7	1,568
Own children under 6 years	673	+/-156	673	(X)	414
All parents in family in labor force	451	+/-174	67.0%	+/-16.6	252
Own children 6 to 17 years	952	+/-163	952	(X)	972
All parents in family in labor force	693	+/-181	72.8%	+/-14.5	850
COMMUTING TO WORK					
Workers 16 years and over	3,018	+/-364	3,018	(X)	2,969
Car, truck, or van -- drove alone	2,480	+/-337	82.2%	+/-6.2	2,554
Car, truck, or van -- carpooled	435	+/-202	14.4%	+/-6.1	215
Public transportation (excluding taxicab)	0	+/-17	0.0%	+/-1.1	10
Walked	0	+/-17	0.0%	+/-1.1	27
Other means	2	+/-4	0.1%	+/-0.1	24
Worked at home	101	+/-64	3.3%	+/-2.2	139
Mean travel time to work (minutes)	32.9	+/-2.7	(X)	(X)	30.8
OCCUPATION					

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Subject	Deatsville CCD, Elmore County, Alabama				Eclectic CCD, Elmore County, Alabama
	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate
Civilian employed population 16 years and over	3,072	+/-348	3,072	(X)	3,117
Management, business, science, and arts occupations	936	+/-195	30.5%	+/-5.8	1,061
Service occupations	323	+/-129	10.5%	+/-4.3	475
Sales and office occupations	953	+/-247	31.0%	+/-6.9	838
Natural resources, construction, and maintenance occupations	415	+/-151	13.5%	+/-4.4	412
Production, transportation, and material moving occupations	445	+/-196	14.5%	+/-6.1	331
INDUSTRY					
Civilian employed population 16 years and over	3,072	+/-348	3,072	(X)	3,117
Agriculture, forestry, fishing and hunting, and mining	29	+/-29	0.9%	+/-0.9	16
Construction	277	+/-125	9.0%	+/-4.0	437
Manufacturing	312	+/-181	10.2%	+/-5.4	417
Wholesale trade	52	+/-43	1.7%	+/-1.4	52
Retail trade	452	+/-152	14.7%	+/-4.5	348
Transportation and warehousing, and utilities	247	+/-113	8.0%	+/-3.9	147
Information	58	+/-69	1.9%	+/-2.3	40
Finance and insurance, and real estate and rental and leasing	230	+/-111	7.5%	+/-3.5	214
Professional, scientific, and management, and administrative and waste management services	107	+/-76	3.5%	+/-2.5	198
Educational services, and health care and social assistance	675	+/-183	22.0%	+/-5.5	643
Arts, entertainment, and recreation, and accommodation and food services	13	+/-21	0.4%	+/-0.7	255
Other services, except public administration	335	+/-136	10.9%	+/-4.3	171
Public administration	285	+/-116	9.3%	+/-3.7	179
CLASS OF WORKER					
Civilian employed population 16 years and over	3,072	+/-348	3,072	(X)	3,117
Private wage and salary workers	2,314	+/-300	75.3%	+/-5.3	2,275
Government workers	558	+/-163	18.2%	+/-4.8	609
Self-employed in own not incorporated business workers	200	+/-107	6.5%	+/-3.4	230
Unpaid family workers	0	+/-17	0.0%	+/-1.1	3
INCOME AND BENEFITS (IN 2012 INFLATION-ADJUSTED DOLLARS)					
Total households	2,472	+/-191	2,472	(X)	2,787
Less than $10,000	133	+/-83	5.4%	+/-3.3	181
$10,000 to $14,999	117	+/-58	4.7%	+/-2.4	154
$15,000 to $24,999	242	+/-112	9.8%	+/-4.4	226
$25,000 to $34,999	356	+/-126	14.4%	+/-5.0	286
$35,000 to $49,999	474	+/-186	19.2%	+/-7.1	522
$50,000 to $74,999	364	+/-116	14.7%	+/-4.3	580
$75,000 to $99,999	365	+/-123	14.8%	+/-5.2	324
$100,000 to $149,999	328	+/-114	13.3%	+/-4.7	304
$150,000 to $199,999	34	+/-34	1.4%	+/-1.4	151
$200,000 or more	59	+/-50	2.4%	+/-2.1	59
Median household income (dollars)	46,352	+/-7,943	(X)	(X)	50,482
Mean household income (dollars)	60,946	+/-7,075	(X)	(X)	66,172
With earnings	1,985	+/-197	80.3%	+/-4.1	2,088
Mean earnings (dollars)	61,402	+/-8,916	(X)	(X)	61,507
With Social Security	596	+/-102	24.1%	+/-4.0	1,078
Mean Social Security income (dollars)	16,456	+/-2,198	(X)	(X)	17,660
With retirement income	529	+/-107	21.4%	+/-4.6	880
Mean retirement income (dollars)	22,523	+/-4,175	(X)	(X)	23,697
With Supplemental Security Income	132	+/-71	5.3%	+/-2.8	96

Subject	Deatsville CCD, Elmore County, Alabama				Eclectic CCD, Elmore County, Alabama
	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate
Mean Supplemental Security Income (dollars)	14,368	+/-6,797	(X)	(X)	6,545
With cash public assistance income	2	+/-4	0.1%	+/-0.2	16
Mean cash public assistance income (dollars)	-	**	(X)	(X)	1,988
With Food Stamp/SNAP benefits in the past 12 months	184	+/-102	7.4%	+/-4.2	250
Families	1,816	+/-178	1,816	(X)	1,972
Less than $10,000	72	+/-76	4.0%	+/-4.2	100
$10,000 to $14,999	43	+/-38	2.4%	+/-2.1	51
$15,000 to $24,999	182	+/-111	10.0%	+/-5.8	72
$25,000 to $34,999	265	+/-113	14.6%	+/-5.9	168
$35,000 to $49,999	235	+/-122	12.9%	+/-6.5	332
$50,000 to $74,999	260	+/-98	14.3%	+/-5.2	486
$75,000 to $99,999	365	+/-123	20.1%	+/-6.6	296
$100,000 to $149,999	311	+/-110	17.1%	+/-5.9	257
$150,000 to $199,999	34	+/-34	1.9%	+/-1.8	151
$200,000 or more	49	+/-48	2.7%	+/-2.6	59
Median family income (dollars)	61,404	+/-11,880	(X)	(X)	65,198
Mean family income (dollars)	68,537	+/-9,101	(X)	(X)	78,498
Per capita income (dollars)	16,183	+/-2,067	(X)	(X)	27,527
Nonfamily households	656	+/-165	656	(X)	815
Median nonfamily income (dollars)	38,272	+/-6,641	(X)	(X)	30,417
Mean nonfamily income (dollars)	39,791	+/-6,734	(X)	(X)	35,380
Median earnings for workers (dollars)	25,500	+/-4,122	(X)	(X)	30,072
Median earnings for male full-time, year-round workers (dollars)	52,361	+/-4,280	(X)	(X)	47,743
Median earnings for female full-time, year-round workers (dollars)	29,695	+/-5,286	(X)	(X)	31,111
HEALTH INSURANCE COVERAGE					
Civilian noninstitutionalized population	6,498	+/-499	6,498	(X)	6,853
With health insurance coverage	5,702	+/-518	87.8%	+/-4.7	6,062
With private health insurance	5,095	+/-580	78.4%	+/-6.0	5,076
With public coverage	1,450	+/-251	22.3%	+/-4.0	2,256
No health insurance coverage	796	+/-320	12.2%	+/-4.7	791
Civilian noninstitutionalized population under 18 years	1,641	+/-213	1,641	(X)	1,455
No health insurance coverage	32	+/-37	2.0%	+/-2.3	117
Civilian noninstitutionalized population 18 to 64 years	4,095	+/-387	4,095	(X)	4,162
In labor force:	3,202	+/-359	3,202	(X)	3,059
Employed:	2,983	+/-333	2,983	(X)	2,831
With health insurance coverage	2,549	+/-339	85.5%	+/-6.4	2,412
With private health insurance	2,549	+/-339	85.5%	+/-6.4	2,384
With public coverage	51	+/-66	1.7%	+/-2.2	109
No health insurance coverage	434	+/-197	14.5%	+/-6.4	419
Unemployed:	219	+/-102	219	(X)	228
With health insurance coverage	156	+/-83	71.2%	+/-22.0	105
With private health insurance	156	+/-83	71.2%	+/-22.0	56
With public coverage	0	+/-17	0.0%	+/-13.8	49
No health insurance coverage	63	+/-59	28.8%	+/-22.0	123
Not in labor force:	893	+/-223	893	(X)	1,103
With health insurance coverage	640	+/-177	71.7%	+/-15.0	971
With private health insurance	433	+/-143	48.5%	+/-14.5	801
With public coverage	276	+/-128	30.9%	+/-12.5	336

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Subject	Deatsville CCD, Elmore County, Alabama				Eclectic CCD, Elmore County, Alabama
	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate
No health insurance coverage	253	+/-164	28.3%	+/-15.0	132
PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL					
All families	(X)	(X)	10.7%	+/-6.2	(X)
With related children under 18 years	(X)	(X)	19.2%	+/-12.7	(X)
With related children under 5 years only	(X)	(X)	5.5%	+/-9.5	(X)
Married couple families	(X)	(X)	7.0%	+/-5.8	(X)
With related children under 18 years	(X)	(X)	14.3%	+/-13.7	(X)
With related children under 5 years only	(X)	(X)	6.0%	+/-10.6	(X)
Families with female householder, no husband present	(X)	(X)	32.4%	+/-24.2	(X)
With related children under 18 years	(X)	(X)	32.3%	+/-26.8	(X)
With related children under 5 years only	(X)	(X)	0.0%	+/-89.4	(X)
All people	(X)	(X)	14.1%	+/-7.2	(X)
Under 18 years	(X)	(X)	22.2%	+/-16.6	(X)
Related children under 18 years	(X)	(X)	22.2%	+/-16.6	(X)
Related children under 5 years	(X)	(X)	15.5%	+/-15.7	(X)
Related children 5 to 17 years	(X)	(X)	26.1%	+/-18.8	(X)
18 years and over	(X)	(X)	11.3%	+/-4.4	(X)
18 to 64 years	(X)	(X)	13.1%	+/-5.3	(X)
65 years and over	(X)	(X)	1.8%	+/-3.0	(X)
People in families	(X)	(X)	12.5%	+/-8.3	(X)
Unrelated individuals 15 years and over	(X)	(X)	23.7%	+/-7.8	(X)

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Area intentionally left blank.

Subject	Eclectic CCD, Elmore County, Alabama			Elmore CCD, Elmore County, Alabama	
	Margin of Error	Percent	Percent Margin of Error	Estimate	Margin of Error
Arts, entertainment, and recreation, and accommodation and food services	+/-109	8.2%	+/-3.2	1,118	+/-231
Other services, except public administration	+/-66	5.5%	+/-2.2	588	+/-156
Public administration	+/-66	5.7%	+/-2.2	1,578	+/-241
CLASS OF WORKER					
Civilian employed population 16 years and over	+/-292	3,117	(X)	12,072	+/-659
Private wage and salary workers	+/-245	73.0%	+/-4.0	8,634	+/-656
Government workers	+/-140	19.5%	+/-3.8	2,879	+/-369
Self-employed in own not incorporated business workers	+/-73	7.4%	+/-2.4	559	+/-166
Unpaid family workers	+/-4	0.1%	+/-0.1	0	+/-22
INCOME AND BENEFITS (IN 2012 INFLATION-ADJUSTED DOLLARS)					
Total households	+/-166	2,787	(X)	9,609	+/-368
Less than $10,000	+/-84	6.5%	+/-2.9	579	+/-161
$10,000 to $14,999	+/-57	5.5%	+/-2.0	464	+/-163
$15,000 to $24,999	+/-92	8.1%	+/-3.2	885	+/-194
$25,000 to $34,999	+/-93	10.3%	+/-3.2	1,079	+/-230
$35,000 to $49,999	+/-119	18.7%	+/-4.0	1,302	+/-245
$50,000 to $74,999	+/-122	20.8%	+/-4.2	2,083	+/-275
$75,000 to $99,999	+/-88	11.6%	+/-3.1	1,273	+/-204
$100,000 to $149,999	+/-62	10.9%	+/-2.4	1,472	+/-206
$150,000 to $199,999	+/-66	5.4%	+/-2.4	296	+/-91
$200,000 or more	+/-34	2.1%	+/-1.2	176	+/-71
Median household income (dollars)	+/-3,167	(X)	(X)	56,350	+/-3,571
Mean household income (dollars)	+/-5,401	(X)	(X)	65,788	+/-2,840
With earnings	+/-178	74.9%	+/-4.1	8,140	+/-413
Mean earnings (dollars)	+/-6,327	(X)	(X)	63,791	+/-2,924
With Social Security	+/-121	38.7%	+/-4.1	2,279	+/-195
Mean Social Security income (dollars)	+/-1,578	(X)	(X)	16,769	+/-1,348
With retirement income	+/-131	31.6%	+/-4.9	2,091	+/-228
Mean retirement income (dollars)	+/-4,563	(X)	(X)	21,999	+/-2,238
With Supplemental Security Income	+/-56	3.4%	+/-2.0	363	+/-112
Mean Supplemental Security Income (dollars)	+/-3,632	(X)	(X)	8,472	+/-1,849
With cash public assistance income	+/-12	0.6%	+/-0.4	189	+/-97
Mean cash public assistance income (dollars)	+/-2,365	(X)	(X)	2,962	+/-1,499
With Food Stamp/SNAP benefits in the past 12 months	+/-74	9.0%	+/-2.5	1,012	+/-201
Families	+/-156	1,972	(X)	7,260	+/-402
Less than $10,000	+/-50	5.1%	+/-2.5	378	+/-174
$10,000 to $14,999	+/-27	2.6%	+/-1.4	280	+/-119
$15,000 to $24,999	+/-37	3.7%	+/-1.8	575	+/-159
$25,000 to $34,999	+/-62	8.5%	+/-3.0	594	+/-164
$35,000 to $49,999	+/-84	16.8%	+/-3.9	855	+/-195
$50,000 to $74,999	+/-120	24.6%	+/-5.3	1,590	+/-256
$75,000 to $99,999	+/-82	15.0%	+/-3.8	1,156	+/-184
$100,000 to $149,999	+/-68	13.0%	+/-3.5	1,381	+/-190
$150,000 to $199,999	+/-66	7.7%	+/-3.5	285	+/-92
$200,000 or more	+/-34	3.0%	+/-1.8	166	+/-69
Median family income (dollars)	+/-11,274	(X)	(X)	65,769	+/-4,970
Mean family income (dollars)	+/-7,212	(X)	(X)	73,352	+/-3,719
Per capita income (dollars)	+/-2,051	(X)	(X)	24,829	+/-1,163
Nonfamily households	+/-159	815	(X)	2,349	+/-298

Subject	Eclectic CCD, Elmore County, Alabama			Elmore CCD, Elmore County, Alabama	
	Margin of Error	Percent	Percent Margin of Error	Estimate	Margin of Error
Median nonfamily income (dollars)	+/-5,886	(X)	(X)	30,719	+/-2,603
Mean nonfamily income (dollars)	+/-5,200	(X)	(X)	39,215	+/-4,254
Median earnings for workers (dollars)	+/-2,405	(X)	(X)	31,148	+/-1,372
Median earnings for male full-time, year-round workers (dollars)	+/-3,536	(X)	(X)	52,161	+/-2,362
Median earnings for female full-time, year-round workers (dollars)	+/-2,034	(X)	(X)	34,852	+/-1,704
HEALTH INSURANCE COVERAGE					
Civilian noninstitutionalized population	+/-424	6,853	(X)	25,043	+/-940
With health insurance coverage	+/-407	88.5%	+/-4.3	22,162	+/-914
With private health insurance	+/-386	74.1%	+/-4.6	18,672	+/-914
With public coverage	+/-240	32.9%	+/-3.6	6,386	+/-582
No health insurance coverage	+/-311	11.5%	+/-4.3	2,881	+/-397
Civilian noninstitutionalized population under 18 years	+/-154	1,455	(X)	6,699	+/-480
No health insurance coverage	+/-116	8.0%	+/-8.0	377	+/-142
Civilian noninstitutionalized population 18 to 64 years	+/-341	4,162	(X)	15,942	+/-670
In labor force:	+/-295	3,059	(X)	12,552	+/-622
Employed:	+/-289	2,831	(X)	11,536	+/-615
With health insurance coverage	+/-272	85.2%	+/-6.4	9,943	+/-555
With private health insurance	+/-271	84.2%	+/-6.6	9,602	+/-532
With public coverage	+/-52	3.9%	+/-1.9	756	+/-206
No health insurance coverage	+/-195	14.8%	+/-6.4	1,593	+/-278
Unemployed:	+/-93	228	(X)	1,016	+/-223
With health insurance coverage	+/-69	46.1%	+/-23.3	561	+/-162
With private health insurance	+/-47	24.6%	+/-18.0	377	+/-134
With public coverage	+/-50	21.5%	+/-20.7	194	+/-100
No health insurance coverage	+/-74	53.9%	+/-23.3	455	+/-129
Not in labor force:	+/-200	1,103	(X)	3,390	+/-390
With health insurance coverage	+/-190	88.0%	+/-4.9	2,934	+/-379
With private health insurance	+/-188	72.6%	+/-7.6	2,332	+/-357
With public coverage	+/-93	30.5%	+/-7.7	1,041	+/-225
No health insurance coverage	+/-57	12.0%	+/-4.9	456	+/-142
PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL					
All families	(X)	9.4%	+/-2.9	(X)	(X)
With related children under 18 years	(X)	17.6%	+/-6.5	(X)	(X)
With related children under 5 years only	(X)	20.7%	+/-16.8	(X)	(X)
Married couple families	(X)	5.6%	+/-2.5	(X)	(X)
With related children under 18 years	(X)	9.0%	+/-5.5	(X)	(X)
With related children under 5 years only	(X)	5.3%	+/-6.5	(X)	(X)
Families with female householder, no husband present	(X)	29.4%	+/-12.8	(X)	(X)
With related children under 18 years	(X)	39.4%	+/-16.2	(X)	(X)
With related children under 5 years only	(X)	56.0%	+/-38.8	(X)	(X)
All people	(X)	10.4%	+/-2.6	(X)	(X)
Under 18 years	(X)	16.2%	+/-6.3	(X)	(X)
Related children under 18 years	(X)	16.2%	+/-6.3	(X)	(X)
Related children under 5 years	(X)	27.6%	+/-13.7	(X)	(X)
Related children 5 to 17 years	(X)	12.2%	+/-6.1	(X)	(X)
18 years and over	(X)	8.8%	+/-2.4	(X)	(X)
18 to 64 years	(X)	9.9%	+/-2.8	(X)	(X)
65 years and over	(X)	5.2%	+/-2.6	(X)	(X)
People in families	(X)	9.1%	+/-2.8	(X)	(X)

Subject	Elmore CCD, Elmore County, Alabama		Tallassee CCD, Elmore County, Alabama		
	Percent	Percent Margin of Error	Estimate	Margin of Error	Percent
EMPLOYMENT STATUS					
Population 16 years and over	20,042	(X)	6,092	+/-479	6,092
In labor force	67.5%	+/-2.4	4,004	+/-367	65.7%
Civilian labor force	66.2%	+/-2.4	3,993	+/-366	65.5%
Employed	60.2%	+/-2.4	3,571	+/-370	58.6%
Unemployed	6.0%	+/-1.3	422	+/-189	6.9%
Armed Forces	1.3%	+/-0.5	11	+/-18	0.2%
Not in labor force	32.5%	+/-2.4	2,088	+/-285	34.3%
Civilian labor force	13,265	(X)	3,993	+/-366	3,993
Percent Unemployed	9.0%	+/-1.9	(X)	(X)	10.6%
Females 16 years and over	10,947	(X)	3,350	+/-313	3,350
In labor force	64.2%	+/-3.2	2,082	+/-232	62.1%
Civilian labor force	63.9%	+/-3.3	2,082	+/-232	62.1%
Employed	58.2%	+/-3.1	1,907	+/-254	56.9%
Own children under 6 years	2,461	(X)	547	+/-186	547
All parents in family in labor force	58.0%	+/-9.5	350	+/-159	64.0%
Own children 6 to 17 years	4,034	(X)	1,482	+/-342	1,482
All parents in family in labor force	72.4%	+/-7.0	1,229	+/-318	82.9%
COMMUTING TO WORK					
Workers 16 years and over	11,932	(X)	3,498	+/-370	3,498
Car, truck, or van -- drove alone	85.6%	+/-2.6	3,215	+/-364	91.9%
Car, truck, or van -- carpooled	10.3%	+/-2.6	229	+/-93	6.5%
Public transportation (excluding taxicab)	0.0%	+/-0.3	0	+/-17	0.0%
Walked	0.8%	+/-0.6	0	+/-17	0.0%
Other means	1.2%	+/-0.7	32	+/-52	0.9%
Worked at home	2.0%	+/-0.9	22	+/-26	0.6%
Mean travel time to work (minutes)	(X)	(X)	26.3	+/-2.5	(X)
OCCUPATION					
Civilian employed population 16 years and over	12,072	(X)	3,571	+/-370	3,571
Management, business, science, and arts occupations	34.7%	+/-3.2	1,242	+/-242	34.8%
Service occupations	18.2%	+/-2.1	487	+/-175	13.6%
Sales and office occupations	26.4%	+/-3.4	784	+/-202	22.0%
Natural resources, construction, and maintenance occupations	9.3%	+/-1.6	264	+/-103	7.4%
Production, transportation, and material moving occupations	11.4%	+/-2.4	794	+/-221	22.2%
INDUSTRY					
Civilian employed population 16 years and over	12,072	(X)	3,571	+/-370	3,571
Agriculture, forestry, fishing and hunting, and mining	0.6%	+/-0.5	44	+/-42	1.2%
Construction	5.3%	+/-1.3	261	+/-123	7.3%
Manufacturing	10.9%	+/-1.9	741	+/-202	20.8%
Wholesale trade	1.9%	+/-0.7	143	+/-107	4.0%
Retail trade	11.9%	+/-2.1	483	+/-170	13.5%
Transportation and warehousing, and utilities	5.5%	+/-1.6	105	+/-79	2.9%
Information	0.8%	+/-0.5	0	+/-17	0.0%
Finance and insurance, and real estate and rental and leasing	6.0%	+/-1.4	90	+/-55	2.5%
Professional, scientific, and management, and administrative and waste management services	10.3%	+/-2.1	411	+/-133	11.5%
Educational services, and health care and social assistance	19.5%	+/-2.6	695	+/-201	19.5%

Subject	Elmore CCD, Elmore County, Alabama		Tallassee CCD, Elmore County, Alabama		
	Percent	Percent Margin of Error	Estimate	Margin of Error	Percent
Arts, entertainment, and recreation, and accommodation and food services	9.3%	+/-1.8	205	+/-133	5.7%
Other services, except public administration	4.9%	+/-1.2	174	+/-74	4.9%
Public administration	13.1%	+/-2.0	219	+/-107	6.1%
CLASS OF WORKER					
Civilian employed population 16 years and over	12,072	(X)	3,571	+/-370	3,571
Private wage and salary workers	71.5%	+/-3.2	2,701	+/-334	75.6%
Government workers	23.8%	+/-2.9	698	+/-225	19.5%
Self-employed in own not incorporated business workers	4.6%	+/-1.4	172	+/-80	4.8%
Unpaid family workers	0.0%	+/-0.3	0	+/-17	0.0%
INCOME AND BENEFITS (IN 2012 INFLATION-ADJUSTED DOLLARS)					
Total households	9,609	(X)	2,916	+/-277	2,916
Less than $10,000	6.0%	+/-1.7	327	+/-123	11.2%
$10,000 to $14,999	4.8%	+/-1.7	178	+/-85	6.1%
$15,000 to $24,999	9.2%	+/-2.0	348	+/-133	11.9%
$25,000 to $34,999	11.2%	+/-2.4	280	+/-113	9.6%
$35,000 to $49,999	13.5%	+/-2.4	314	+/-133	10.8%
$50,000 to $74,999	21.7%	+/-2.7	555	+/-147	19.0%
$75,000 to $99,999	13.2%	+/-2.0	269	+/-118	9.2%
$100,000 to $149,999	15.3%	+/-2.1	494	+/-146	16.9%
$150,000 to $199,999	3.1%	+/-0.9	140	+/-93	4.8%
$200,000 or more	1.8%	+/-0.7	11	+/-17	0.4%
Median household income (dollars)	(X)	(X)	52,115	+/-12,533	(X)
Mean household income (dollars)	(X)	(X)	59,757	+/-5,399	(X)
With earnings	84.7%	+/-2.1	2,254	+/-227	77.3%
Mean earnings (dollars)	(X)	(X)	63,503	+/-6,231	(X)
With Social Security	23.7%	+/-2.2	822	+/-169	28.2%
Mean Social Security income (dollars)	(X)	(X)	14,425	+/-2,172	(X)
With retirement income	21.8%	+/-2.2	507	+/-147	17.4%
Mean retirement income (dollars)	(X)	(X)	16,574	+/-3,373	(X)
With Supplemental Security Income	3.8%	+/-1.2	207	+/-90	7.1%
Mean Supplemental Security Income (dollars)	(X)	(X)	8,483	+/-2,027	(X)
With cash public assistance income	2.0%	+/-1.0	66	+/-78	2.3%
Mean cash public assistance income (dollars)	(X)	(X)	3,542	+/-1,817	(X)
With Food Stamp/SNAP benefits in the past 12 months	10.5%	+/-2.1	393	+/-121	13.5%
Families	7,260	(X)	2,234	+/-230	2,234
Less than $10,000	5.2%	+/-2.3	85	+/-60	3.8%
$10,000 to $14,999	3.9%	+/-1.6	90	+/-72	4.0%
$15,000 to $24,999	7.9%	+/-2.2	215	+/-117	9.6%
$25,000 to $34,999	8.2%	+/-2.2	214	+/-92	9.6%
$35,000 to $49,999	11.8%	+/-2.5	285	+/-123	12.8%
$50,000 to $74,999	21.9%	+/-3.4	464	+/-125	20.8%
$75,000 to $99,999	15.9%	+/-2.5	277	+/-119	12.4%
$100,000 to $149,999	19.0%	+/-2.5	486	+/-145	21.8%
$150,000 to $199,999	3.9%	+/-1.3	107	+/-73	4.8%
$200,000 or more	2.3%	+/-1.0	11	+/-17	0.5%
Median family income (dollars)	(X)	(X)	61,587	+/-5,424	(X)
Mean family income (dollars)	(X)	(X)	69,449	+/-5,878	(X)
Per capita income (dollars)	(X)	(X)	22,164	+/-2,336	(X)
Nonfamily households	2,349	(X)	682	+/-202	682

Subject	Elmore CCD, Elmore County, Alabama		Tallassee CCD, Elmore County, Alabama		
	Percent	Percent Margin of Error	Estimate	Margin of Error	Percent
Median nonfamily income (dollars)	(X)	(X)	15,259	+/-4,699	(X)
Mean nonfamily income (dollars)	(X)	(X)	26,724	+/-12,386	(X)
Median earnings for workers (dollars)	(X)	(X)	30,392	+/-3,756	(X)
Median earnings for male full-time, year-round workers (dollars)	(X)	(X)	43,116	+/-3,898	(X)
Median earnings for female full-time, year-round workers (dollars)	(X)	(X)	32,857	+/-6,034	(X)
HEALTH INSURANCE COVERAGE					
Civilian noninstitutionalized population	25,043	(X)	7,841	+/-698	7,841
With health insurance coverage	88.5%	+/-1.5	7,043	+/-624	89.8%
With private health insurance	74.6%	+/-2.2	5,924	+/-651	75.6%
With public coverage	25.5%	+/-2.2	1,942	+/-371	24.8%
No health insurance coverage	11.5%	+/-1.5	798	+/-304	10.2%
Civilian noninstitutionalized population under 18 years	6,699	(X)	2,144	+/-386	2,144
No health insurance coverage	5.6%	+/-2.1	127	+/-106	5.9%
Civilian noninstitutionalized population 18 to 64 years	15,942	(X)	4,695	+/-437	4,695
In labor force:	12,552	(X)	3,635	+/-359	3,635
Employed:	11,536	(X)	3,362	+/-367	3,362
With health insurance coverage	86.2%	+/-2.2	2,988	+/-341	88.9%
With private health insurance	83.2%	+/-2.4	2,980	+/-340	88.6%
With public coverage	6.6%	+/-1.7	97	+/-67	2.9%
No health insurance coverage	13.8%	+/-2.2	374	+/-176	11.1%
Unemployed:	1,016	(X)	273	+/-127	273
With health insurance coverage	55.2%	+/-9.0	196	+/-110	71.8%
With private health insurance	37.1%	+/-9.3	94	+/-62	34.4%
With public coverage	19.1%	+/-9.1	102	+/-95	37.4%
No health insurance coverage	44.8%	+/-9.0	77	+/-55	28.2%
Not in labor force:	3,390	(X)	1,060	+/-217	1,060
With health insurance coverage	86.5%	+/-4.1	840	+/-188	79.2%
With private health insurance	68.8%	+/-6.2	607	+/-168	57.3%
With public coverage	30.7%	+/-6.0	381	+/-127	35.9%
No health insurance coverage	13.5%	+/-4.1	220	+/-122	20.8%
PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL					
All families	13.3%	+/-2.8	(X)	(X)	9.7%
With related children under 18 years	19.0%	+/-5.1	(X)	(X)	17.2%
With related children under 5 years only	23.3%	+/-12.0	(X)	(X)	31.5%
Married couple families	7.6%	+/-2.7	(X)	(X)	1.5%
With related children under 18 years	11.2%	+/-4.6	(X)	(X)	1.5%
With related children under 5 years only	21.4%	+/-13.6	(X)	(X)	0.0%
Families with female householder, no husband present	31.6%	+/-9.0	(X)	(X)	25.1%
With related children under 18 years	40.1%	+/-12.9	(X)	(X)	36.4%
With related children under 5 years only	33.9%	+/-21.6	(X)	(X)	69.5%
All people	14.5%	+/-2.4	(X)	(X)	12.3%
Under 18 years	20.4%	+/-5.3	(X)	(X)	16.0%
Related children under 18 years	20.3%	+/-5.3	(X)	(X)	16.0%
Related children under 5 years	24.8%	+/-8.0	(X)	(X)	27.4%
Related children 5 to 17 years	18.3%	+/-6.4	(X)	(X)	13.7%
18 years and over	12.3%	+/-1.9	(X)	(X)	10.9%
18 to 64 years	12.0%	+/-2.1	(X)	(X)	9.9%
65 years and over	14.6%	+/-5.4	(X)	(X)	15.8%
People in families	13.6%	+/-2.6	(X)	(X)	9.1%

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Subject	Elmore CCD, Elmore County, Alabama		Tallassee CCD, Elmore County, Alabama		
	Percent	Percent Margin of Error	Estimate	Margin of Error	Percent
Unrelated individuals 15 years and over	21.6%	+/-4.4	(X)	(X)	40.7%

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Subject	Tallassee CCD, Elmore County, Alabama	Titus CCD, Elmore County, Alabama			
	Percent Margin of Error	Estimate	Margin of Error	Percent	Percent Margin of Error
EMPLOYMENT STATUS					
Population 16 years and over	(X)	3,721	+/-285	3,721	(X)
In labor force	+/-3.6	2,180	+/-265	58.6%	+/-6.3
Civilian labor force	+/-3.6	2,180	+/-265	58.6%	+/-6.3
Employed	+/-4.5	1,914	+/-262	51.4%	+/-6.3
Unemployed	+/-3.0	266	+/-115	7.1%	+/-3.1
Armed Forces	+/-0.3	0	+/-12	0.0%	+/-0.9
Not in labor force	+/-3.6	1,541	+/-274	41.4%	+/-6.3
Civilian labor force	(X)	2,180	+/-265	2,180	(X)
Percent Unemployed	+/-4.6	(X)	(X)	12.2%	+/-5.2
Females 16 years and over	(X)	1,941	+/-230	1,941	(X)
In labor force	+/-4.9	1,081	+/-229	55.7%	+/-9.7
Civilian labor force	+/-4.9	1,081	+/-229	55.7%	+/-9.7
Employed	+/-5.8	908	+/-219	46.8%	+/-9.5
Own children under 6 years	(X)	366	+/-111	366	(X)
All parents in family in labor force	+/-17.4	270	+/-117	73.8%	+/-21.3
Own children 6 to 17 years	(X)	661	+/-190	661	(X)
All parents in family in labor force	+/-9.4	464	+/-172	70.2%	+/-15.3
COMMUTING TO WORK					
Workers 16 years and over	(X)	1,875	+/-255	1,875	(X)
Car, truck, or van -- drove alone	+/-3.4	1,483	+/-252	79.1%	+/-8.8
Car, truck, or van -- carpooled	+/-2.6	217	+/-125	11.6%	+/-6.3
Public transportation (excluding taxicab)	+/-0.9	15	+/-24	0.8%	+/-1.3
Walked	+/-0.9	67	+/-79	3.6%	+/-4.2
Other means	+/-1.5	23	+/-27	1.2%	+/-1.5
Worked at home	+/-0.7	70	+/-58	3.7%	+/-3.0
Mean travel time to work (minutes)	(X)	36.7	+/-4.0	(X)	(X)
OCCUPATION					
Civilian employed population 16 years and over	(X)	1,914	+/-262	1,914	(X)
Management, business, science, and arts occupations	+/-5.2	580	+/-185	30.3%	+/-10.0
Service occupations	+/-4.8	343	+/-180	17.9%	+/-8.8
Sales and office occupations	+/-5.2	428	+/-139	22.4%	+/-6.6
Natural resources, construction, and maintenance occupations	+/-2.9	300	+/-106	15.7%	+/-5.6
Production, transportation, and material moving occupations	+/-5.9	263	+/-164	13.7%	+/-7.9
INDUSTRY					
Civilian employed population 16 years and over	(X)	1,914	+/-262	1,914	(X)
Agriculture, forestry, fishing and hunting, and mining	+/-1.2	23	+/-34	1.2%	+/-1.8
Construction	+/-3.3	188	+/-104	9.8%	+/-5.3
Manufacturing	+/-5.3	246	+/-146	12.9%	+/-7.0
Wholesale trade	+/-3.0	82	+/-70	4.3%	+/-3.7
Retail trade	+/-4.5	184	+/-119	9.6%	+/-5.6
Transportation and warehousing, and utilities	+/-2.2	47	+/-39	2.5%	+/-2.1
Information	+/-0.9	0	+/-12	0.0%	+/-1.7
Finance and insurance, and real estate and rental and leasing	+/-1.5	81	+/-61	4.2%	+/-3.2
Professional, scientific, and management, and administrative and waste management services	+/-3.6	206	+/-94	10.8%	+/-4.8
Educational services, and health care and social assistance	+/-4.8	473	+/-165	24.7%	+/-8.2

Subject	Tallassee CCD, Elmore County, Alabama	Titus CCD, Elmore County, Alabama			
	Percent Margin of Error	Estimate	Margin of Error	Percent	Percent Margin of Error
Arts, entertainment, and recreation, and accommodation and food services	+/-3.6	77	+/-53	4.0%	+/-2.8
Other services, except public administration	+/-2.1	77	+/-57	4.0%	+/-3.1
Public administration	+/-3.0	230	+/-91	12.0%	+/-5.1
CLASS OF WORKER					
Civilian employed population 16 years and over	(X)	1,914	+/-262	1,914	(X)
Private wage and salary workers	+/-6.1	1,226	+/-270	64.1%	+/-9.3
Government workers	+/-5.7	519	+/-118	27.1%	+/-7.4
Self-employed in own not incorporated business workers	+/-2.2	169	+/-147	8.8%	+/-7.4
Unpaid family workers	+/-0.9	0	+/-12	0.0%	+/-1.7
INCOME AND BENEFITS (IN 2012 INFLATION-ADJUSTED DOLLARS)					
Total households	(X)	1,823	+/-151	1,823	(X)
Less than $10,000	+/-3.9	116	+/-101	6.4%	+/-5.4
$10,000 to $14,999	+/-2.8	56	+/-45	3.1%	+/-2.4
$15,000 to $24,999	+/-4.6	311	+/-132	17.1%	+/-6.9
$25,000 to $34,999	+/-3.6	178	+/-82	9.8%	+/-4.3
$35,000 to $49,999	+/-4.3	208	+/-93	11.4%	+/-5.2
$50,000 to $74,999	+/-5.4	392	+/-143	21.5%	+/-7.5
$75,000 to $99,999	+/-3.9	240	+/-95	13.2%	+/-5.2
$100,000 to $149,999	+/-4.6	268	+/-88	14.7%	+/-5.2
$150,000 to $199,999	+/-3.1	33	+/-31	1.8%	+/-1.8
$200,000 or more	+/-0.6	21	+/-24	1.2%	+/-1.3
Median household income (dollars)	(X)	50,900	+/-3,797	(X)	(X)
Mean household income (dollars)	(X)	59,176	+/-6,549	(X)	(X)
With earnings	+/-4.7	1,257	+/-140	69.0%	+/-6.9
Mean earnings (dollars)	(X)	63,982	+/-8,055	(X)	(X)
With Social Security	+/-5.2	659	+/-105	36.1%	+/-5.7
Mean Social Security income (dollars)	(X)	18,030	+/-1,966	(X)	(X)
With retirement income	+/-4.4	547	+/-137	30.0%	+/-7.4
Mean retirement income (dollars)	(X)	17,103	+/-3,236	(X)	(X)
With Supplemental Security Income	+/-3.0	76	+/-54	4.2%	+/-3.0
Mean Supplemental Security Income (dollars)	(X)	8,221	+/-4,079	(X)	(X)
With cash public assistance income	+/-2.7	28	+/-43	1.5%	+/-2.3
Mean cash public assistance income (dollars)	(X)	550	+/-7	(X)	(X)
With Food Stamp/SNAP benefits in the past 12 months	+/-4.2	228	+/-109	12.5%	+/-5.6
Families	(X)	1,422	+/-157	1,422	(X)
Less than $10,000	+/-2.6	105	+/-99	7.4%	+/-6.8
$10,000 to $14,999	+/-3.1	33	+/-31	2.3%	+/-2.2
$15,000 to $24,999	+/-5.4	173	+/-96	12.2%	+/-6.7
$25,000 to $34,999	+/-4.0	134	+/-73	9.4%	+/-4.9
$35,000 to $49,999	+/-5.0	99	+/-60	7.0%	+/-4.2
$50,000 to $74,999	+/-5.9	343	+/-146	24.1%	+/-9.5
$75,000 to $99,999	+/-5.1	213	+/-85	15.0%	+/-5.7
$100,000 to $149,999	+/-6.2	268	+/-88	18.8%	+/-6.9
$150,000 to $199,999	+/-3.2	33	+/-31	2.3%	+/-2.3
$200,000 or more	+/-0.7	21	+/-24	1.5%	+/-1.7
Median family income (dollars)	(X)	56,989	+/-10,684	(X)	(X)
Mean family income (dollars)	(X)	65,584	+/-7,784	(X)	(X)
Per capita income (dollars)	(X)	23,342	+/-2,161	(X)	(X)
Nonfamily households	(X)	401	+/-116	401	(X)

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Subject	Tallassee CCD, Elmore County, Alabama	Titus CCD, Elmore County, Alabama			
	Percent Margin of Error	Estimate	Margin of Error	Percent	Percent Margin of Error
Median nonfamily income (dollars)	(X)	30,197	+/-18,962	(X)	(X)
Mean nonfamily income (dollars)	(X)	34,804	+/-7,644	(X)	(X)
Median earnings for workers (dollars)	(X)	29,177	+/-5,479	(X)	(X)
Median earnings for male full-time, year-round workers (dollars)	(X)	51,580	+/-3,682	(X)	(X)
Median earnings for female full-time, year-round workers (dollars)	(X)	25,250	+/-11,674	(X)	(X)
HEALTH INSURANCE COVERAGE					
Civilian noninstitutionalized population	(X)	4,650	+/-373	4,650	(X)
With health insurance coverage	+/-3.5	4,274	+/-368	91.9%	+/-3.2
With private health insurance	+/-5.1	3,439	+/-399	74.0%	+/-6.9
With public coverage	+/-4.7	1,744	+/-286	37.5%	+/-5.6
No health insurance coverage	+/-3.5	376	+/-153	8.1%	+/-3.2
Civilian noninstitutionalized population under 18 years	(X)	1,118	+/-196	1,118	(X)
No health insurance coverage	+/-4.7	31	+/-53	2.8%	+/-4.5
Civilian noninstitutionalized population 18 to 64 years	(X)	2,796	+/-253	2,796	(X)
In labor force:	(X)	2,100	+/-265	2,100	(X)
Employed:	(X)	1,834	+/-262	1,834	(X)
With health insurance coverage	+/-4.8	1,618	+/-234	88.2%	+/-5.6
With private health insurance	+/-4.9	1,618	+/-234	88.2%	+/-5.6
With public coverage	+/-2.0	83	+/-56	4.5%	+/-3.2
No health insurance coverage	+/-4.8	216	+/-113	11.8%	+/-5.6
Unemployed:	(X)	266	+/-115	266	(X)
With health insurance coverage	+/-18.3	166	+/-85	62.4%	+/-25.1
With private health insurance	+/-23.1	147	+/-84	55.3%	+/-26.3
With public coverage	+/-24.7	53	+/-35	19.9%	+/-14.1
No health insurance coverage	+/-18.3	100	+/-87	37.6%	+/-25.1
Not in labor force:	(X)	696	+/-180	696	(X)
With health insurance coverage	+/-10.0	667	+/-171	95.8%	+/-5.9
With private health insurance	+/-12.2	503	+/-154	72.3%	+/-13.3
With public coverage	+/-10.2	303	+/-114	43.5%	+/-13.5
No health insurance coverage	+/-10.0	29	+/-43	4.2%	+/-5.9
PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL					
All families	+/-4.6	(X)	(X)	10.9%	+/-6.4
With related children under 18 years	+/-8.7	(X)	(X)	20.1%	+/-12.3
With related children under 5 years only	+/-26.8	(X)	(X)	11.9%	+/-16.2
Married couple families	+/-1.7	(X)	(X)	2.5%	+/-2.8
With related children under 18 years	+/-2.3	(X)	(X)	4.1%	+/-6.5
With related children under 5 years only	+/-26.3	(X)	(X)	11.2%	+/-20.0
Families with female householder, no husband present	+/-14.1	(X)	(X)	39.1%	+/-23.4
With related children under 18 years	+/-19.9	(X)	(X)	46.7%	+/-25.9
With related children under 5 years only	+/-45.9	(X)	(X)	14.0%	+/-46.6
All people	+/-4.6	(X)	(X)	10.8%	+/-5.6
Under 18 years	+/-9.0	(X)	(X)	17.6%	+/-11.1
Related children under 18 years	+/-9.0	(X)	(X)	16.9%	+/-11.3
Related children under 5 years	+/-20.3	(X)	(X)	10.1%	+/-12.1
Related children 5 to 17 years	+/-9.3	(X)	(X)	20.1%	+/-15.3
18 years and over	+/-3.6	(X)	(X)	8.7%	+/-4.6
18 to 64 years	+/-4.1	(X)	(X)	9.6%	+/-5.8
65 years and over	+/-8.5	(X)	(X)	5.0%	+/-5.9

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Subject	Tallassee CCD, Elmore County, Alabama	Titus CCD, Elmore County, Alabama			
	Percent Margin of Error	Estimate	Margin of Error	Percent	Percent Margin of Error
People in families	+/-4.8	(X)	(X)	9.6%	+/-5.8
Unrelated individuals 15 years and over	+/-14.1	(X)	(X)	20.1%	+/-15.4

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Subject	Wetumpka CCD, Elmore County, Alabama			
	Estimate	Margin of Error	Percent	Percent Margin of Error
EMPLOYMENT STATUS				
Population 16 years and over	19,068	+/-753	19,068	(X)
In labor force	11,969	+/-721	62.8%	+/-2.8
Civilian labor force	11,813	+/-705	62.0%	+/-2.7
Employed	10,986	+/-645	57.6%	+/-2.5
Unemployed	827	+/-210	4.3%	+/-1.1
Armed Forces	156	+/-137	0.8%	+/-0.7
Not in labor force	7,099	+/-590	37.2%	+/-2.8
Civilian labor force	11,813	+/-705	11,813	(X)
Percent Unemployed	(X)	(X)	7.0%	+/-1.7
Females 16 years and over	10,342	+/-476	10,342	(X)
In labor force	5,787	+/-434	56.0%	+/-3.6
Civilian labor force	5,762	+/-436	55.7%	+/-3.6
Employed	5,283	+/-381	51.1%	+/-3.3
Own children under 6 years	1,359	+/-267	1,359	(X)
All parents in family in labor force	929	+/-229	68.4%	+/-12.6
Own children 6 to 17 years	3,889	+/-479	3,889	(X)
All parents in family in labor force	2,996	+/-455	77.0%	+/-7.9
COMMUTING TO WORK				
Workers 16 years and over	10,842	+/-652	10,842	(X)
Car, truck, or van -- drove alone	9,316	+/-685	85.9%	+/-3.1
Car, truck, or van -- carpooled	979	+/-238	9.0%	+/-2.2
Public transportation (excluding taxicab)	13	+/-19	0.1%	+/-0.2
Walked	21	+/-22	0.2%	+/-0.2
Other means	145	+/-117	1.3%	+/-1.1
Worked at home	368	+/-173	3.4%	+/-1.6
Mean travel time to work (minutes)	28.8	+/-1.5	(X)	(X)
OCCUPATION				
Civilian employed population 16 years and over	10,986	+/-645	10,986	(X)
Management, business, science, and arts occupations	3,736	+/-374	34.0%	+/-2.7
Service occupations	1,748	+/-281	15.9%	+/-2.4
Sales and office occupations	2,423	+/-319	22.1%	+/-2.9
Natural resources, construction, and maintenance occupations	1,279	+/-251	11.6%	+/-2.1
Production, transportation, and material moving occupations	1,800	+/-333	16.4%	+/-2.8
INDUSTRY				
Civilian employed population 16 years and over	10,986	+/-645	10,986	(X)
Agriculture, forestry, fishing and hunting, and mining	37	+/-34	0.3%	+/-0.3
Construction	913	+/-255	8.3%	+/-2.2
Manufacturing	1,298	+/-293	11.8%	+/-2.6
Wholesale trade	362	+/-210	3.3%	+/-1.9
Retail trade	879	+/-228	8.0%	+/-1.9
Transportation and warehousing, and utilities	510	+/-160	4.6%	+/-1.5
Information	214	+/-102	1.9%	+/-0.9
Finance and insurance, and real estate and rental and leasing	612	+/-170	5.6%	+/-1.5
Professional, scientific, and management, and administrative and waste management services	1,051	+/-222	9.6%	+/-2.0
Educational services, and health care and social assistance	2,211	+/-332	20.1%	+/-3.1
Arts, entertainment, and recreation, and accommodation and food services	689	+/-193	6.3%	+/-1.7

Subject	Wetumpka CCD, Elmore County, Alabama			
	Estimate	Margin of Error	Percent	Percent Margin of Error
Other services, except public administration	568	+/-170	5.2%	+/-1.6
Public administration	1,642	+/-313	14.9%	+/-2.6
CLASS OF WORKER				
Civilian employed population 16 years and over	10,986	+/-645	10,986	(X)
Private wage and salary workers	7,416	+/-499	67.5%	+/-3.2
Government workers	2,727	+/-378	24.8%	+/-3.0
Self-employed in own not incorporated business workers	770	+/-226	7.0%	+/-2.0
Unpaid family workers	73	+/-63	0.7%	+/-0.6
INCOME AND BENEFITS (IN 2012 INFLATION-ADJUSTED DOLLARS)				
Total households	8,536	+/-417	8,536	(X)
Less than $10,000	491	+/-171	5.8%	+/-1.9
$10,000 to $14,999	359	+/-114	4.2%	+/-1.3
$15,000 to $24,999	563	+/-182	6.6%	+/-2.0
$25,000 to $34,999	833	+/-179	9.8%	+/-2.0
$35,000 to $49,999	1,156	+/-250	13.5%	+/-2.7
$50,000 to $74,999	1,893	+/-286	22.2%	+/-3.2
$75,000 to $99,999	1,355	+/-271	15.9%	+/-3.1
$100,000 to $149,999	1,279	+/-227	15.0%	+/-2.8
$150,000 to $199,999	366	+/-126	4.3%	+/-1.5
$200,000 or more	241	+/-102	2.8%	+/-1.2
Median household income (dollars)	61,556	+/-3,095	(X)	(X)
Mean household income (dollars)	71,527	+/-4,443	(X)	(X)
With earnings	6,833	+/-372	80.0%	+/-2.6
Mean earnings (dollars)	69,605	+/-3,999	(X)	(X)
With Social Security	2,486	+/-243	29.1%	+/-2.6
Mean Social Security income (dollars)	16,566	+/-980	(X)	(X)
With retirement income	2,405	+/-292	28.2%	+/-3.2
Mean retirement income (dollars)	26,048	+/-3,065	(X)	(X)
With Supplemental Security Income	319	+/-114	3.7%	+/-1.3
Mean Supplemental Security Income (dollars)	8,124	+/-1,226	(X)	(X)
With cash public assistance income	119	+/-98	1.4%	+/-1.2
Mean cash public assistance income (dollars)	3,370	+/-2,351	(X)	(X)
With Food Stamp/SNAP benefits in the past 12 months	724	+/-200	8.5%	+/-2.3
Families	6,162	+/-340	6,162	(X)
Less than $10,000	180	+/-101	2.9%	+/-1.6
$10,000 to $14,999	141	+/-81	2.3%	+/-1.3
$15,000 to $24,999	281	+/-129	4.6%	+/-2.1
$25,000 to $34,999	409	+/-118	6.6%	+/-1.8
$35,000 to $49,999	884	+/-205	14.3%	+/-3.2
$50,000 to $74,999	1,370	+/-246	22.2%	+/-3.8
$75,000 to $99,999	1,172	+/-256	19.0%	+/-3.9
$100,000 to $149,999	1,138	+/-209	18.5%	+/-3.5
$150,000 to $199,999	354	+/-124	5.7%	+/-2.0
$200,000 or more	233	+/-102	3.8%	+/-1.6
Median family income (dollars)	71,810	+/-4,115	(X)	(X)
Mean family income (dollars)	82,465	+/-4,887	(X)	(X)
Per capita income (dollars)	26,112	+/-1,560	(X)	(X)
Nonfamily households	2,374	+/-369	2,374	(X)
Median nonfamily income (dollars)	32,827	+/-4,703	(X)	(X)
Mean nonfamily income (dollars)	41,475	+/-4,540	(X)	(X)

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Subject	Wetumpka CCD, Elmore County, Alabama			
	Estimate	Margin of Error	Percent	Percent Margin of Error
Median earnings for workers (dollars)	32,252	+/-2,386	(X)	(X)
Median earnings for male full-time, year-round workers (dollars)	49,424	+/-4,254	(X)	(X)
Median earnings for female full-time, year-round workers (dollars)	39,462	+/-2,415	(X)	(X)
HEALTH INSURANCE COVERAGE				
Civilian noninstitutionalized population	22,331	+/-1,131	22,331	(X)
With health insurance coverage	19,705	+/-1,127	88.2%	+/-2.5
With private health insurance	17,025	+/-1,020	76.2%	+/-3.1
With public coverage	5,785	+/-578	25.9%	+/-2.2
No health insurance coverage	2,626	+/-584	11.8%	+/-2.5
Civilian noninstitutionalized population under 18 years	5,592	+/-506	5,592	(X)
No health insurance coverage	306	+/-152	5.5%	+/-2.7
Civilian noninstitutionalized population 18 to 64 years	13,806	+/-750	13,806	(X)
In labor force:	10,999	+/-656	10,999	(X)
Employed:	10,298	+/-617	10,298	(X)
With health insurance coverage	8,789	+/-623	85.3%	+/-3.4
With private health insurance	8,687	+/-605	84.4%	+/-3.5
With public coverage	404	+/-151	3.9%	+/-1.4
No health insurance coverage	1,509	+/-368	14.7%	+/-3.4
Unemployed:	701	+/-211	701	(X)
With health insurance coverage	336	+/-156	47.9%	+/-15.6
With private health insurance	332	+/-155	47.4%	+/-15.4
With public coverage	48	+/-42	6.8%	+/-5.6
No health insurance coverage	365	+/-149	52.1%	+/-15.6
Not in labor force:	2,807	+/-472	2,807	(X)
With health insurance coverage	2,361	+/-399	84.1%	+/-5.4
With private health insurance	1,620	+/-278	57.7%	+/-8.9
With public coverage	1,048	+/-306	37.3%	+/-7.0
No health insurance coverage	446	+/-181	15.9%	+/-5.4
PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL				
All families	(X)	(X)	8.4%	+/-2.6
With related children under 18 years	(X)	(X)	11.6%	+/-4.4
With related children under 5 years only	(X)	(X)	18.2%	+/-15.5
Married couple families	(X)	(X)	3.9%	+/-2.0
With related children under 18 years	(X)	(X)	5.9%	+/-3.9
With related children under 5 years only	(X)	(X)	0.0%	+/-11.0
Families with female householder, no husband present	(X)	(X)	31.1%	+/-12.3
With related children under 18 years	(X)	(X)	34.3%	+/-16.8
With related children under 5 years only	(X)	(X)	56.3%	+/-32.2
All people	(X)	(X)	12.4%	+/-3.5
Under 18 years	(X)	(X)	16.9%	+/-7.0
Related children under 18 years	(X)	(X)	16.6%	+/-7.0
Related children under 5 years	(X)	(X)	25.9%	+/-11.8
Related children 5 to 17 years	(X)	(X)	14.4%	+/-7.2
18 years and over	(X)	(X)	10.9%	+/-2.9
18 to 64 years	(X)	(X)	11.6%	+/-3.3
65 years and over	(X)	(X)	7.7%	+/-3.8
People in families	(X)	(X)	11.1%	+/-3.9
Unrelated individuals 15 years and over	(X)	(X)	21.1%	+/-5.3

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Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

There were changes in the edit between 2009 and 2010 regarding Supplemental Security Income (SSI) and Social Security. The changes in the edit loosened restrictions on disability requirements for receipt of SSI resulting in an increase in the total number of SSI recipients in the American Community Survey. The changes also loosened restrictions on possible reported monthly amounts in Social Security income resulting in higher Social Security aggregate amounts. These results more closely match administrative counts compiled by the Social Security Administration.

Workers include members of the Armed Forces and civilians who were at work last week.

Industry codes are 4-digit codes and are based on the North American Industry Classification System 2007. The Industry categories adhere to the guidelines issued in Clarification Memorandum No. 2, "NAICS Alternate Aggregation Structure for Use By U.S. Statistical Agencies," issued by the Office of Management and Budget.

While the 2008-2012 American Community Survey (ACS) data generally reflect the December 2009 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Source: U.S. Census Bureau, 2008-2012 American Community Survey

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

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Figure 3.13-1 Elmore County – Base Map

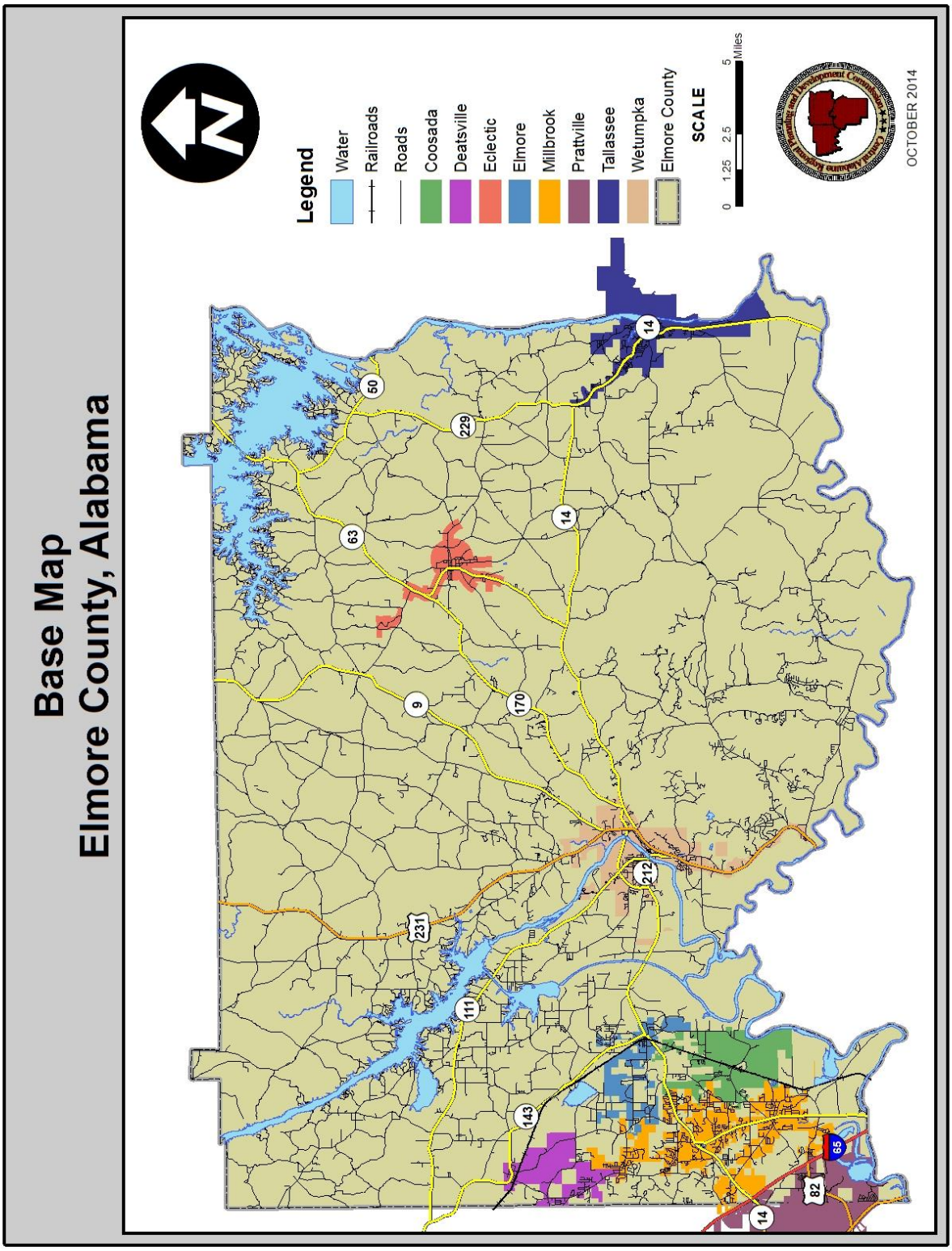


Figure 3.13-2 Elmore County Municipalities

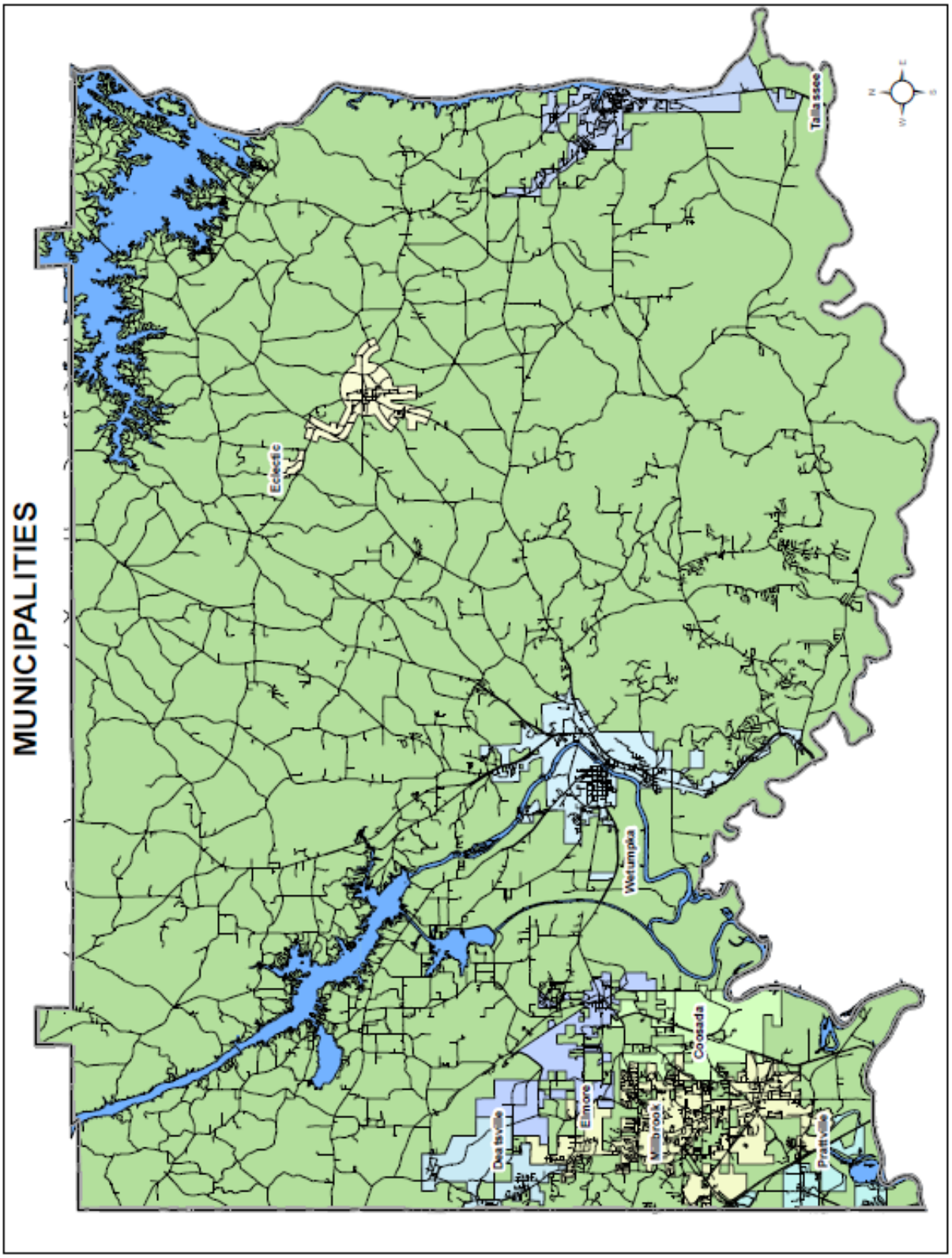


Figure 3.13-3 Elmore County Fire Stations

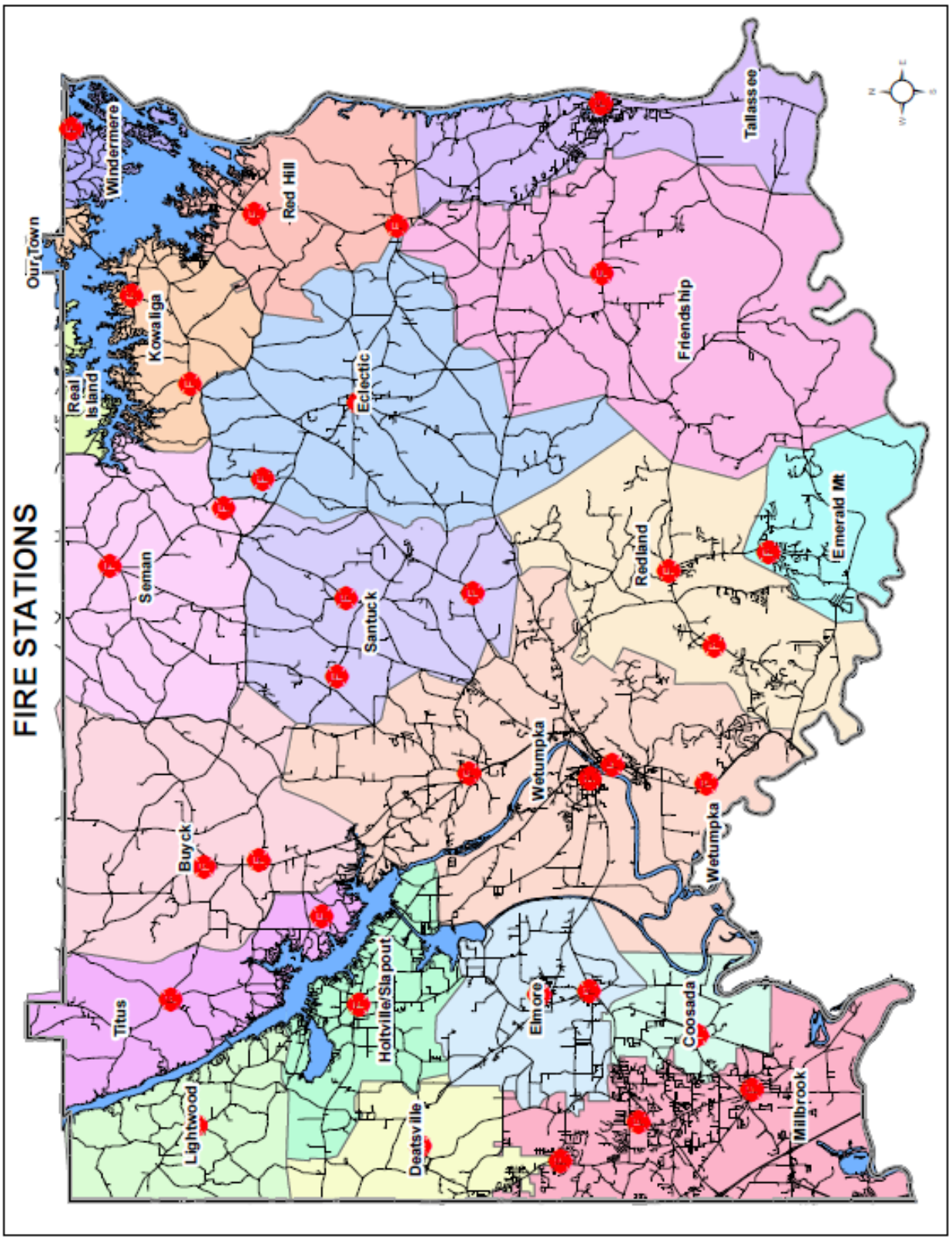


Figure 3.13-4 Elmore County Fire Districts

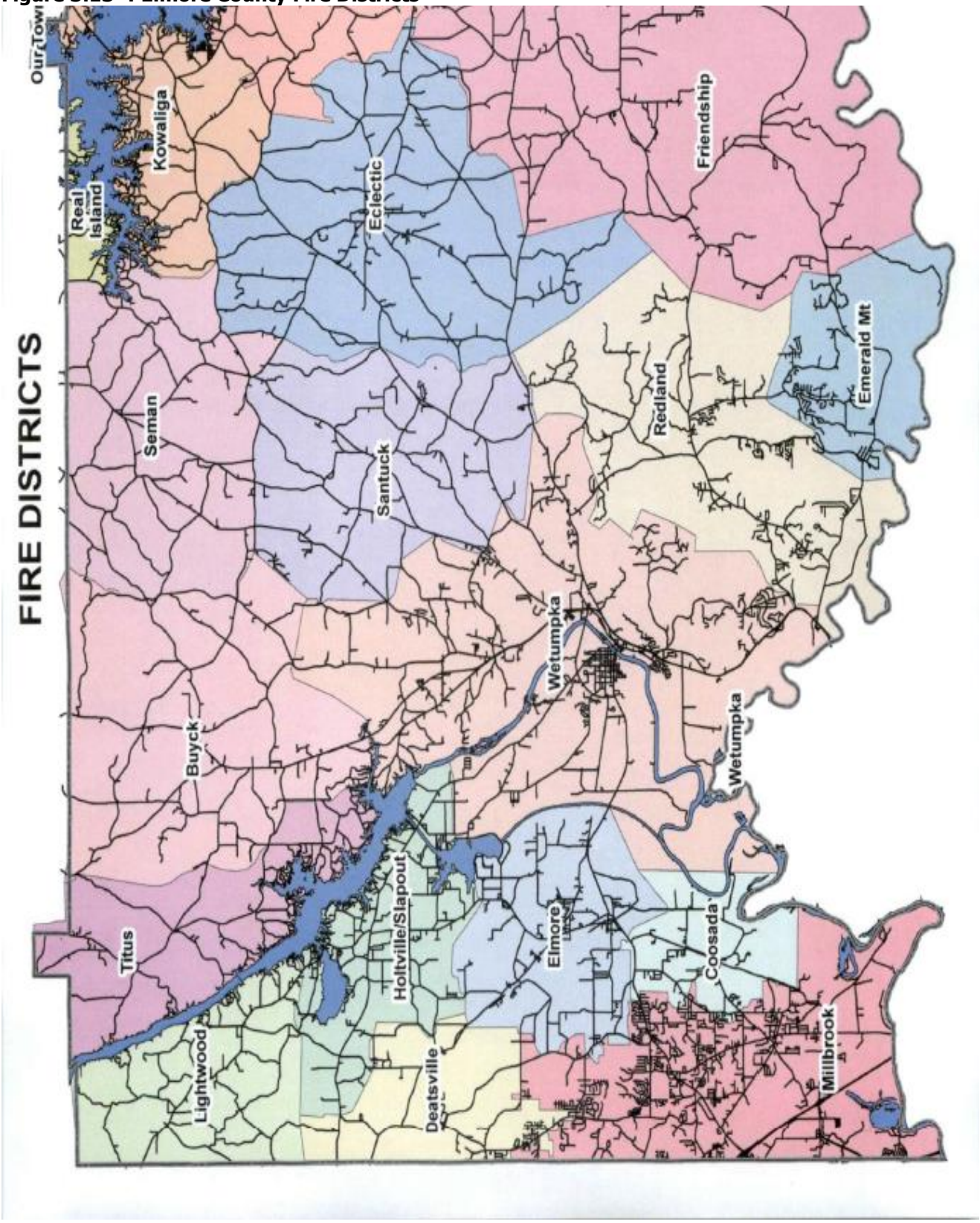


Figure 3.13-5 Elmore County Police Departments

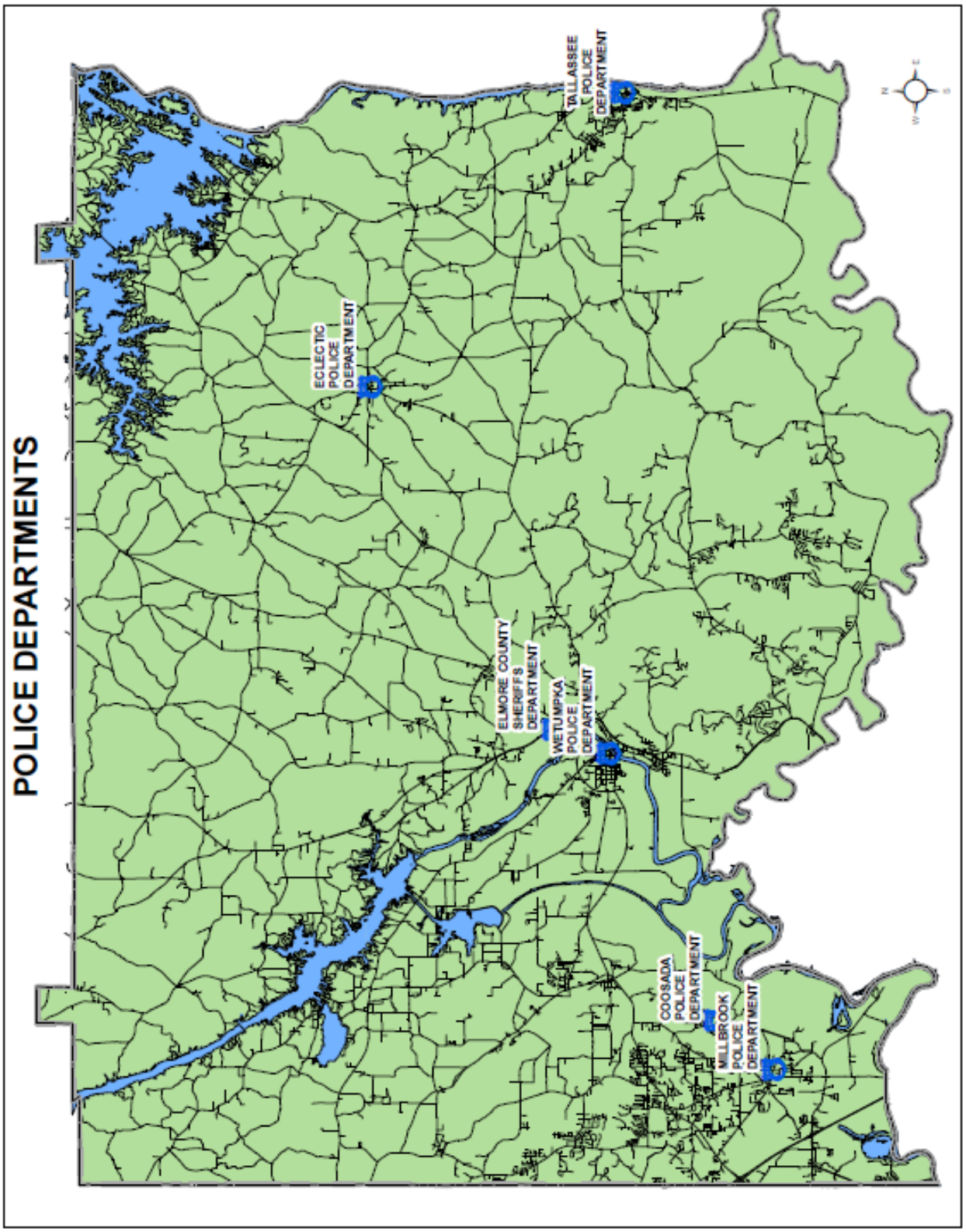


Figure 3.13-6 Elmore County Warning Polygons

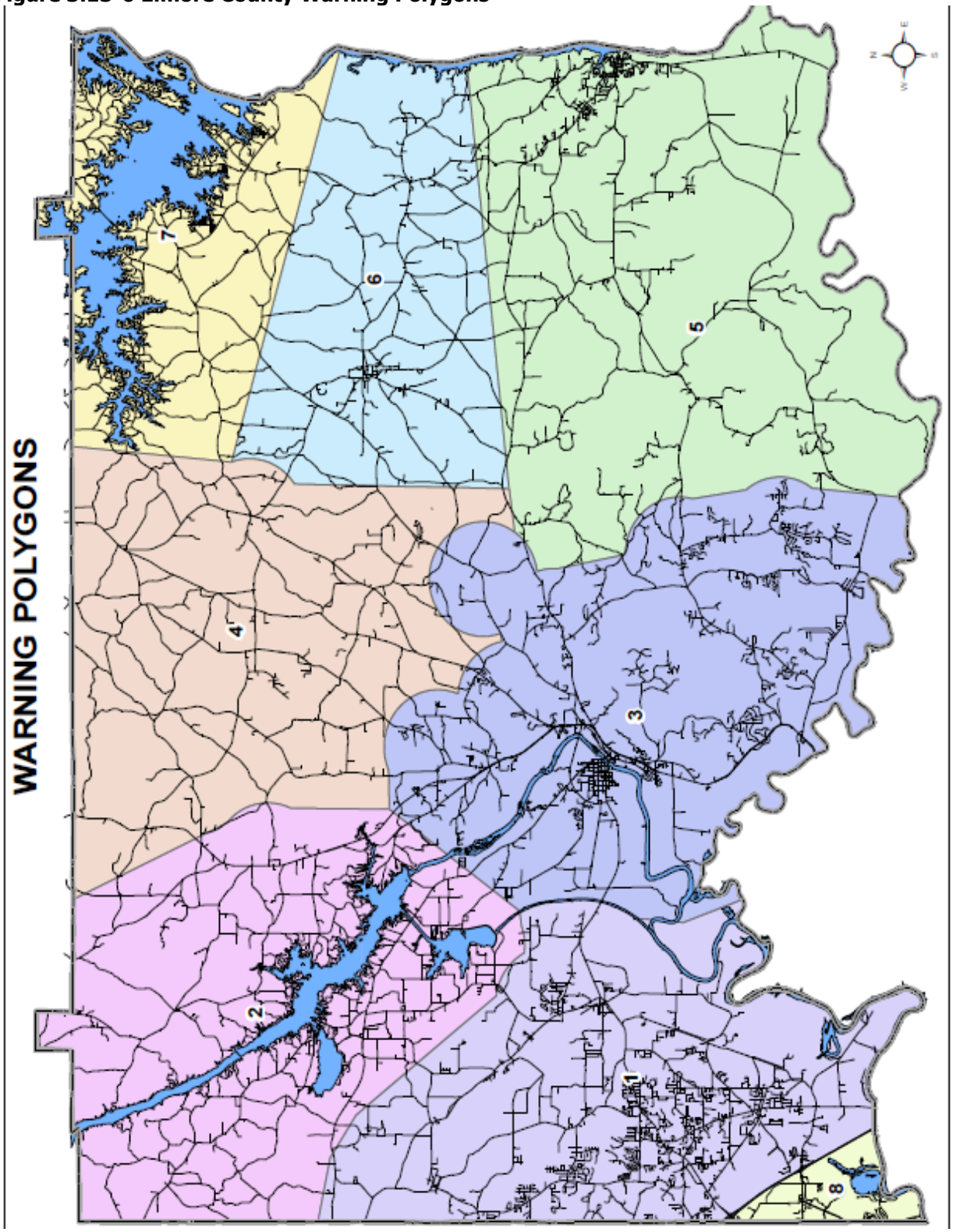


Figure 3.13-7 Elmore County Outdoor Warning Sirens / Coverage

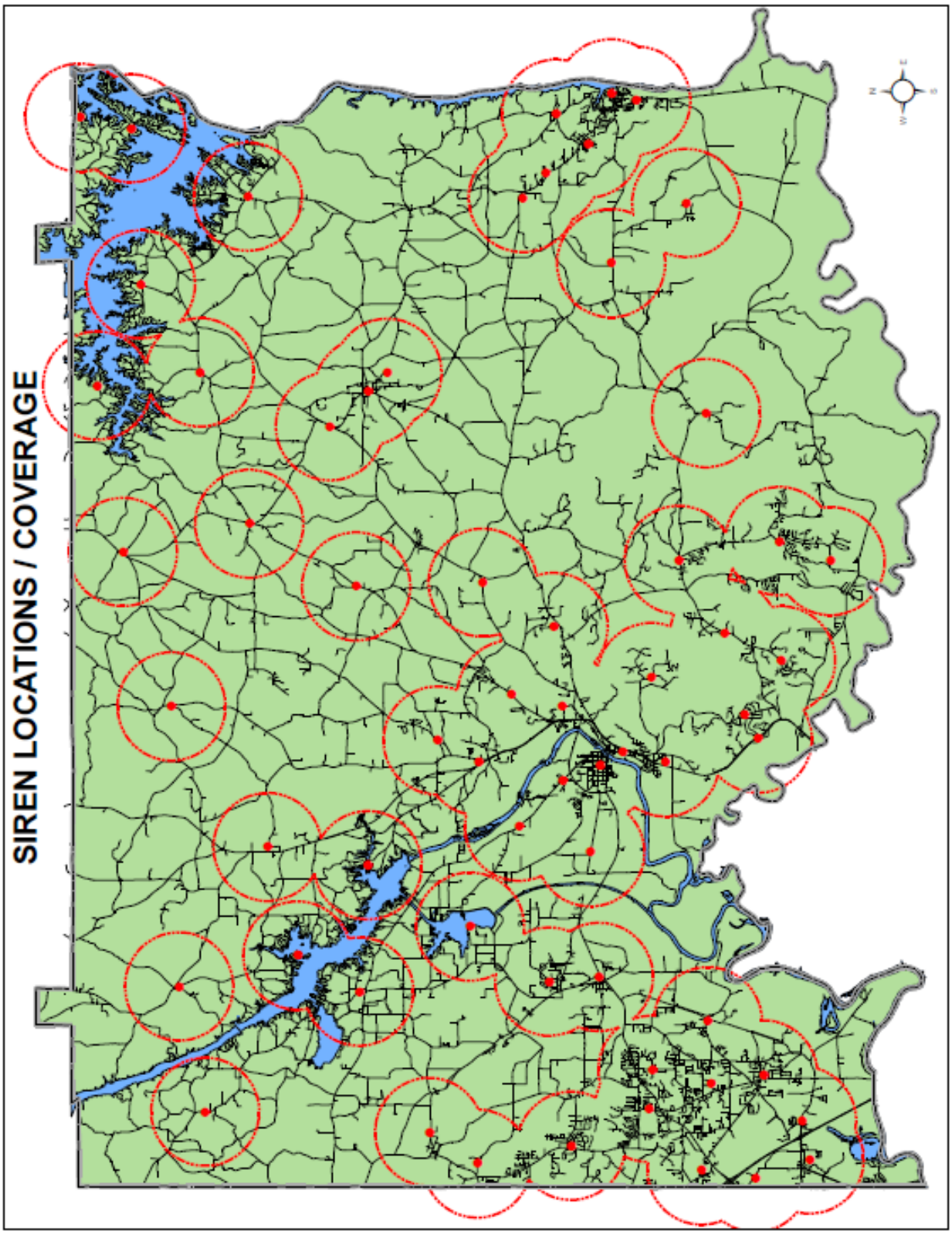


Figure 3.13-8 Elmore County Healthcare Facilities

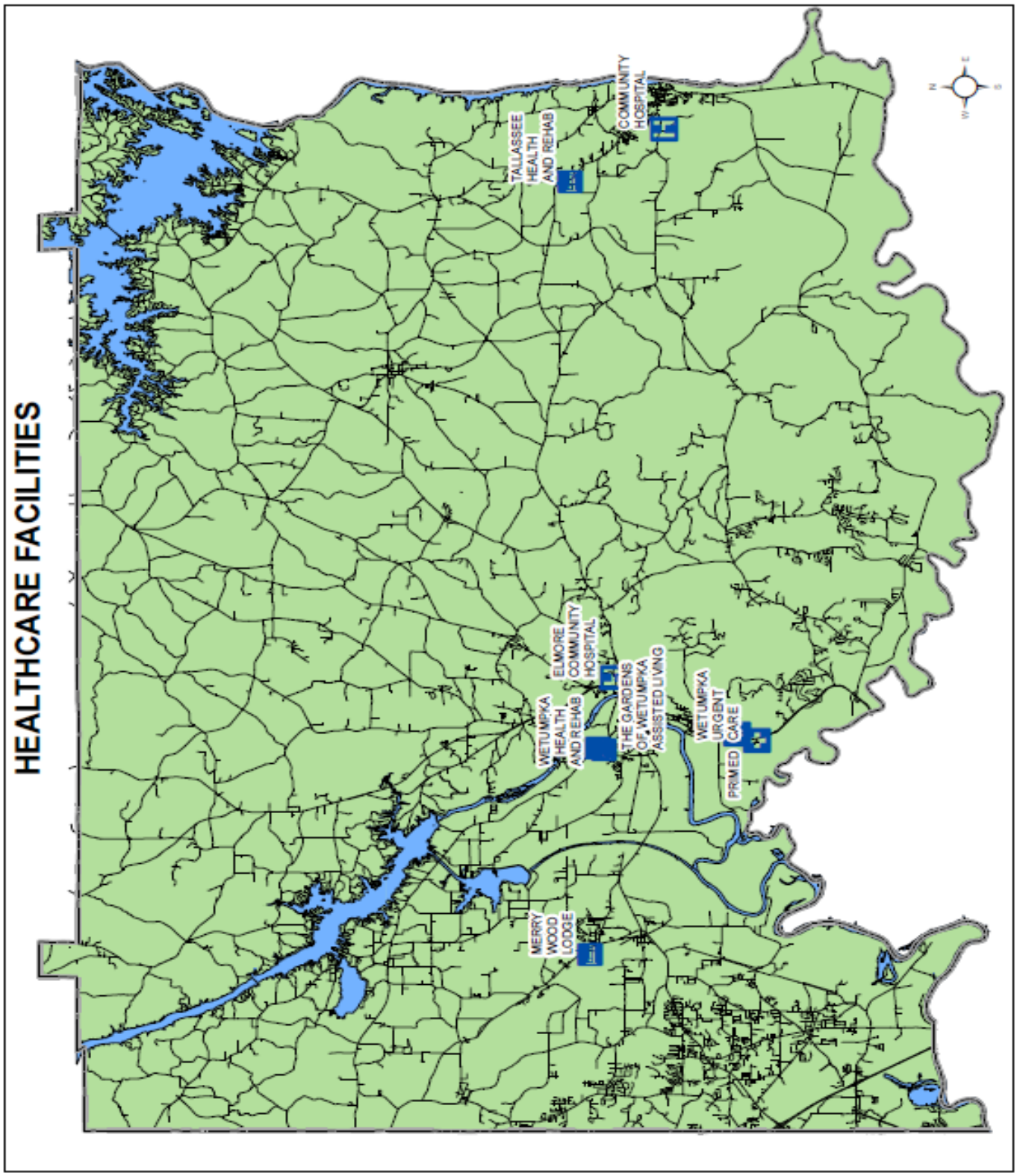


Figure 3.13-9 Elmore County Commission Districts

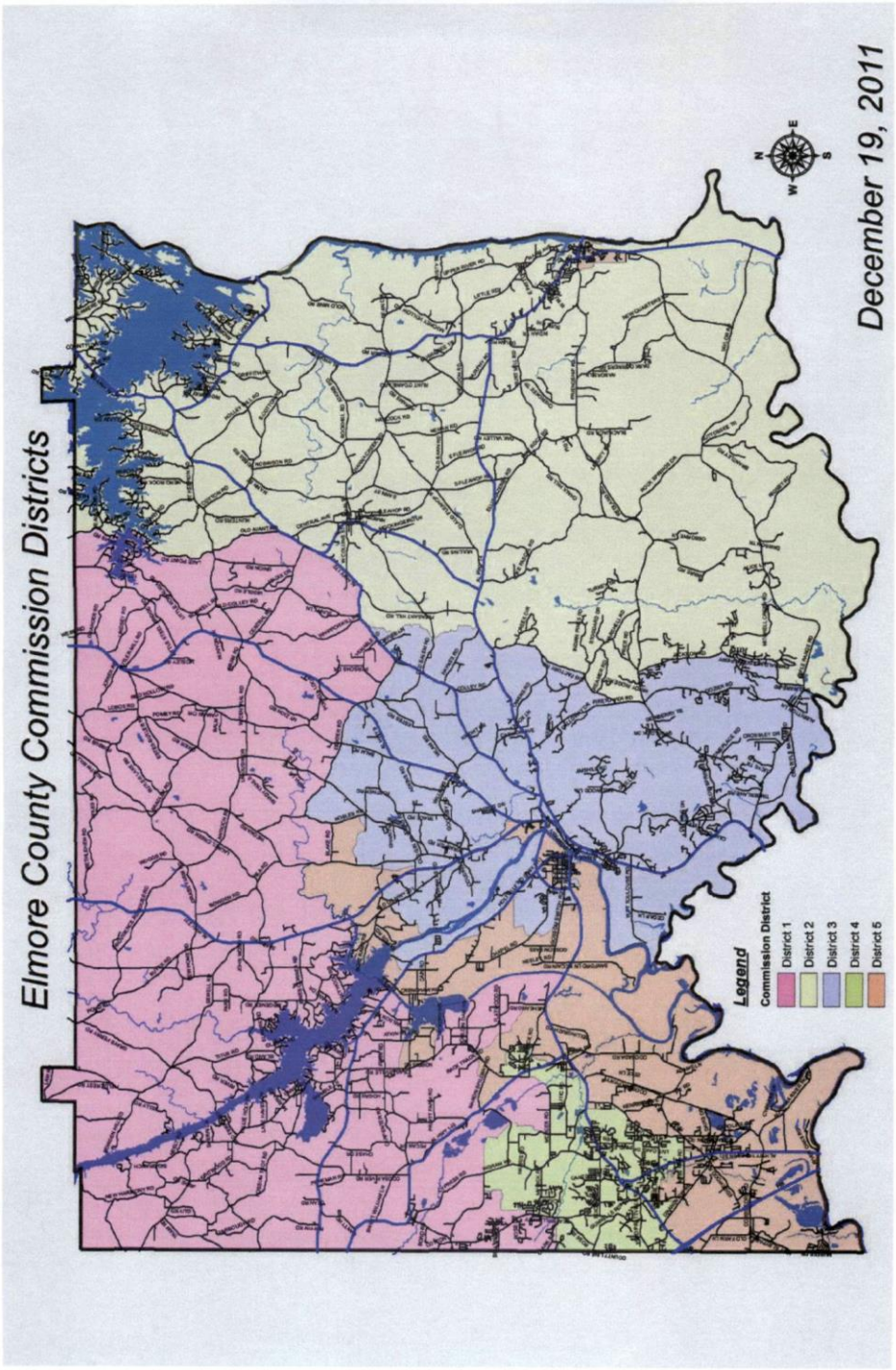


Figure 3.13-10 Elmore County Voting Districts

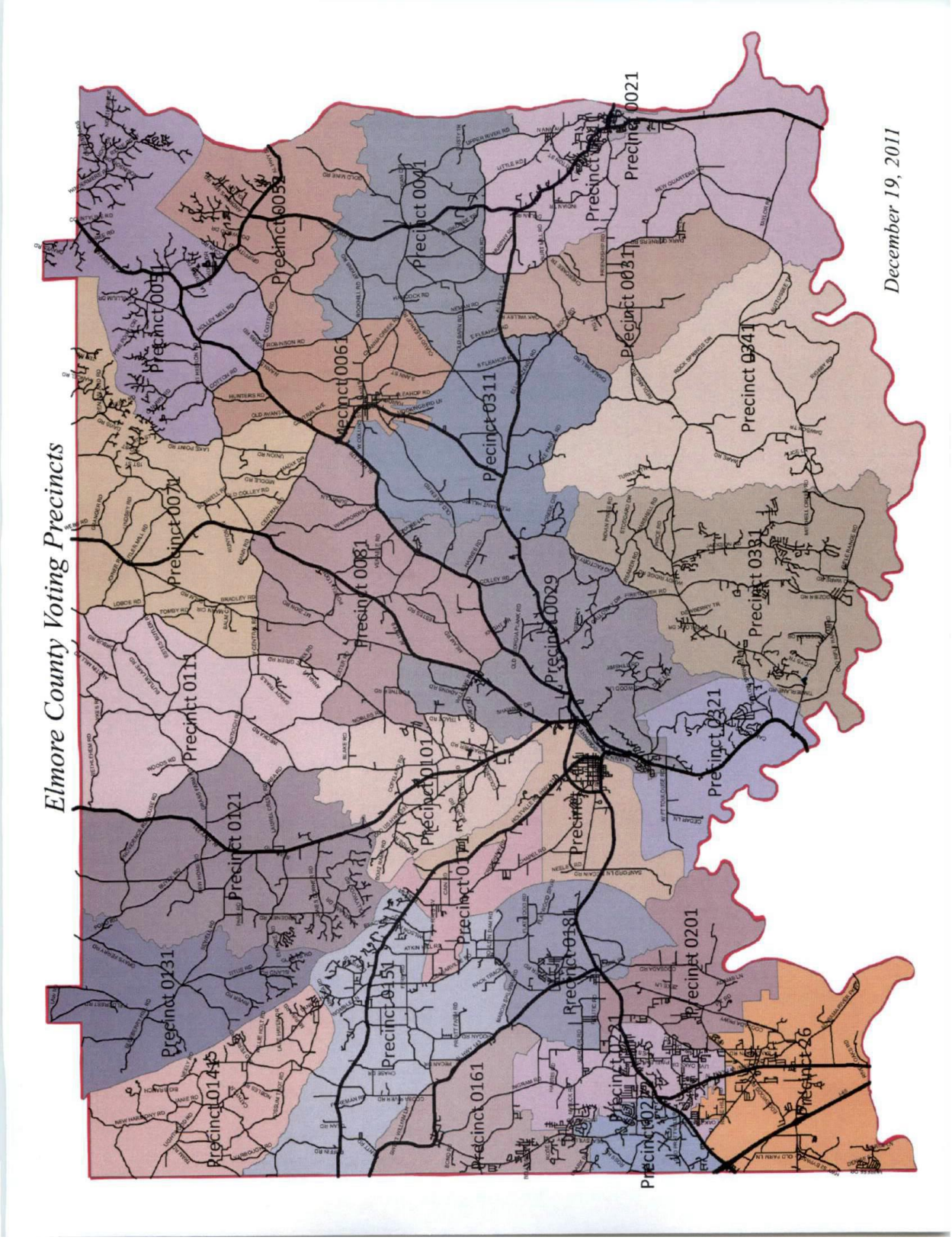


Figure 3.13-11 Town of Coosada – Base Map

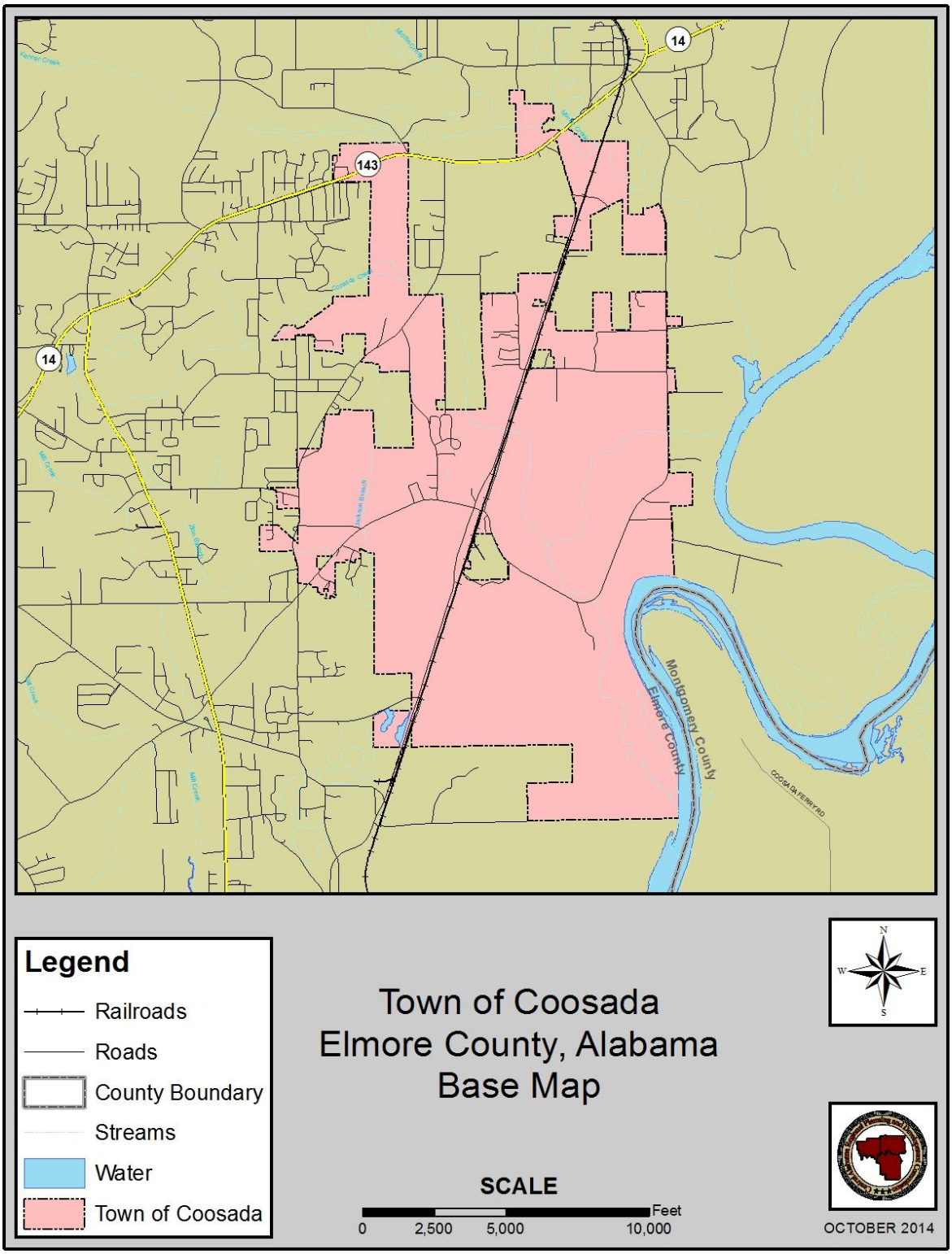


Figure 3.3-12 Town of Deatsville – Base Map

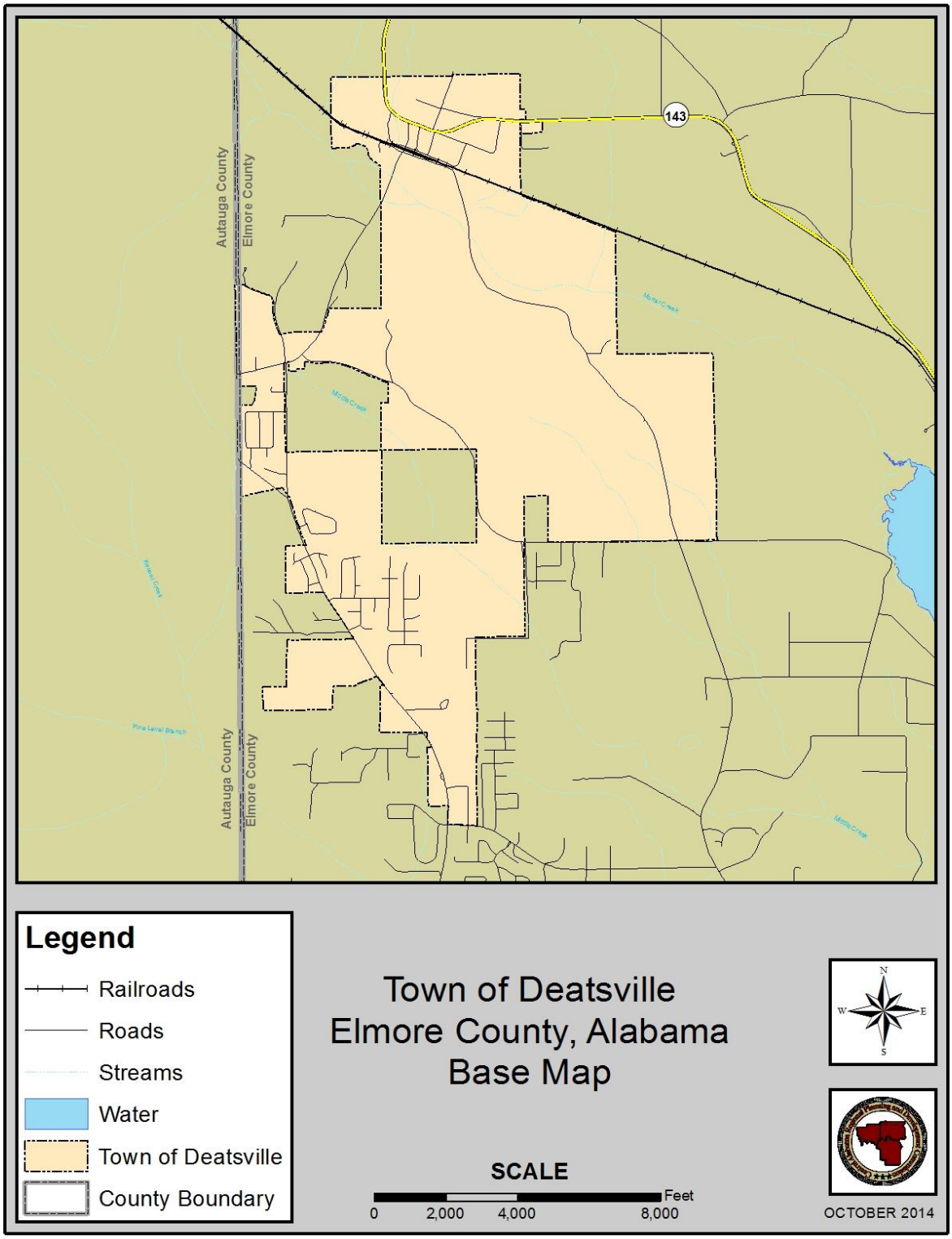


Figure 3.13-13 Town of Eclectic – Base Map

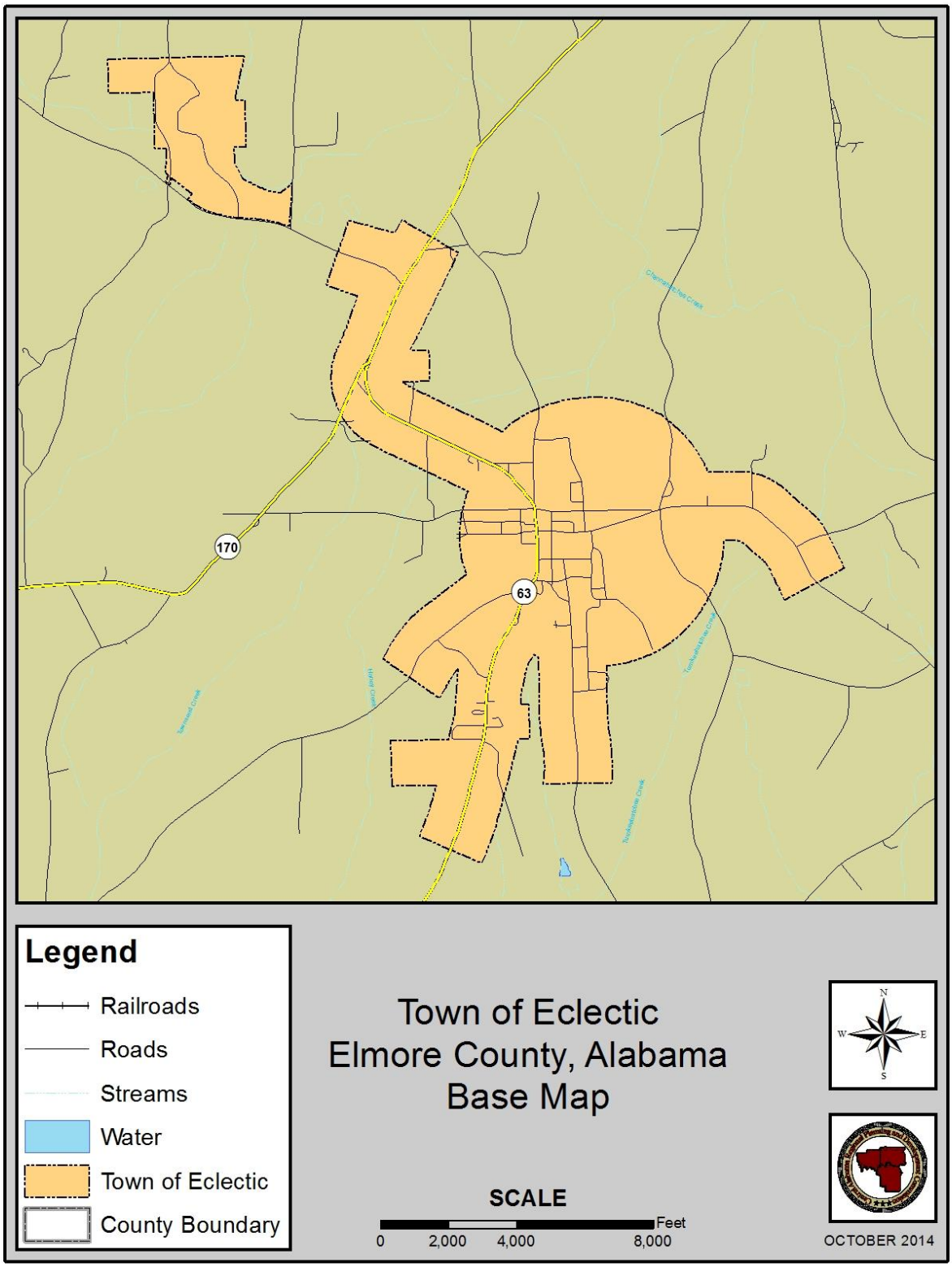


Figure 3.13-14 Town of Elmore – Base Map

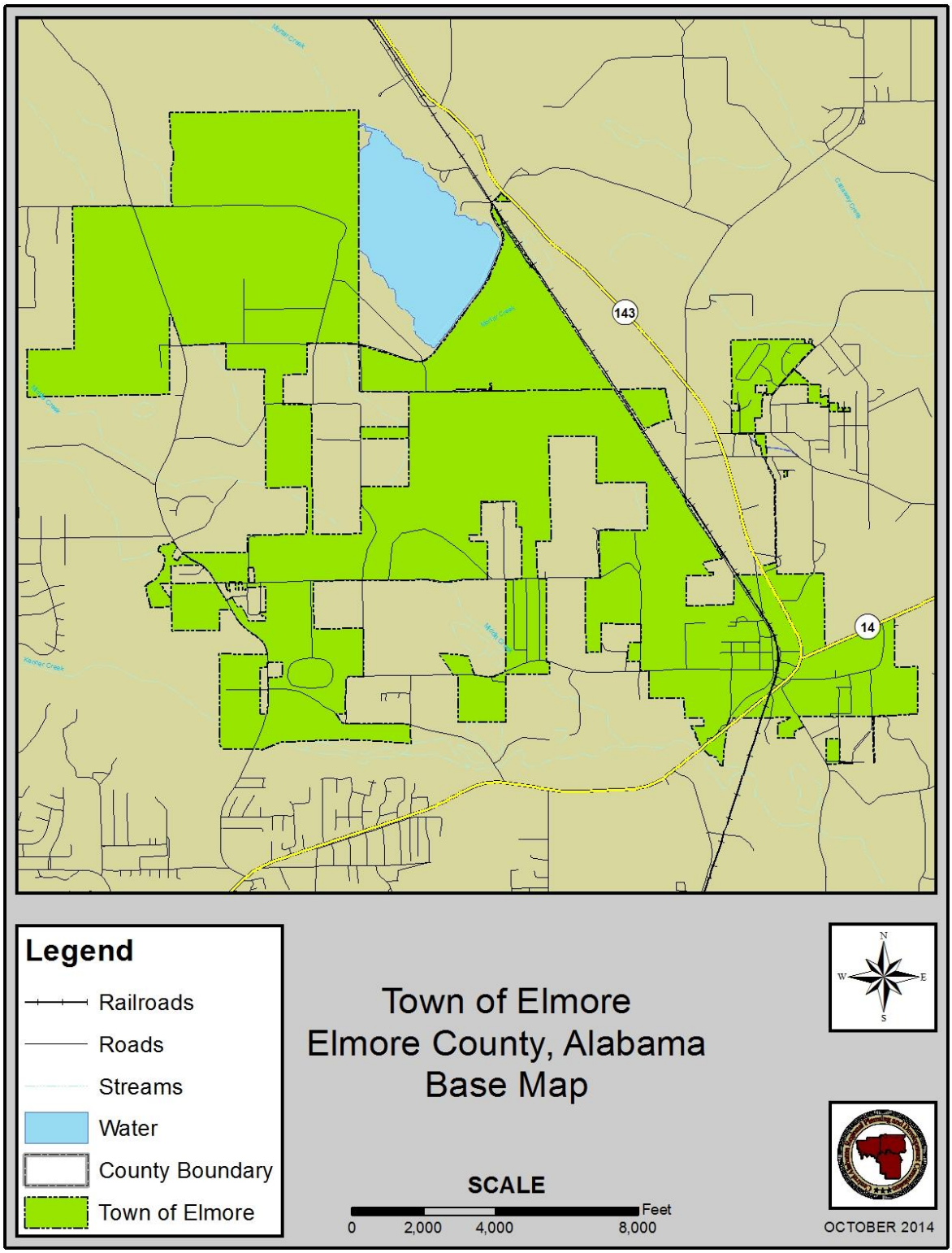


Figure 3.13-15 City of Millbrook – Base Map

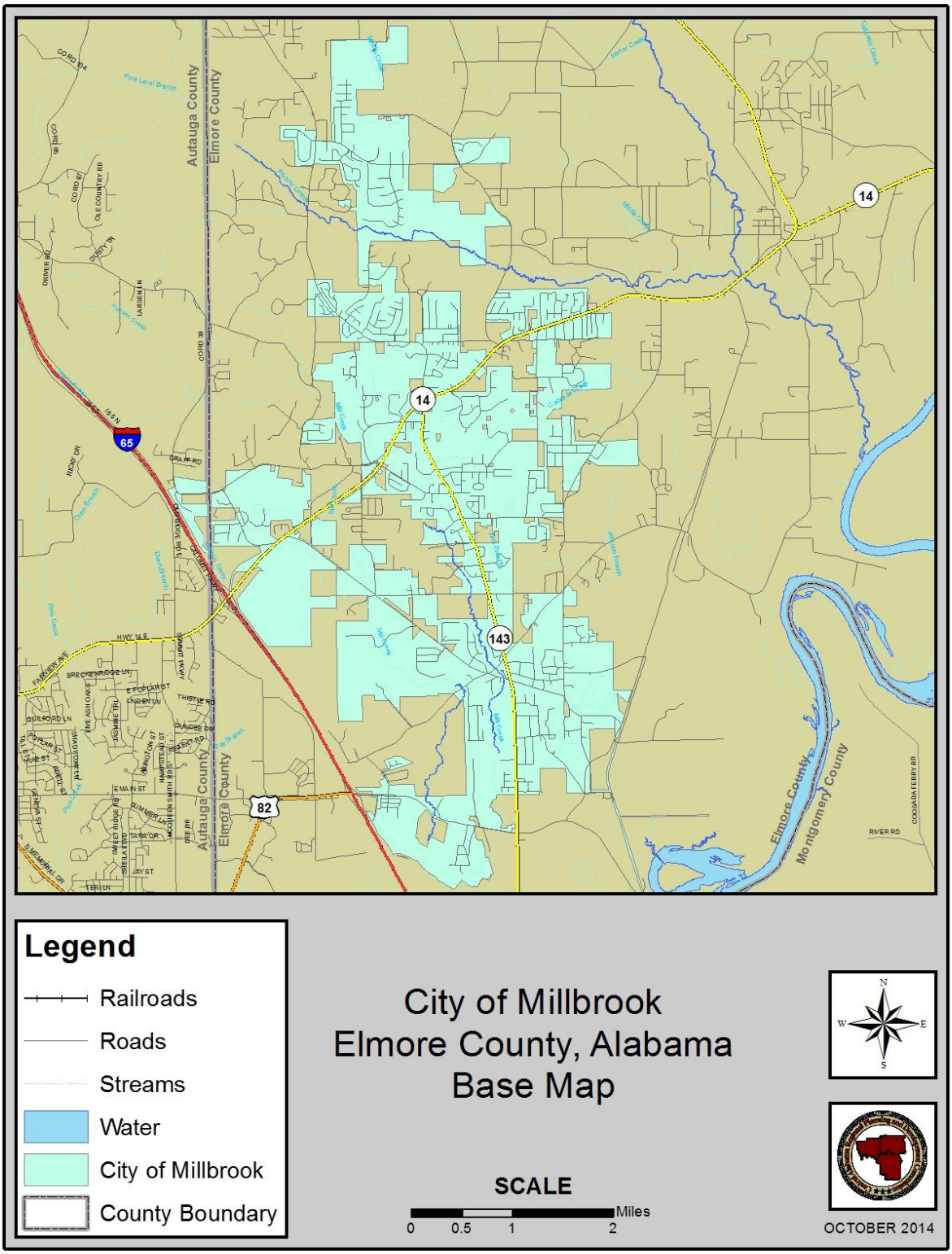


Figure 3.13-16 City of Prattville – Base Map

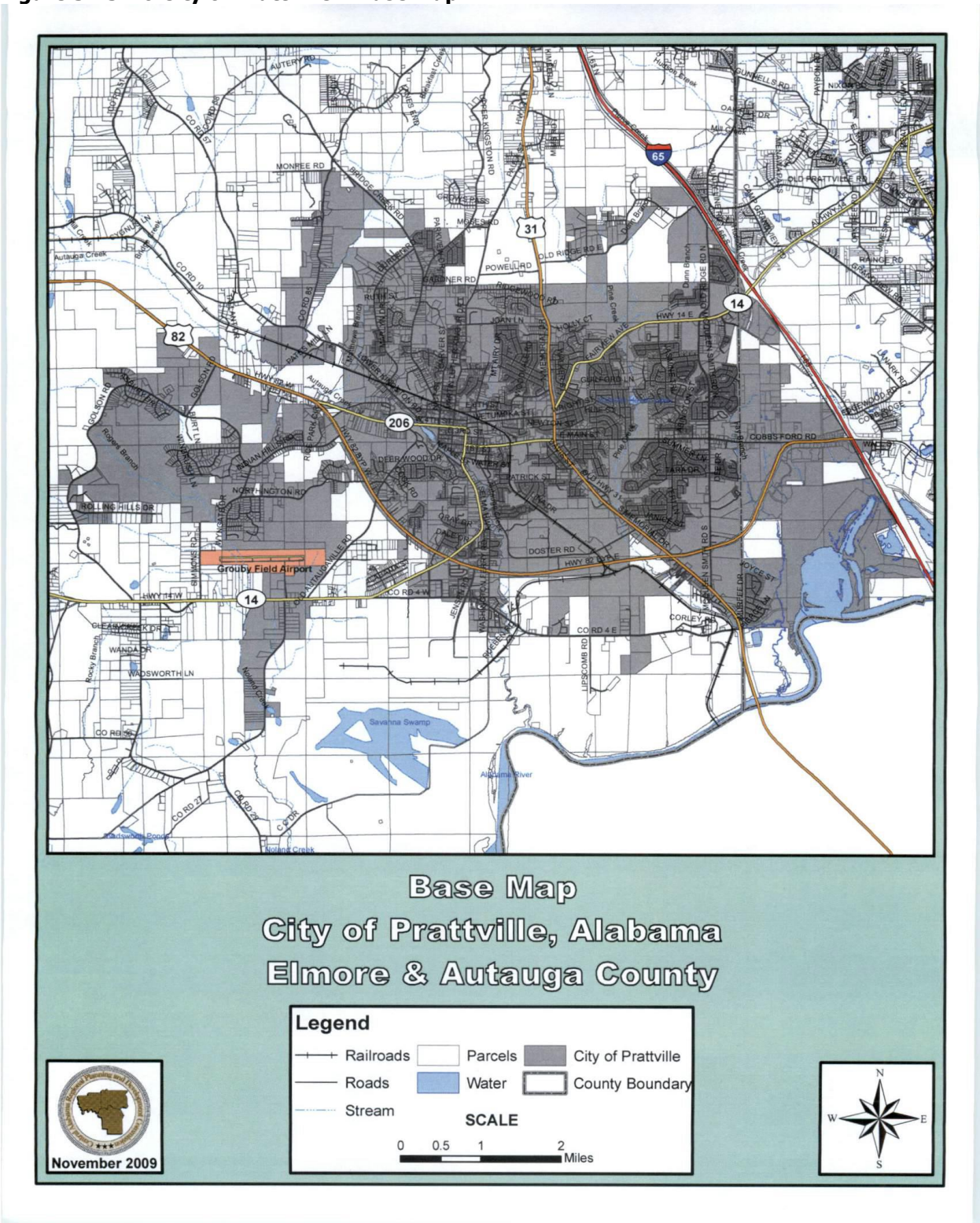


Figure 3.13-17 City of Tallassee – Base Map

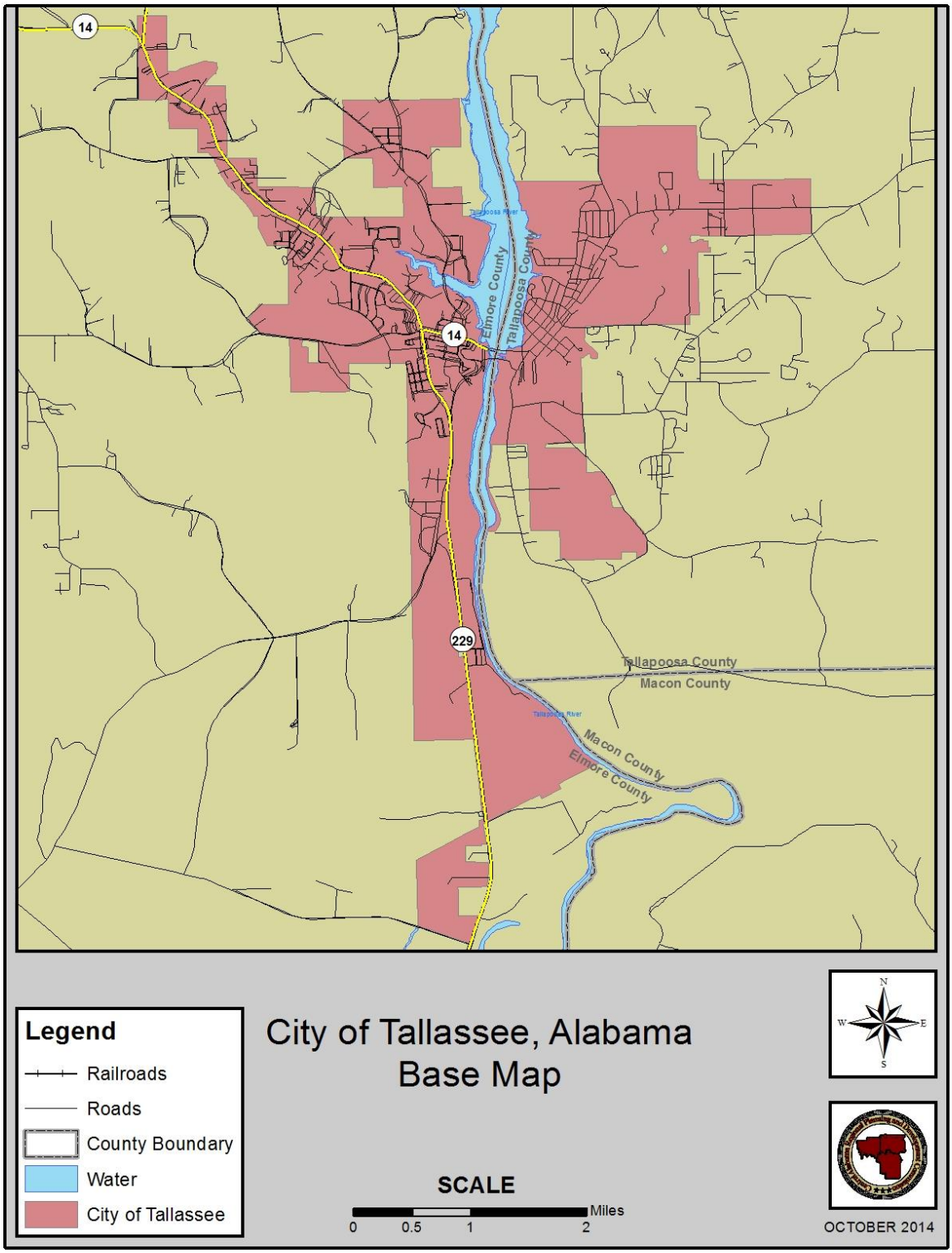


Figure 3.13-18 City of Wetumpka – Base Map

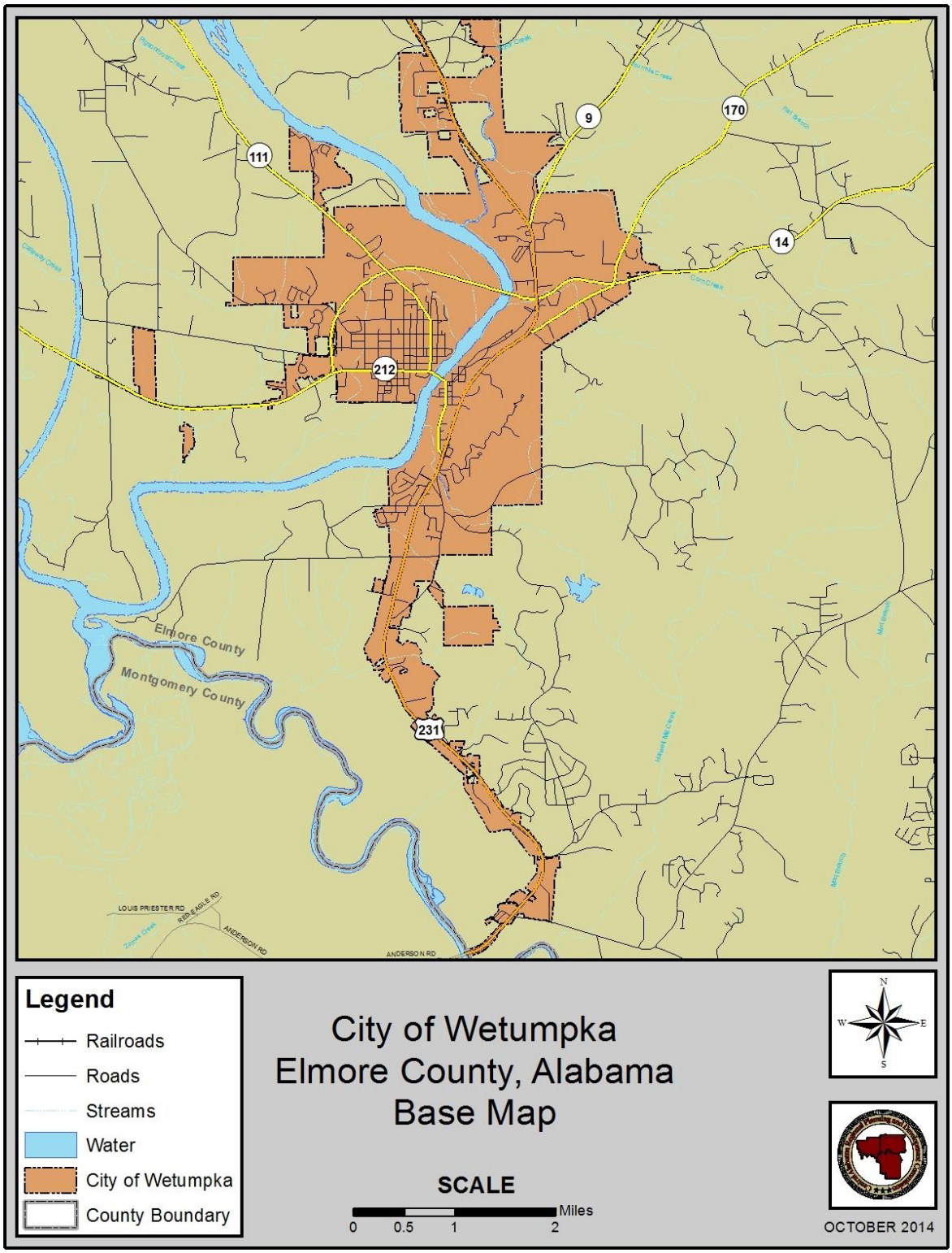


Figure 3.13-19

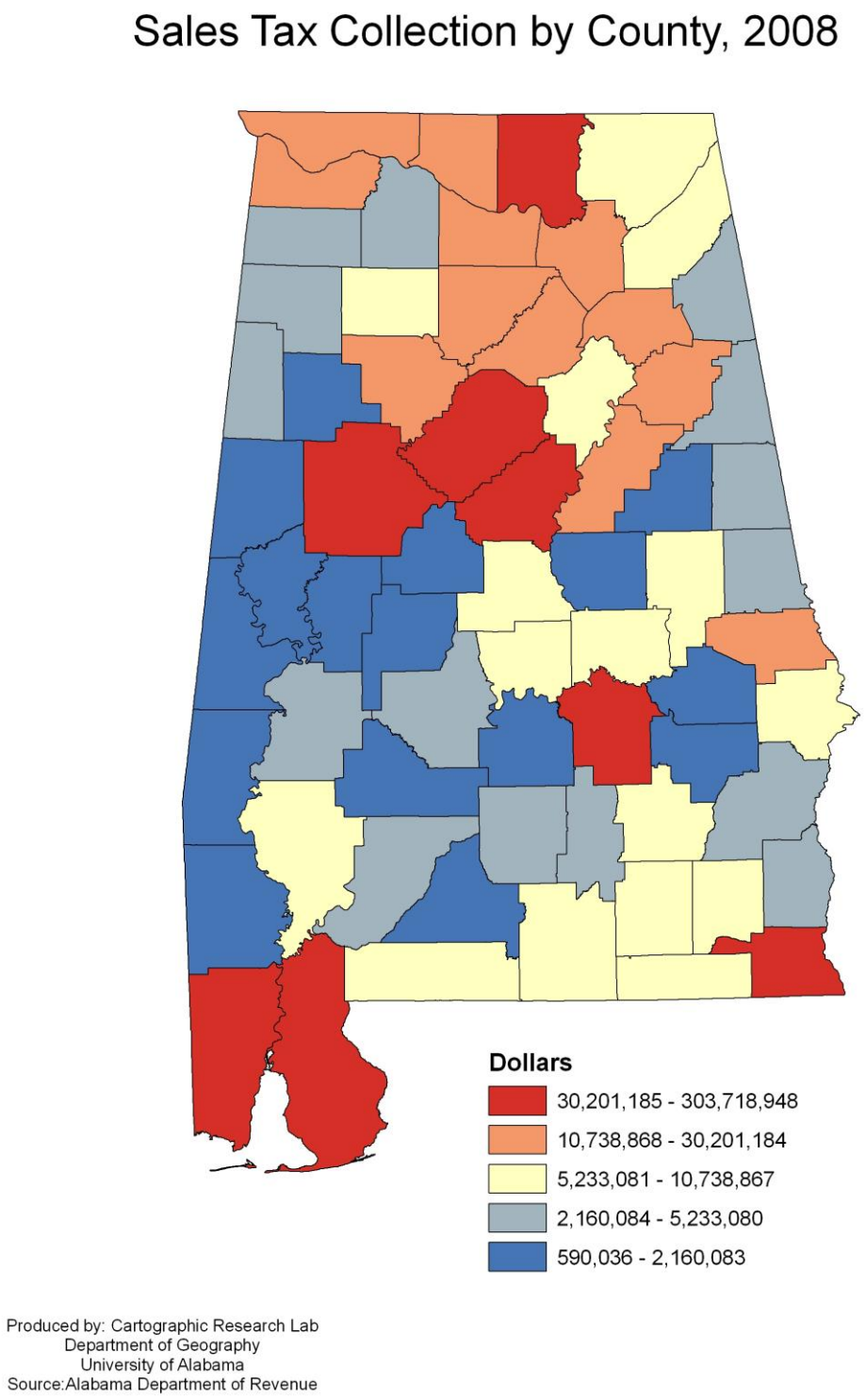
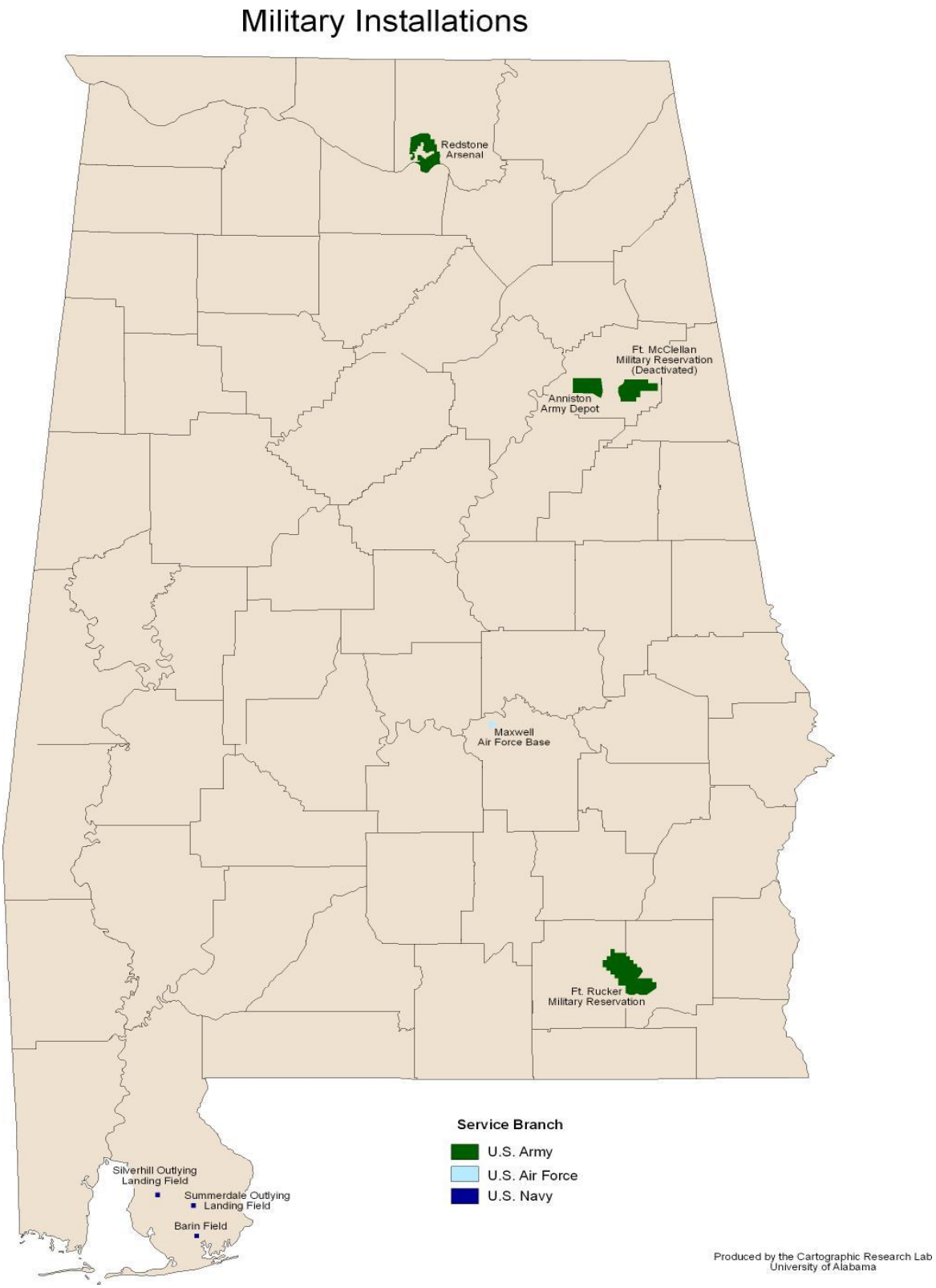


Figure 3.13-20



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Section 4. The Planning Process

This section of the plan addresses requirements of Final Rule (the Rule) Section 201.6. A copy of the Rule is provided for reference in Appendix B of this document.

Contents of this Section

4.1 Final Rule Requirements for the Planning Process
4.2 Coordination with Local and State Agencies, and Interested Groups
4.3 Integration into other Ongoing County Planning Efforts
4.4 Integration into other Local Mitigation Programs and Initiatives
4.5 Description of the Planning Process

What has been updated?

The 2010 *Elmore County Natural Hazard Mitigation Plan* was completely revised during the 2015 plan update process. For the 2015 update, the Plan underwent a *major* re-write, was completely restructured and reformatted, and vastly broadened to include *all* hazards relative to Elmore County--natural, technological, and human-related (man-made)--thus warranting the new title: *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*.

Certain informational elements of the 2010 Plan were retained and carried forward into the 2015 plan update, like various maps, storm events data, census data, facilities, methodologies, strategies, action items, etc. All retained informational elements were refreshed and updated as appropriate and expanded where applicable. Numerous informational elements were added to the Plan to support the newly incorporated technological and human-related (man-made) threats and hazards, as well as additional natural hazards not previously covered, such as fog, sinkholes, and land subsidence.

Given the broad scope of changes resulting from this update, users are highly encouraged to read this plan "cover to cover," expecting numerous differences between the *2010* and *2015* editions. The scope of change contained herein extends far beyond the typical, minor, or expected changes one might see in a standard plan update.

The primary driving factors behind the complete "over-haul" of this Plan include:

- ✓ The desire to standardize its structure to more closely aligned it with that of the governing Final Rule (FR), thus improving its organization, cohesiveness, and flow;
- ✓ The desire to incorporate a number of threats and hazards not previously addressed in the Elmore County HMP; and
- ✓ The desire to more closely mirror the Alabama State Hazard Mitigation Plan, Updated April 2013.

4.1 Final Rule Requirements for the Planning Process

The Final Rule (FR) Subsection 201.6 states the following:

"The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the State to provide technical assistance and to prioritize project funding."

The FR Subsection 201.6 (c) (1) requires that the plan include:

"Documentation of 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."

4.2 Coordination with Local, State, and Tribal Agencies and Interested Groups

As shown by the list of members in **Figures 4.1 – 4.15** and **Appendix C,** the county's HMPC/MAC Group is representative of those jurisdictions and stakeholder agencies and organizations in the Elmore County area concerned with *all-hazards*--natural, technological, and human-related (man-made). The HMPC/MAC Group worked to engage the public for participation and support to identify the hazards that pose a threat to their communities, provided information about the past hazardous events, identified the assets and potential losses in their communities, and identified the past and future mitigation measures throughout Elmore County. In addition, various meetings and phone calls took place and emails were sent to the following agencies requesting their input and cooperation. These agencies helped provide information in regards to the hazards profiles, vulnerabilities assessments, potential losses, land use and development trends and mapping data.

4.2.1 Agency Coordination during Development of the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*

All agency coordination was achieved on both an individual entity and group basis by assembling the county's Hazard Mitigation Planning Committee (HMPC) (also referred to as the Elmore County Multi-Agency Coordination Group or "MAC Group" throughout this Plan). Activities of these entities are more thoroughly discussed in **Section 4.5**. Beyond the activities of the HMPC/MAC Group, the following summarizes efforts to involve other agencies in the planning process.

The Elmore County EMA coordinated with the local agencies in the county to gather information that could be incorporated into the Plan. EMA provided the local HMPC/MAC Group representatives with a worksheet to determine local capabilities, hazards, risks, and mitigation goals and actions. All county jurisdictions were contacted for their input. The information obtained was the starting point for revising the risk assessment and mitigation strategy for the updated plan.

The Rule states that, "The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas" must be included in the Plan. Elmore County EMA identified which county-level organizations might own or operate critical facilities, and contacted each directly to request information regarding their assets, operations, and risks. Each

was provided with a worksheet requesting information on agency background, critical facility hazard and risk assessment data, and potential mitigation actions.

The AEMA was involved in this plan update process. AEMA provided detailed technical assistance by interpreting the Rule planning requirements and assisting the Elmore County EMA in integrating these requirements into the final product. Additionally, information from the *Alabama EMA Final State Hazard Mitigation Plan, September 2010 and the 2013 Plan Update* were consulted and information incorporated, in-part, into the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*.

One of the purposes of the HMPC/MAC Group is to ensure coordination among various levels of government and a county-wide planning effort. Activities and involvement of the HMPC/MAC Group are detailed in **Section 4.5**.

4.3 Review and Incorporation of Existing Plans, Studies, Reports, and Technical Information (Ref: Element 1.A4 of Plan Review Tool)

The following plans, studies, reports, and technical information, as appropriate, were reviewed and incorporated in the development of the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014 (not all inclusive):*

- ✓ *Elmore County Emergency Operations Plan (EOP)*
- ✓ *Elmore County Continuity of Operations Plan (COOP)*
- ✓ *Elmore County Debris Management Plan*
- ✓ *Elmore County Natural Hazard Mitigation Plan, 2010*
- ✓ Existing Master Plans, Zoning Ordinances, Building Codes, Subdivision Regulations, NFIP Participation Statuses, Economic Development Planning (Ref: Tables 3.13-1 & 6.7-1)
- ✓ *Elmore County Vulnerability Analysis and Threat/Hazard Profile (THIRA), November 2013*
- ✓ Critical Facilities and Infrastructure Data
- ✓ Code of Alabama, Title 11, Chapter 52, *Planning, Zoning, and Subdivisions;* Chapter 24 (subdivisions within unincorporated areas); Chapter 19, *The Comprehensive Land Use Management Act (floodplain management-NFIP)*
- ✓ *Alabama State Hazard Mitigation Plan Update Final April 2013*
- ✓ *Post Katrina Emergency Management Reform Act of 2006*
- ✓ Alabama Register of Landmarks and Heritage
- ✓ Alabama State Data Center, Center for Business and Economic Research, The University of Alabama
- ✓ Cartographic Research Lab Department of Geography University of Alabama
- ✓ Elmore County GIS Technician, GCM, Elmore County Revenue Commission (maps)
- ✓ Central Alabama Regional Planning & Development Commission Planner I/GIS Analyst (maps)
- ✓ Alabama Department of Economic and Community Affairs and U.S. Army Corps of Engineers National Inventory of Dams (dam-specific information)
- ✓ Elmore County Engineer, Local NFIP Coordinator and *FEMA Community Status Book Report* (flood plain management, NFIP, Repetitive Loss, Severe Repetitive Loss…)

- ✓ *SWIFTReach SWIFT911 (Radial maps)*
- ✓ Hazard-specific reports/data/technical information for all included natural, technological/accidental, and human-related (man-made) hazards
- ✓ Michigan's Hazard Mitigation Plan, 2011; Michigan's 2012 Threat and Hazard Identification and Risk Assessment
- ✓ Cullman County (Alabama) Natural Hazards Mitigation Plan, 2010
- ✓ Ouray County (Colorado) Multi-Hazard Mitigation Plan Comprehensive Update September 2013
- ✓ NOAA NWS Space Weather Prediction Center (SWPC)
- ✓ National Weather Service
- ✓ Federal Bureau of Investigation (FBI) – *A Study of Active Shooter Incidents in the United States Between 2000 and 2013*
- ✓ U.S. Department of Homeland Security - Adversarial Threats
- ✓ Alabama Fusion Center - Adversarial Threats
- ✓ Alabama Department of Corrections
- ✓ U.S Department of Transportation, Pipeline & Hazardous Materials Safety Administration; Alabama Significant Incidents Listing – All Pipeline Systems
- ✓ U.S. Census Bureau, American FactFinder*; CensusScope; Alabama-Demogrpahics.com*
- ✓ *Alabama Economic Outlook 2013, Center for Business and Economic Research, The Unitversity of Alabama, Montgomery, pages 1-4 excerpts*
- ✓ *Encyclopedia of Alabama: Elmore County, Employment (.org website)*
- ✓ Alabama Department of Labor
- ✓ Alabama Department of Agriculture
- ✓ U.S. Center for Disease Control
- ✓ *the*WhiteHouse.gov; The National Strategy for Counterterrorism; *United States Department of State Publication Bureau of Counterterrorism, April 2014* – Adversarial Threats
- ✓ U.S. Department of Homeland Security, Office of Cybersecurity and Communications – Adversarial Threats

These plans are administered through the Emergency Management Agency. Additionally, consideration for mitigation activities planning

4.3.1 Summary

County-level planning efforts related to hazard mitigation planning are primarily the responsibility of the Elmore County EMA. This agency is responsible for the administrative and planning functions for hazard mitigation planning and disaster recovery planning. Other significant county-level planning efforts related to hazard mitigation are supported by local agencies and interested groups, all of which are represented on the HMPC/MAC Group.

4.3.2 Ongoing County Planning Efforts and Integration Process

In developing the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan*, *December 2014* the Elmore County EMA elected to conduct the update of this Plan using EMA staff, in lieu of hiring an outside contractor, as was done previously. Limited assistance, such as with updated hazards maps and certain information was however obtained from Central Alabama Regional

Planning and Development Commission (CARPDC), during this update process. The EMA is responsible for coordinating the Elmore County Multi-Agency Coordination (MAC) Group to increase the overall level of coordination, communication and collaboration of the emergency management functions and phases in the County. The MAC Group is made up of leaders and representatives of all jurisdictions and stakeholder agencies/organizations to include municipal, county, state government, and tribal agencies and departments; volunteer, non-profit and faith-based organizations and the private sector.

The MAC Group is organized in sections as follows: Policy, Operations, Community Service, Infrastructure, Planning/External Affairs, Logistics, and Finance/Administration. The Elmore County HMPC is composed of representatives of the MAC Group. The MAC Group assists with the development and maintenance of the hazard mitigation plan, which is a critical element of an effective Emergency Management Program in the county. This includes the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014.*

The EOP references the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* as well as other plans related to all potential threats. This hazard mitigation plan update has been integrated with all of the above jurisdictions in the planning process through meetings, discussions, and references in the plans. It is incumbent upon all of the above jurisdictions to incorporate the objectives of this plan into all local planning measures such as plans, ordinances, resolutions, etc.,.

The state/county Floodplain Managers offer technical support materials for flood hazard mitigation planning.

The Geological Survey of Alabama (GSA) supports mitigation planning for geological hazards including sinkholes, earthquakes, and landslides. The GSA maintains maps of ecologic formations, with descriptions of characteristics, and prepares reports of findings and recommendations. The information and technical resources of the GSA are critical to the county-wide risk assessment of this plan and the development of mitigation strategies that respond to pervasive geological hazards across the county. The GSA develops and maintains maps showing the distribution of known sinkholes, faults, underground mines, and landslides. It maintains records of historical earthquakes and monitors current seismic activity. The GSA also conducts public outreach through the distribution of educational brochures on geological hazards. Other hazard mitigation initiatives by federal agencies are described in **Section 6.9**. These are primarily funding mechanisms to augment state and local mitigation activities.

4.3.3 Potential Improvements

Elmore County has many opportunities to strengthen or improve the integration of its existing county-wide planning initiatives. These opportunities include the following potential improvements:

- Continue NFIP and improve coordination and delivery of mitigation planning information to interested individuals throughout the county. Expanded and coordinated training is one of the best opportunities to ensure integration of planning initiatives among local, state,

and other interest groups, and to best deliver hazard mitigation planning principles at the local level.

- Maintain documents and materials in a centralized location for printed distribution.
- Coordinate outreach services among county-wide planning agencies. A coordinated public outreach program should more effectively communicate the complete plan and keep the public informed of risks and countywide efforts underway to mitigate those risks.

4.4 Integration into Other FEMA Mitigation Programs and Initiatives

4.4.1 Summary

Elmore County EMA administers and oversees federal mitigation grant programs for Elmore County that are related to hazard mitigation, emergency management and disaster relief, as well as serving as the lead agency for the county in disaster mitigation efforts. Elmore County EMA has the opportunity to integrate the dissemination of mitigation information to the AEMA with the FEMA grant application process for the programs listed in **Section 4.4.2**. The primary responsibilities of the local NFIP Coordinator include facilitating participation in the NFIP among county jurisdictions, providing technical support and training and encouraging participation in the Community Rating System (CRS) Program.

4.4.2 List of Ongoing FEMA Mitigation Programs and Initiatives

FEMA Grant Programs:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation Grant Program (PDM)
- Public Assistance Grant Program (PA)
- Flood Mitigation Assistance Program (FMA)
- Repetitive Flood Claims (RFC) Grant Program
- Severe Repetitive Loss (SRL) Grant Program
- National Flood Insurance Program (NFIP)
- State and Local NFIP Coordination
- Community Rating System (CRS)
- Map Modernization Program (MMP)

4.4.3 Integration Process and Potential Improvements

The HMPC/MAC Group identified and reviewed the laws, regulations, policies and programs pertaining to mitigation and AEMA/FEMA sponsored programs and supporting regulations.

FEMA Grant Programs:

The Elmore County EMA administers AEMA/FEMA grant programs. It notifies communities and eligible applicants of the availability of program funds, provides briefings and technical assistance, and recommends funding to the Elmore County Commission. The AEMA serves as the grantee of AEMA/FEMA grant awards and oversees the implementation of funded projects by sub grantees (communities and other eligible applicants).

Consistency of project applications with local mitigation plans is required by the state and county EMA to assure integration of local mitigation activities with the hazard mitigation planning process. The grant award process can be improved by adhering to an established prioritization criteria presented in the county plan.

National Flood Insurance Program:

The Local NFIP Coordinator should continue to provide county-wide support for local participation in the NFIP, assisting with flood hazard prevention ordinance development and federal compliance, providing training and technical support to local floodplain ordinance administrators, encouraging the floodplain management practices of the NFIP, and promoting flood insurance.

The NFIP Coordinator should continue to regularly conduct Community Assistance Visits (CAVs) among NFIP participating communities throughout the county. During these visits the staff should not only check for program compliance but offer guidance and support for improved flood hazard mitigation practices.

In addition to regular NFIP participation, the NFIP Coordinator should encourage the Community Rating System (CRS) program participation by NFIP communities and assist current CRS communities to continually seek higher CRS classifications.

The NFIP Coordinator should continue working closely with the Elmore County EMA and the Alabama EMA to assure strong integration of local flood hazard mitigation practices into local and state hazard mitigation planning policies.

The State of Alabama Office of Water Resources will continue county-wide flood map modernization programs for counties across the state, including the development of Digital Flood Insurance Rate Maps (DFIRMs) that will readily provide flood GIS data for local risk assessments and hazard mitigation planning.

The State NFIP Coordinator should continue to distribute technical publications to local floodplain administrators, building officials, public works engineers, planners, and local officials involved in hazard mitigation. The popular and regular course offering, *Managing Floodplain Development through the NFIP,* should be made available annually or as needed.

4.5. Description of the Planning Process

4.5.1 How the Plan was Prepared and Updated

The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* plan was prepared in general accordance with the processes established in the How-To Guides produced by FEMA, and the requirements of the February 26, 2002 Interim Final Rule and subsequent 2007 Final Rule.

- Established the HMPC/MAC Group (see **Appendix C** for full membership).
- Encouraged representatives from all local agencies to attend HMPC/MAC Group meetings.

- Directed all county agencies to participate in the development of the plan by providing services as directed by the HMPC/MAC Group.

- Encouraged agencies and other interested parties to participate in the planning process by providing comments and information via meetings, surveys, questionnaires and other means.

- Directed the HMPC/MAC Group to assist in the prioritizing of hazard and pre-disaster mitigation grant program project applications.

- Directed the HMPC/MAC Group to meet when called by the Elmore County EMA and remain in place until the five-year update to the plan has been approved by the AEMA/FEMA.

- Directed the Elmore County EMA to prepare the County Hazard Mitigation Plan.

- As noted in **Section 1.1 Executive Summary Background**: The City of Prattville, through cooperative agreement, is served by the Autauga County Emergency Management Agency. Through the agreement of the parties involved, the Autauga County Emergency Management Agency addressed mitigation planning for the entire City of Prattville to include the portion of the city that is located in Elmore County. The City of Prattville is not referenced in this plan, but is referenced in the Autauga County Hazard Mitigation Plan. The City of Millbrook also is located in Elmore County and also in a portion of Autauga County. The Elmore County Emergency Management Agency worked with the City of Millbrook to incorporate all mitigation activities for the portion of the City of Millbrook that is located in Autauga County into the *Elmore County Natural Hazards Mitigation Plan (*now known as the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014)*. Likewise, portions of the City of Tallassee are located in both Elmore and Tallapoosa County's. Elmore County Emergency Management Agency worked with the City of Tallassee to incorporate all mitigation activities into the *Elmore County Natural Hazards Mitigation Plan (*now known as the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014)*.

    - In light of the above, Tallapoosa County EMA, Autauga County EMA, and the City of Prattville were all invited to/given an opportunity to participate in this planning process.
    - Evidence of successful collaboration on mitigation projects can be seen in approved Hazard Mitigation Grant Program (HMGP) projects, such as:
        - Elmore County pursuing and receiving approved grant funding for a backup power generator for the City of Tallassee's Water Treatment Plant, physically located in Tallapoosa County
        - Elmore County pursuing and receiving grant funding for two all-hazards outdoor warning sirens, both physically located within the Elmore County portion of the City of Prattville, but maintained and operated by the City of

Prattville & the Autauga County EMA

In an effort to comply more fully with the ***Post Katrina Emergency Management Reform Act of 2006***, Elmore County, for the first time, approached mitigation planning from an *all-hazards* perspective, addressing not only the natural hazards, but technological and man-made hazards that could potentially impact the county. The county-wide risk assessment conducted as part of this plan update considered a total of twenty-one (21) categorical threats and hazards. The assessment expands beyond the threats and hazards pre-identified in the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile (THIRA Inform as requested by AEMA) THIRA*** **and** ***Elmore County Natural Hazards Mitigation Plan*****.** Through the process utilized in the *Elmore County Vulnerability Analysis and Threat/Hazard Profile (THIRA Inform as requested by AEMA)*, each threat/hazard included in **Section 5** of this *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* was assessed based on virtue of:

- ✓ **History** – How often the hazard occurred in the county
  - Low – at least one occurrence every 11-100 years
  - Medium – at least one occurrence every 5-10 years
  - High – at least one occurrence every 1-4 years

- ✓ **Probability** of the hazard occurring – determined on basis of observations, experience, or scientific reason/documentation
  - Low – less than 30% chance of occurrence
  - Medium – greater than 30% chance but less than 70% chance of occurrence
  - High – greater than 70% chance of occurrence

- ✓ **Vulnerability** – indicates total number of people and property of the county that could be affected should the hazard occur
  Population
  - Low – less than 30% of population
  - Medium – greater than 30% but less than 70% of population
  - High – greater than 70% of population

- ✓ **Maximum Threat** – The greatest destruction that can be expected from a hazard
  Population – loss of life or injury
  - Low – less than 5% of population
  - Medium – 5 to 10% of population
  - High – greater than 10% of population

- ✓ **Property** homes, businesses, infrastructure losses (i.e., bridges, roads, government buildings)
  - Low – less than 5% of property
  - Medium – 5% to 10% of property
  - High – greater than 10% of property

- ✓ **Economic** impact – losses of jobs and revenue. Economic instability or environmental insults from the hazard
    - Low – impacts less than 5% of the county's economy
    - Medium – 5% to 20% of the county's economy
    - High – greater than 20% of the county's economy

Through the rating system provided in the THIRA (as explained above in-part, and in **Section 5**), the HMPC/MAC Group assigned rankings to each threat/hazard identified in **Section 5** of this Plan. For these hazards, detailed risk assessments were performed that included calculations of future expected damages expressed in dollars. From the results of the risk assessments, the HMPC/MAC Group developed a mitigation strategy composed of actions identified by the Elmore County EMA, HMPC/MAC Group agencies, and the existing local plan. The plan was approved by the HMPC/MAC Group, adopted by the Elmore County Commission and county jurisdictions, and approved by FEMA.

As mentioned in **Section 4.2**, the initial plan called for the HMPC (now known as the Elmore County MAC Group) to re-assemble on an annual basis to review and evaluate the plan based on the following criteria:

1. The relevance and appropriateness of the plan goals and objectives in relation to current conditions;
2. The nature, scope and magnitude of hazard-related problems in the county, state and country;
3. The type and amount of resources available to implement the plan;
4. The current and projected capabilities of the assigned implementing agencies;
5. Relevant deadlines, priorities, and other consideration of the scarcity of available resources;
6. Plan implementation problems that have occurred or that may occur, such as technical, political, legal, social, or coordination issues;
7. The overall success of actions that have been implemented;
8. Progress on mitigation actions (including project closeouts) and/or new mitigation actions that the county is considering;
9. Changes in the composition of the Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group; and
10. Major changes to the multi-jurisdictional hazard mitigation plan

In addition, the Elmore County EMA may initiate the review process under any of the following conditions:

- After a major disaster declaration
- At the request of the Elmore County Commission or Alabama EMA (AEMA)
- When significant new risks or vulnerabilities are identified

Unfortunately, not all of the annual HMPC/MAC Group meetings took place.

The Elmore County EMA began working on the plan update in **November 2010**, beginning with a business letter contact to various stakeholder agencies/HMPC members requesting their

participation in the first annual review of the *Elmore County Natural Hazard Mitigation Plan, dated October 2009*. Attached to the letter was the **Elmore County EMA/HS Office *Natural Hazard Mitigation Plan Annual Review Worksheet, dated November 4, 2010.*** All recipients were asked to conduct a review of the Plan and to complete and return the worksheet to EMA not later than **February 20, 2011**. Further, the letter stated the input provided by each jurisdiction would determine the next course of action, but that all actions regarding the first annual review should be completed not later than **May 2011**.
In **December 2010**, in addition to the letters referenced above, EMA staff invested two days hand-carrying information packets containing the materials above to twenty-six (26) separate entities throughout Elmore County, hoping to garner maximum support and participation in the plan update process. All partners were asked to return their completed worksheets by the end of **February, 2011**.

By **March 2011**, the below nine entities returned completed Elmore County EMA/HS Office *Natural Hazard Mitigation Plan Annual Review Worksheets (**See: Appx F**):*

- Elmore County Commission (with updates/recommended changes)
- Town of Coosada (no updates/recommendations)
- Town of Eclectic (with updates/recommended changes)
- Holtville Water System (no updates/recommendations)
- Millbrook Fire Department (no updates/recommendations)
- Tallassee Fire Department (with updates/recommended changes)
- Tallassee Police Department (no updates/recommendations)
- Wetumpka Water Works (no updates/recommendations)

Not all actions regarding the first annual review were completed in entirety by **May 2011**, as hoped. Failure to meet the established completion date was primarily due to Elmore County being directly impacted by several rounds of severe weather in **Spring 2011**—most notably--the historic and catastrophic state-wide tornado outbreaks of **April 15th and April 27th**, both resulting in Elmore County's inclusion in **Presidential Disaster Declaration DR-1971**. Sadly, the tornado destruction of April 27, 2011, resulted in the deaths of six Elmore County citizens, including one small child.

While specific plan update actions were placed on the "back burner" during the events' immediate aftermaths and into the long-term recovery phase, hazard mitigation discussions remained **active throughout the remainder of 2011** as many stakeholder agencies considered and pursued Hazard Mitigation Grant Program (HMGP) funding made available under DR-1971. Collectively, Elmore County submitted a total of twenty-three (23) individual grant applications for projects such as: community and individual safe rooms, outdoor all-hazards warning sirens, backup power generators, and warning and emergency notification systems. Funding for over 2/3rds of these projects was awarded by AEMA & FEMA, based on the State's established HMGP priorities and the county submitting solidly documented project applications, thereby receiving it's "fair share" of available project funding.

As directed by FEMA and AEMA in the **summer of 2012**, the Elmore County EMA was fully engaged in the newly established ***Vulnerability Analysis and Threat/Hazard Profile***

(THIRA) process. As certified in the Statement of Compliance by the Elmore County EMA Director, the data found in the THIRA was discussed in Public Meetings to obtain input and knowledge from the public on **September 10th, October 9th and October 24th 2012**.

By **fall 2012**, deliberate planning efforts were once again underway after an EMA-driven initiative to restructure stakeholders into a more wholly efficient and effective Multi-Agency Coordination (MAC) Group configuration was completed. The MAC Group organization is based on the following Sections: Policy, Operations, Community Services, Infrastructure, Planning, Logistics, Finance & Administration, and External Affairs.

In **September 2012**, the EMA Director scheduled a series of sectional MAC Group kickoff meetings for numerous county-wide stakeholders. Meetings were convened on **October 24th** and **November 7th, 2012**, affording all Sections an opportunity to meet, discuss, and begin action on stated objectives. Some rescheduling was required based on conflicts and the unavailability of key stakeholders. Additional meetings were held on **December 13th, 2012**. Clearly defined objectives were set forth in the kickoff meetings including:

- ✓ Reiterating roles and responsibilities of the Multi-Agency Coordination System and Group;
- ✓ Conducting the County's Threat/Hazard Assessment;
- ✓ Providing a detailed briefing on the Elmore County Emergency Operations Plan (EOP) and its update plan; and
- ✓ Discussing the Hazard Mitigation Program (HMP) and establishing the initial strategy for updating the *Elmore County Natural Hazard Mitigation Plan*.

Additionally, stakeholders were provided copies of *the Elmore County Threat and Hazards Survey* and asked to have at least one member from their organization complete it and bring it with them to their designated MAC Group meeting.

A second round of MAC Group meetings was convened in **February 2013**. As related to hazard mitigation, a PowerPoint presentation entitled *Hazard Mitigation Program (HMP)* was provided to all in attendance. By way of overview, this HMP presentation covered the following:

- ★ HMP Purpose
- ★ Legal Authority & Requirements
- ★ Mitigation: One Phase of Emergency Management
- ★ Hazard Mitigation Assistance (HMA) Programs
- ★ Local Multi-Hazard Mitigation Planning
- ★ Elmore County Local Hazard Mitigation Plan

The EMA Director briefed MAC Group members on the projected timeline for updating the Plan; described in general the work needing to be accomplished over the course of the update process; emphasized the "penalty" associated with an expired mitigation plan; and stressed the importance and necessity for each stakeholder's participation and input.

Further, the second round of MAC Group meetings continued into **May 2013** when the Infrastructure and Finance & Administration Sections met on May 1st to discuss and begin taking action on the stated objectives above.

On **September 23, 2013**, the Director, Elmore County EMA, initiated a meeting with the Mayor of the City of Millbrook, meeting for approximately one and one half (1½) hours to discuss the plan update process; the projected timeline for updating the Plan; the work needing to be accomplished over the course of the update process; the "penalty" associated with an expired mitigation plan; and stressed the importance and necessity for each stakeholder's participation and input.

On **September 25, 2013**, the Director, Elmore County EMA, met with the Mayor of the City of Wetumpka, meeting for approximately one and one half (1½) hours to discuss the plan update process; the projected timeline for updating the Plan; the work needing to be accomplished over the course of the update process; the "penalty" associated with an expired mitigation plan; and stressed the importance and necessity for each stakeholder's participation and input.

On **October 21, 2013**, the Director, Elmore County EMA, met with the Mayor of the City of Tallassee, meeting for approximately one and one half (1½) hours to discuss the plan update process; the projected timeline for updating the Plan; the work needing to be accomplished over the course of the update process; the "penalty" associated with an expired mitigation plan; and stressed the importance and necessity for each stakeholder's participation and input.

Round three MAC Group meetings convened in **Nov and Dec 2013**. As related specifically to the hazard mitigation plan update, EMA provided a detailed PowerPoint briefing entitled *Elmore County Hazard Mitigation Planning – 2013.* By way of overview, this hazard mitigation planning presentation covered the following:

- ★ New Plan, New Direction
- ★ Current Plan Specifications [Specs]
- ★ Plan Review Process
- ★ Action Steps ("In-Class" & "Homework")

All MAC Group members in attendance were provided copies of the Elmore County EMA/HS Office *Natural Hazard Mitigation Plan Annual Review Worksheet, dated November 4, 2010;* a copy of the current Plan's Section 5. Natural Hazards Goals and Action Items, Table 5.1 *Project Opportunities*; and each entity's portion of the Plan's Appendix A: Critical Facilities – Elmore County listing, in order to conduct their reviews and to document update actions on. Details were discussed on how to best utilize the worksheet to reflect the results of each stakeholder's review; the Plan's current goals and actions items were broadly addressed, along with the methodology for addressing potential revisions/changes; critical facilities were addressed along with the need to update the listing with additions, deletions, and changes in replacement values; and lastly, any remaining stakeholder questions or points of clarification needing addressing before the meeting

was convened. Participants at the **November 5th and 7th** meetings were asked to return their completed worksheets with applicable updates and changes not later than **November 19, 2013**. Those members attending the **December 12, 2013**, meeting were asked to return their worksheets not later than **January 15, 2014**.

On **January 8, 2014**, the Elmore County EMA Director met separately with twelve members of the Elmore County Firefighter's Association, thoroughly covering the HMP update process as reflected above.

By **February 4, 2014**, EMA had identified all MAC Group members still not involved in the hazard mitigation plan update process. EMA began contacting those entities/organizations/departments with the intent of scheduling small group or one-on-one meetings to discuss the hazard mitigation plan update process and garnering their active participation. Those contacts yielded additional small group meetings convened on **February 13th, 20th, and 21st**.

By **March 2014**, EMA decided to make one last push to garner the support and participation of those still uninvolved entities/organizations/departments, this time scheduling one-on-one, on-site, meetings with each willing partner to discuss a multitude of plan updates, including the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan*, the EOP, and the Elmore County Continuity of Operations Plan (COOP). This extra effort resulted in at least an additional twenty-eight (28) individual stakeholders being brought up-to-speed on the plan update process and being given an opportunity to provide insight, perspective, updates, and recommendations into the process. Still, a number of others were contacted and requested to participate in the Plan's update process, but for myriad reasons, either chose not to or were unable to. Based on time constraints driving the final phase of the 2015 hazard mitigation plan update, EMA took no further action to pursue obtaining input from these members for the final update of the Plan.

On **March 12, 2014**, the Elmore County EMA Director met for a second time with twelve members of the Elmore County Firefighter's Association, thoroughly covering the HMP update process as reflected above.

On **April 8, 2014**, the Director, Elmore County EMA, met with the Mayor of the Town of Eclectic meeting for approximately one and one half (1½) hours to discuss the plan update process; the projected timeline for updating the Plan; the work needing to be accomplished over the course of the update process; the "penalty" associated with an expired mitigation plan; and stressed the importance and necessity for each stakeholder's participation and input.

On **May 14, 2014**, the Elmore County EMA Director met for a third and final time with twelve members of the Elmore County Firefighter's Association, thoroughly covering the HMP update process as reflected above.

On **May 30, 2014**, the Director, Elmore County EMA, met with the Chief and four other members of the Coosada Volunteer Fire Department for approximately one and one half hours to discuss the plan update as reflected above.

As stated in the preceding paragraphs, the first step of the process was to perform an analysis of the 2010 *Elmore County Natural Hazard Mitigation Plan*. Stakeholders were asked to review each section as stated in Section 4.2 of the Plan. Results of the analysis were presented to the MAC Group, as well as the strategy for completing the county plan update. The MAC Group concurred with the strategy. The review and update process for each section is detailed in **Section 4.5.4.** The EMA received all comments and then incorporated them into the plan, where appropriate. A summary of comments is available in **Appendix F**. Upon completion of the plan update, the plan will be forwarded to all jurisdictions for formal adoption. Once all adopting resolutions are returned to the EMA, the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan*, *December 2014* along with all adopting resolutions, will be forwarded to AEMA for their review, before the plan is forwarded to FEMA for final review and approval.

The Elmore County Commission adopted by Resolution the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan*, *December 2014* on **December 8, 2014**, effective after being approved by FEMA.

4.5.2 Who was Involved in the Planning Process?

The Elmore County Hazard Mitigation Planning Committee (HMPC), which later evolved into the Elmore County Multi-Agency Coordination (MAC) Group, is comprised of representatives from all participating jurisdictions and other members as noted in **Appendix C**. This committee/group facilitated development and revision of this plan.

The Elmore County HMPC's/MAC Group's members participated in the five-year planning cycle of the *Multi-Jurisdictional All-Hazards Mitigation Plan,* as detailed later in this sub-section. The HMPC's/MAC Group's mission statement is as follows:

To develop and oversee a comprehensive multi-jurisdictional all-hazards mitigation planning process that:

- Facilitates coordination among local, state, and federal agencies
- Monitors and evaluates the potential risks of hazards to life and property
- Actively mobilizes all available community resources and measures to mitigate the threats of hazards
- Implement programmed actions with specific results

The Elmore County EMA Director devised a list of requirements and guidelines that must be adhered to by each committee/group member in order for them to remain a part of the multi-jurisdictional plan. Each board member stated they fully understand and will abide by the guidelines set forth by the Elmore County EMA. The requirements/guidelines are as follows:

- Attendance by them, or a representative, at each of the HMPC meetings
- If unable to attend a meeting, follow up by communicating with the Elmore County EMA through personal visits, phone calls, correspondence, email or fax
- Submit information necessary for the draft plan update in a timely manner
- Full cooperation among the members of each municipality with the Elmore County EMA

During the planning process, the **Multi-Agency Coordination (MAC) Group met** as follows:

- ☑ October 24, 2012: Infrastructure Section (13 members in attendance)
- ☑ October 24, 2012: Operations Section (13 members in attendance)
- ☑ November 7, 2012: Community Services Section (12 members in attendance)
- ☑ February 6, 2012: Operations Section (13 members in attendance)
- ☑ February 7, 2013: Community Services Section (8 members in attendance)
- ☑ May 1, 2013: Infrastructure Section and Finance & Administration Section (18 members in attendance)
- ☑ November 5, 2013: Operations Section (8 members in attendance)
- ☑ November 5, 2013: Infrastructure Section (3 members in attendance)
- ☑ November 5, 2013: Community Services Section (12 members in attendance)
- ☑ December 12, 2013: Infrastructure Section: (13 members in attendance)

  Notes:
  - ALL of the above meetings were open to the Public and information was posted at the Elmore County Courthouse fully complying with the requirements of the Alabama Open Meetings Act.
  - Just the above annotated meetings resulted in approximately 170 man-hours invested in hazard mitigation planning for Elmore County.

Documentation of these meetings is contained in **Appendix F.** In the event a MAC Group member was unable to attend a meeting, he or she was contacted by the Elmore County EMA by phone call, personal visit, email, fax or other correspondence. The MAC Group member was made aware of the results of the missed meeting and asked to provide any pertinent information needed at the meeting. In this manner, participation by all jurisdictions was insured.

As stated early in this section, beginning **February 2014**, EMA had identified all MAC Group members still not involved in the hazard mitigation plan update process. EMA began contacting those entities/organizations/departments with the intent of scheduling small group or one-on-one meetings to discuss the hazard mitigation plan update process and garnering their active participation. Those contacts yielded additional small group meetings convened on **February 13th, 20th, and 21st**.

After a short planning pause during **March 2014**, the Elmore County EMA made one final push to ensure all of the county's major stakeholders were afforded an opportunity to participate in the hazard mitigation planning process. Beginning **April 2014**, the EMA Director and Deputy Director began a final campaign to reach all those entities/organizations/departments still not actively engaged in the process. After persistent and diligent coordination, the EMA Director and

his Deputy took the planning process "on the road"—meeting stakeholders in their offices/stations, attending specially called meetings, and making presentations during in-house training sessions—all to further maximize the planning effort. Between **April and July 2014**, EMA engaged an additional 28 stakeholder agencies and their personnel, bringing participants up-to-speed on the hazard mitigation planning process, seeking direct input from stakeholders, and paving the way for final completion of the plan update and the adopting resolutions that would soon follow.

This extra effort by EMA added an estimated additional 58 man-hours to the planning processes underway in Elmore County. While the effort to reach all Elmore County stakeholders was not 100% successful, this final effort did result in dozens of individuals, many of them "first-timers," contributing to the process and the Plan's update.

By the end of **July 2014**, it is calculated approximately **305** MAC Group member ***man-hours*** were vested in Elmore County planning processes. These hours do not include the public's involvement or announcements/discussions that took place during numerous Elmore County Commission meetings throughout the period of the Plan's update. Neither does the sum include the man-hours involved in the research and development of this completely re-written, re-formatted, completely "over-hauled" hazard mitigation plan—easily exceeding another 1600+ hours invested in researching untold sources, sites, recently approved "all-hazards" plans nation-wide, telephonic contacts with various agency points of contact, etc., and the physical development of the newly revised *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*.

Public Involvement

As briefly mentioned above, the status of the update process of the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan* was announced/discussed at numerous Elmore County Commission meetings. The bi-monthly commission meetings were/are open to the public and media. In addition to the commission meetings (covered later), additional efforts were undertaken to draw the public's participation into the update process.

All public meeting announcements were published in *The Wetumpka Herald*, the servicing local newspaper for the Elmore County Commission, as well as posted at the Old Elmore County Courthouse, 100 E. Commerce St. Wetumpka. Eric Jones, Director of the Elmore County EMA, was present as facilitator of the meetings.

In **Fall 2012**, as part of the *Elmore County Vulnerability Analysis and Threat/Hazard Profile*, Elmore County EMA initiated the *Elmore County Threat and Hazards Survey* process within the county. The EMA provided MAC Group members with the survey for their completion. In addition to the MAC Group, EMA encouraged participation from the public in the following ways:

- To reach private business partners, contacted all local Area Chambers of Commerce and provided them with electronic surveys to make available online to their memberships: Millbrook (345 members), Tallassee (175 members), and Wetumpka (391 members)

- To reach private business partners, contacted the Elmore County Economic Development Authority (ECEDA) and provided an electronic survey to make available online to their membership (more than 50 investors)
- To reach EMA citizen volunteers, the Elmore County Community Emergency Response Team (CERT) Email Group, with its nearly 75 members, was contacted and provided with the electronic survey for its members to complete.

As referenced above, Director Eric Jones of the Elmore County EMA routinely provided status reports to the Elmore County Commission and to the general public in attendance during bi-monthly commission meetings. The EMA Director provided process updates, answered questions, invited additional input, etc., as needed/appropriate. The following is a list of **Elmore County Commission meeting dates** in which the hazard mitigation plan update process was discussed by the EMA Director:

- ☑ 6-10-2013
- ☑ 11-12-2013
- ☑ 12-9-2013
- ☑ 1-13-2014
- ☑ 3-10-2014
- ☑ 3-24-2014
- ☑ 4-17-2014
- ☑ 5-5-2014
- ☑ 6-9-2014
- ☑ 6-23-2014
- ☑ 7-28-2014
- ☑ 8-11-2014
- ☑ 9-8-2014

During the planning process **two public meetings were held**, one on **December 1, 2014**, and one on **December 9, 2014**. One meeting was held to address public input into the plan and one was held for the purpose of reviewing the draft plan. The first public meeting was held at 6 p.m. The meeting was published in the local newspaper, and posted at the Elmore County Courthouse. Local agencies as well as surrounding counties' representatives were in attendance at the meeting. No private citizens attended. Documentation regarding the meeting is found at **Appendix F**. The second public meeting was held on **December 9, 2014** at 6 p.m., unfortunately, however, no one else attended this meeting, other than the Elmore County EMA Director. Documentation regarding this meeting is found at **Appendix F** as well.

The purposes of these meetings were to provide an overview of the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan* and discuss the procedures for the county commission and participating local jurisdictions to adopt the plan by resolution. The ***Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*** was adopted by the Elmore County Commission during this meeting on **December 8, 2014**.

The questionnaire that was made available at each public meeting was also placed at the Elmore County EMA Office. A copy of the public questionnaire and any copies that were filled out can be found on file at the Elmore County EMA. Also, a copy of each public meeting announcement and the sign-in sheets from each meeting can be found at **Appendix F**.

Interagency & Intergovernmental Reliance a/o Coordination

In addition to the Multi-Agency Coordination (MAC) Group members, the following agencies were also sources of information and/or assistance in regards to completing the community profiles, hazards profiles, vulnerabilities assessments, potential losses, land use and development trends, and mapping data included in this plan. The vast majority of input was provided via official web sites, but in limited cases, phone calls and emails facilitated the gathering of the information contained herein.

Federal Agencies:

- ✓ U.S. Census Bureau
- ✓ U.S. Department of Geography
- ✓ U.S. Department of Homeland Security
- ✓ U.S. Office of Management and Budget
- ✓ Federal Emergency Management Agency
- ✓ National Weather Service – Birmingham Office
- ✓ United States Geological Survey - Alabama District
- ✓ United States Army Corps of Engineers
- ✓ United States Department of Agriculture

Tribal Government:

- ✓ Poarch Band of Creek Indians

State Agencies:

- ✓ Alabama Emergency Management Agency
- ✓ Alabama Department of Labor
- ✓ Alabama Department of Public Health
- ✓ Alabama Forestry Commission
- ✓ Alabama Department of Economic & Community Affairs
- ✓ Alabama Department of Transportation
- ✓ Alabama Highway Department
- ✓ Geological Survey of Alabama
- ✓ University of Alabama

Local Agencies:

- ✓ Elmore County Commission
- ✓ Elmore County Emergency Management Agency
- ✓ Elmore County Revenue Office
- ✓ Elmore County Economic Development Authority
- ✓ Elmore County Firefighters' Association

Neighboring Communities / Adjacent Counties:

- ✓ Surrounding County EMAs: Autauga, Chilton, Coosa, Macon, Montgomery and Tallapoosa

In addition, opportunity was provided for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to participate in the hazard mitigation planning process through the public involvement meetings.

Participating Municipalities
All jurisdictions within Elmore County have participated in the planning process and have committed to adoption of the final plan by formal resolution. These jurisdictions include:

- ★ Elmore County
- ★ Cities of Millbrook, Tallassee, Wetumpka
- ★ Towns of Coosada, Deatsville, Eclectic, and Elmore

All are continuing participating jurisdictions in the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.*

Other Local Agencies, Interested Groups, Including Private Non-Profits and Non-Governmental Organizations
Early in the planning process the HMPC/MAC Group and the Elmore County EMA identified a list of entities that should be involved in the plan development process including local and state agencies, interested groups, private non-profits and non-governmental organizations. In the first stages of the process these groups were contacted and points of contact identified. Throughout development of the plan, these groups and the points of contact were informed of the planning process and its outcomes. The HMPC/MAC Group was the only body directly authorized to make decisions about what was included in the plan. However, at many points in the process, these other organizations were invited to review materials related to the plan and comment on them. Representatives from these agencies, groups, and organizations were invited to attend the HMPC/MAC Group meetings and participate in the plan update process. The HMPC/MAC Group participated throughout development of the plan by providing representatives at the HMPC/MAC Group meetings, maintaining contact with the Elmore County EMA as the local mitigation plan was being updated, and interacting with the Elmore County EMA to provide information about the contents of the local plan. The HMPC/MAC Group assisted in the plan update process by facilitating coordination with local governments to obtain information regarding their local capabilities. Representatives from the HMPC/MAC Group also attended HMPC/MAC Group meetings and coordinated with the Elmore County EMA in developing the discussion of local plan updates. The Elmore County EMA provided assistance and support throughout development of this plan. **(See: Table 4:1)**

4.5.3 How Other Agencies Participated in the Planning Process
During development of the initial plan, all HMPC/MAC Group member agencies and those with points of contact identified to the HMPC/MAC Group received regular updates on plan progress via email, and all such agencies were invited to attend every general meeting of the HMPC, as well as the public workshops. These agencies participated in the planning process in several ways, but their primary means of doing so was by attending the HMPC/MAC Group meetings and participating in discussions and decisions about various plan procedures and components. The entire planning process was carefully documented. Documentation includes invitee lists, participants, materials provided, presentations, discussions, and decisions made by the planning team at the various meetings. A list of attendees is included in **Table 4.1** and **Appendix F.**

4.5.4 Summary of Review, Analysis and Update of Each Section
The following provides a brief summary of the methodology utilized to review, analyze, and update each section of the plan.

To begin with, the entire format of the *Elmore County Natural Hazard Mitigation Plan* was re-organized in the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* to both parallel the structure provided in the Final Rule (FR) and to better comply with the ***Post Katrina Emergency Management Reform Act of 2006*** (as further discussed in **Section 5** below).

Section 1 – Executive Summary Background and Introduction to the Plan. The overall structure of the Plan was updated, most section titles were altered and some sections were added. New format combined the Executive Summary Background with the (former) Section 1: Introduction.

Section 2 – Plan Approval, Adoption, and Assurances: Newly added as a section, relabeling former Section 2 to Section 3 – County/Community Profiles. These changes were made to reflect the plan review, approval, and adoption processes that were undertaken for the 2015 update.

Section 3 – County and Community Profiles: Retained this section, changing it from Section 2. Updated information in the plan regarding Elmore County's: Geography and the Environment; Major Rivers; Climate; Minerals and Soils; Population and Demographics; Land and Development; Housing and Community Development; Employment and Industry; Education; Transportation and Commuting Patterns; and County/City/Town Profiles.

Section 4 – The Planning Process: Now a "stand alone" section within the Plan. Generally speaking, this section summarizes the information from the planning process resulting in the development of the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan*, *December 2014*. A comprehensive analysis was conducted on each section of the plan and a strategy for updating the plan. New county-wide planning efforts were identified and added to the discussion in **Section 4.3**. In addition, the county-wide planning efforts discussed in the 2010 Plan were re-evaluated to determine if they were still current and on-going. The discussion of these planning efforts was revised according to the findings. The same methodology was used to update **Section 4.4** which discusses local mitigation programs and initiatives. The 2010 planning process was reviewed and revised for currency while new programs and initiatives were added to the discussion. **Section 4.5** was revised to provide a summary of the plan development process from 2010, as well as the current plan update process. It documents agency coordination and involvement and summarizes meetings for both the plan development and the plan update.

Section 5 – Hazard Identification and Risk Assessment: Changed from Section 5 – Natural Hazard Goals and Action Items. At the start of the planning process, the list of identified threats and hazards was reviewed by the Elmore County EMA to determine if any changes should be made based on new information. A desire to better comply with the *Post Katrina Emergency Management Reform Act of 2006* led to the decision to update the 2010 Plan that only addressed natural-hazards to a 2015 Plan that included technological and human-related (man-made) threats and hazards as well. This initiative led to the incorporation of a sizable number of new hazards and threats from the technological/accidental and human-related (man-made) realm. Each prior-existing hazard profile was reviewed to determine if more current information was available based on recent studies or actual hazard events. Any new information was included in this update.

The methodology for prioritizing these hazards for further analysis was reviewed by the Elmore County EMA and the HMPC/MAC Group and determined to still be valid. Hazards were once again ranked according to several criteria discussed in **Section 5.3**. The results of this process were similar to the results in 2010; however, high winds from tornadoes and windstorms have been merged into a single hazard (high winds) and led to it receiving high ratings. The results called for detailed risk assessments for tornadoes and high winds.

The methodologies used in 2010 to develop the vulnerability assessment and potential loss estimates were reviewed to determine which were the most effective in producing usable information. The review of local risk assessments and potential loss estimates were analyzed for the selected hazards (flood, high winds, and earthquakes) using the identified methodologies and the most current data available as described in **Section 5.5**.

An additional section was added, **Section 5.7**, to discuss the impacts of development trends on vulnerability. This section addresses how the changes in population and economic development affect jurisdictions' vulnerability to natural hazards.

Section 6 – Mitigation Strategy: Changed from Section 5: Natural Hazard Goals and Action Items: During the initial phase of the plan update, the HMPC/MAC Group reaffirmed the county's mitigation strategy identified in the 2010 Plan. HMPC/MAC Group members were asked to each conduct a review of the current hazard mitigation goals and actions items, keeping the new ***all-hazards*** direction for mitigation planning in mind. After the review, it was determined that the goals were still applicable/relevant to the update. In addition, each member was asked to provide new actions that their organization/department/agency was interested in pursuing and including in the 2015 plan update. These were incorporated into the updated section on mitigation actions **(Section 6.8)**. A review of mitigation activities from 2010 to 2015 was conducted and summarized in this section. The assessments of county capabilities and funding sources **(Sections 6.4 thru 6.6 and 6.9)** were reviewed to determine what information was still current. Sections were revised to reflect this assessment.

Section 7 – Coordinating Local Planning: Changed from Section 7 – Plan Maintenance: The Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group is representative of those jurisdictions/stakeholders in Elmore County concerned with natural, technological, and human-related (man-made) hazards that have impacted or can impact the county. The HMPC/MAC Group worked to engage the public identifying the threats and hazards that pose a risk to their communities, providing information about the past hazardous events, identifying the assets and potential losses in their communities and identifying the past and future mitigation measures throughout the county. Public meetings were conducted.

Section 8 – Plan Maintenance: Added in 2010 update. The method for monitoring, evaluating, and updating was revised slightly to reflect the plan maintenance activities that were proven to be effective since the 2010 Plan adoption.

Section 9 – Appendices contains a List of Figures, and List of Tables and six (6) Appendices: **A** – DMA 2000; **B** – IFR CFR 201; **C** – HMPC/MAC Group Members Listings; **D** – Plan Approval; **E** – Glossary and Terms; and **F** – Planning Process Documentation.

Figure 4.1 Statement of Representation – Elmore County Commission

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Elmore County Commission
Statement of Representation
3-25-2015

WHEREAS, the Elmore County Commission recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Elmore County Commission during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
David Bowen	Chairman	Elmore County Commission
Joe Faulk	Former Chairman	Elmore County Commission
Eric Jones	EMA Director	Elmore County Commission
Richie Beyer	County Engineer	Elmore County Commission
Lynda Feaga	Former County Administrator	Elmore County Commission
Kim Trost	EMA Program Coordinator	Elmore County Commission
David Brunson	EMA Deputy Director	Elmore County Commission
Luke McGinty	Asst. County Engineer	Elmore County Commission

NOW THEREFORE, BE IT KNOWN, THE ELMORE COUNTY COMMISSION ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

David Bowen, Chairman

4/13/15
Date

Figure 4.2 Statement of Representation – City of Millbrook

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
City of Millbrook
Statement of Representation
3-15-2015

WHEREAS, the City of Millbrook recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the City of Millbrook during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Al Kelley	Mayor	City of Millbrook
Teresa Mercer	City Clerk	City of Millbrook
Michael Harris	Water & Sewer Supervisor	City of Millbrook
P.K. Johnson	Police Chief	City of Millbrook
Larry Brown	Fire Chief	City of Millbrook
Morris Sherrill	Millbrook Street Dept. Manager	City of Millbrook
Johnny Montgomery	Asst. Police Chief	City of Millbrook
Doyle Campbell	Fire Marshall	City of Millbrook
Greg Guthrie	Utility Dept. Staff	City of Millbrook

NOW THEREFORE, BE IT KNOWN, THE CITY OF MILLBROOK ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Al Kelley, Mayor

4-8-15
Date

Figure 4.3 Statement of Representation – City of Tallassee

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
City of Tallassee
Statement of Representation
3-15-2015

WHEREAS, the City of Tallassee recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the City of Tallassee during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Bobby Payne	Mayor	City of Tallassee
Barbara Garnet	City Clerk	City of Tallassee
Steve Oswalt	Water & Sewer Department	City of Tallassee
Jimmy Rodgers	Police Chief	City of Tallassee
Travis Jones	Fire Chief	City of Tallassee
Matt Missildine	Former Fire Chief	City of Tallassee
James Garner	Public Works/Utilities Asst. Superintendent	City of Tallassee
Troy Wallace	Street Department	City of Tallassee
Jamie Buckhannon	Public Works & Utilities	City of Tallassee
Lee Blalock, Lt.	Police Department	City of Tallassee
David Rogers	Fire Department	City of Tallassee

NOW THEREFORE, BE IT KNOWN, THE CITY OF TALLASSEE ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Bobby Payne, Mayor

Mar. 30, 15
Date

Figure 4.4 Statement of Representation – City of Wetumpka

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
City of Wetumpka
Statement of Representation
3-15-2015

WHEREAS, the City of Wetumpka recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the City of Wetumpka during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Jerry Willis	Mayor	City of Wetumpka
Janice Whorton	Former City Clerk	City of Wetumpka
Tex Grier	Public Works Director	City of Wetumpka
Greg Willis	Fire Chief	City of Wetumpka
Lynn Weldon	Airport Authority/Econ. Dev.	City of Wetumpka
Jason Baker	Building Department Staff	City of Wetumpka
Stayce Carter	Building Department Staff	City of Wetumpka
Michael Robinson	Building Department - Inspector	City of Wetumpka
Larry Bryson	Traffic Control Officer	City of Wetumpka
Andrew McCullers	Wetumpka Fire Department	City of Wetumpka
Anthony Crenshaw	Former Asst. Police Chief	City of Wetumpka
Ronnie Bozeman	Wetumpka Fire Department	City of Wetumpka
Celia Dixon	Former Police Chief	City of Wetumpka
M. Whiten	Wetumpka Police Department	City of Wetumpka

NOW THEREFORE, BE IT KNOWN, THE CITY OF WETUMPKA ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Jerry Willis, Mayor

4-16-15
Date

Figure 4.5 Statement of Representation – Town of Coosada

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Town of Coosada
Statement of Representation
3-15-2015

WHEREAS, the Town of Coosada recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Town of Coosada during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Connie Hand	Mayor	Town of Coosada
Amanda Magness	Town Clerk	Town of Coosada
Leon Smith	Police Chief	Town of Coosada
Rusty Monfee	Fire Chief	Town of Coosada

NOW THEREFORE, BE IT KNOWN, THE TOWN OF COOSADA ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Connie Hand
Connie Hand, Mayor

April 8, 2015
Date

Figure 4.6 Statement of Representation – Town of Deatsville

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Town of Deatsville
Statement of Representation
3-15-2015

WHEREAS, the Town of Deatsville recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Town of Deatsville during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Clayton Edgar	Mayor	Town of Deatsville
Sandy Bradshaw	Town Clerk	Town of Deatsville

NOW THEREFORE, BE IT KNOWN, THE TOWN OF DEATSVILLE ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Clayton Edgar, Mayor

4/16/2015
Date

Figure 4.7 Statement of Representation – Town of Eclectic

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Town of Eclectic
Statement of Representation
3-15-2015

WHEREAS, the Town of Eclectic recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and *who* was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Town of Eclectic during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Gary Davenport	Mayor	Town of Eclectic
Robert Head	Police Chief	Town of Eclectic
Josh Dorminey	Fire Chief	Town of Eclectic
Adam Graham	Former Fire Chief	Town of Eclectic
Gordon Ledbetter	Former Police Chief	Town of Eclectic

NOW THEREFORE, BE IT KNOWN, THE TOWN OF ECLECTIC ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Gary Davenport, Mayor

4/15/15
Date

1

Figure 4.8 Statement of Representation – Town of Elmore

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Town of Elmore
Statement of Representation
3-15-2015

WHEREAS, the Town of Elmore recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Town of Elmore during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Margeret White	Mayor	Town of Elmore
Cheryl Worley	Town Clerk	Town of Elmore
Jo McWhorter	Former Town Clerk	Town of Elmore

NOW THEREFORE, BE IT KNOWN, THE TOWN OF ELMORE ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Margaret White, Mayor

March 31, 2015
Date

Figure 4.9 Statement of Representation – Poarch Band of Creek Indians

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Poarch Band of Creek Indians
Statement of Representation
3-15-2015

WHEREAS, the Poarch Band of Creek Indians recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Poarch Band of Creek Indians during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
April Sells	Tribal Fire/EMA Director	Poarch Band of Creek Indians
Tim Oliver	Director of Security	Poarch Band of Creek Indians

NOW THEREFORE, BE IT KNOWN, THE POARCH BAND OF CREEK INDIANS ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

April Sells

April Sells, Tribal Fire/EMA Director

3-20-15

Date

Figure 4.10 Statement of Representation – Elmore County Board of Education

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Elmore County Board of Education
Statement of Representation
3-25-2015

WHEREAS, the Elmore County Board of Education recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Elmore County Board of Education during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Dr. Andre Harrison	Superintendent	Elmore County Board of Education
Dr. Jeff Langham	Former Superintendent	Elmore County Board of Education

NOW THEREFORE, BE IT KNOWN, THE ELMORE COUNTY BOARD OF EDUCATION ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Dr. Andre Harrison, Superintendent

4/8/15
Date

Figure 4.11 Statement of Representation – Tallassee City Schools

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Tallassee City Schools
Statement of Representation
3-25-2015

WHEREAS, the Tallassee City Schools recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Tallassee City Schools during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Dr. Kenneth Varner	Superintendent	Tallassee City Schools

NOW THEREFORE, BE IT KNOWN, THE TALLASSEE CITY SCHOOLS ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Dr. Kenneth Varner, Superintendent

4.8.15
Date

Figure 4.12 Statement of Representation – Central Elmore Water & Sewer Authority

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Central Elmore Water & Sewer Authority
Statement of Representation
3-15-2015

WHEREAS, the Central Elmore Water & Sewer Authority recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and *who* was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Central Elmore Water & Sewer Authority during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Bobby Prince	General Manager	Central Elmore Water & Sewer Authority
Chad Shaw	Engineer	Central Elmore Water & Sewer Authority

NOW THEREFORE, BE IT KNOWN, THE CENTRAL ELMORE WATER & SEWER AUTHORITY ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Bobby Prince, General Manager

4-7-15
Date

Figure 4.13 Statement of Representation – Elmore Water Authority

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Elmore Water Authority
Statement of Representation
3-15-2015

WHEREAS, the Elmore Water Authority recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Elmore Water Authority during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Billy Eddings	General Manager	Elmore Water Authority

NOW THEREFORE, BE IT KNOWN, THE ELMORE WATER AUTHORITY ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Billy Eddings, General Manager

04-02-2015
Date

Figure 4.14 Statement of Representation – Holtville Water System

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Holtville Water System
Statement of Representation
3-15-2015

WHEREAS, the Holtville Water System recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Holtville Water System during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Bob Cramer	Manager	Holtville Water System

NOW THEREFORE, BE IT KNOWN, THE HOLTVILLE WATER SYSTEM ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Bob Cramer, Manager

4/7/15
Date

Figure 4.15 Statement of Representation – Wetumpka Water Works & Sewer Board

Multi-Jurisdictional Hazard Mitigation Planning Process
Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan
Wetumpka Water Works & Sewer Board
Statement of Representation
3-15-2015

WHEREAS, the Wetumpka Water Works & Sewer Board recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 CFR §201.6 relating to natural hazards; and

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements to include all jurisdictions and stakeholders in Elmore County.

WHEREAS, the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan has been prepared in accordance with the requirements of 44 CFR 201.6(c) (1) which states the plan must document the planning process, including how it was prepared and ***who*** was involved in the process, identifying each participating jurisdiction and their representative(s) by the person's position or title and agency within the jurisdiction; and

WHEREAS, the below named person(s) represented the Wetumpka Water Works & Sewer Board during the planning process to update the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan:

Name	Position	Jurisdiction
Ronnie Windham	General Manager	Wetumpka Water Works & Sewer Board
Chris Bowar	Wastewater Superintendent	Wetumpka Water Works & Sewer Board

NOW THEREFORE, BE IT KNOWN, THE WETUMPKA WATER & SEWER BOARD ATTESTS that the above named person(s) represented the jurisdiction as required by 44 CFR 201.6(c)(1) in the planning process of the Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan.

Ronnie Windham, General Manager

3/31/2015
Date

Table 4.1 Summary of Participating Jurisdictions [J] / Stakeholders [S] in the Planning Process

PARTICIPATING JURISDICTION [J] / STAKEHOLDER [S]	DATES	INVOLVEMENT
[J] Elmore County Commission	06/10/2013, 11/12/2013, 12/09/2013, 01/13/2014, 03/10/2014, 03/24/2014, 04/17/2014, 05/05/2014, 06/09/2014, 06/23/2014, 07/28/2014, 08/11/2014, 09/08/2014	Hazard Mitigation Plan updates provided to the Commissioners during scheduled meetings.
Elmore County Commission Chairman – Earl Reeves	01/07/2011	Completed Plan Review Worksheet
Elmore County Administrator – Mrs. Linda Feaga Deputy Admin/Finance Ofcr – Rhonda Ward	05/01/2013 05/01/2013	MAC Group Meeting MAC Group Meeting
Elmore County Emergency Management Agency (EMA) - Eric Jones, Director	03/15/2015, 03/20/2015, 03/25/2015, 03/30/2015, 03/31/2015, 04/02/2015, 04/07/2015, 04/08/2015, 04/13/2015, 04/16/2015, 06/10/2013, 11/12/2013, 12/9/2013, 01/13/2014, 03/10/2014, 03/24/2014, 04/17/2014, 05/5/2014, 06/9/2014, 06/23/2014, 07/28/2014, 08/11/2014, 09/08/2014	Prepared, Distributed, Contacted, Briefed, Retrieved all Multi-Jurisdictional Hazard Mitigation Planning Process Statements of Representation Includes: Elmore County Commission; Cities of: Millbrook, Tallassee, Wetumpka; Towns of: Coosada, Deatsville, Eclectic, Elmore; Poarch Band of Creek Indians; Elmore County Board of Education, Tallassee City Schools; Water Authorities: Central Elmore Water & Sewer Authority, Elmore Water Authority, Holtville Water System, and Wetumpka Water Works & Sewer Board Briefed HMP updates, sought input, during County Commission Meetings

	12/09/2014, 12/01/2014 10/24/2012, 11/07/2012, 05/01/2013, 11/05/2013, 11/07/2013, 11/12/2013 05/19/2014, 06/02/2014, 06/03/2014, 06/09/2014, 04/15/2014, 04/08/2013, 09/23/2013, 10/21/2013, 09/25/2013, 05/30/2014, 01/08/2014	Scheduled, advertised, conducted (2) Public Meetings – HMP Review Scheduled, organized, convened, attended, briefed, followed-up on, etc…HMPC/MAC Group Planning Meetings Contacted, scheduled, & conducted one-on-one HMP planning meetings with jurisdictions/stakeholders
Elmore County Emergency Management Agency (EMA) - David Brunson, Deputy Director	10/24/2012, 11/07/2012, 02/21/2014 02/21/2014, 04/16/2014, 04/21/2014, 04/22/2014, 05/08/2014, 05/19/2014, 05/21/2014, 05/22/2014, 05/23/2014, 05/28/2014, 05/29/2014, 06/03/2014, 06/04/2014, 06/09/2014, 06/10/2014, 06/11/2014, 07/01/2014, 07/16/2014	Attended, briefed, followed-up on, etc…HMPC/MAC Group Planning Meetings Contacted, scheduled, & conducted one-on-one HMP planning meetings with jurisdictions/stakeholders
Elmore County Emergency Management Agency (EMA) - Kim Trost, Program Coordinator, Planner	11/07/2012, 12/12/2013, 05/01/2013, 11/05/2013, 11/07/2013, 02/21/2014 12/10/2010, 12/13/2010, 12/16/2010, 12/17/2010	Attended, briefed, followed-up on, etc…HMPC/MAC Group Planning Meetings Hand-delivered copies of Elmore County's 2010 HMP to jurisdictions/stakeholders: Wetumpka Water Works, Five Star Water, Town of Elmore, Elmore Water Authority, Coosada Town Hall, City of Millbrook, Millbrook Police Dept, City of Prattville, Marbury Water, Holtville Water System, Wetumpka Police Dept., Eclectic Town Hall, Eclectic Police Dept,

	2012, 2013, 2014, 2015	Eclectic Water Authority, City of Tallassee, Tallassee Fire Dept, Tallassee Police Dept, City of Millbrook, Millbrook Public Works Dept, Millbrook Fire Dept, Coosada Town Hall, Coosada Police Dept, Five Star Water, Wetumpka City Hall, Wetumpka Fire Dept, Elmore County Highway Dept, Elmore County Fire Fighter's Training Facility, Elmore County Sheriff's Dept Conducted plan research, compilation, and development.
[J] City of Millbrook - Al Kelley, Mayor Teresa Mercer, Clerk	10/16/2010 06/06/2014, 06/09/2014	EMA delivered HMP for review City of Millbrook Stakeholder Mtg, HMP Update Mtg HMP Update Mtg, Plan Review Worksheet
Millbrook Street Dept - Morris Sherrill, Manager	12/16/2010 06/06/2014	EMA delivered HMP for review City of Millbrook Stakeholder Mtg, HMP Update Mtg
Millbrook Utilities - Greg Guthrie, Staff	06/06/2014	City of Millbrook Stakeholder Mtg, HMP Update Mtg
[J] City of Tallassee – Bobby Payne, Mayor Barbara Garnett, Clerk	12/16/2010 06/2014, 10/21/2013 05/01/2013, 06/10/2014	EMA delivered HMP for review City of Tallassee Stakeholder Mtgs City of Tallassee Stakeholder Mtg, HMP Update Mtg
Tallassee Public Works/Utilities – James Garner, Asst. Superintendent Troy Wallace, Street Supervisor Jamie Buckhannon, PW Utilities	10/24/2012, 06/10/2014 10/24/2012, 12/12/2013 12/12/2013	HMP Update Mtgs, Plan Review Worksheet HMP Update Mtgs, Plan Review Worksheet HMP Update Mtg
[J] City of Wetumpka – Jerry Willis, Mayor	12/16/2010 09/25/2013, 07/01/2014	EMA delivered HMP for review

		HMP Update Mtg, Plan Review Worksheet, City of Wetumpka Stakeholder Mtg
Wetumpka Public Works Dept- Lynn Weldon, Director of PW Tex Grier, Director Larry Bryson, Jr., Traffic Control Officer	0/2/25/2011, 10/24/2012 10/24/2012, 12/12/2013, 07/01/2014 12/12/2013	HMP Update Mtgs, Plan Review Worksheet HMP Update Mtg, Plan Review Worksheet, City of Wetumpka Stakeholder Mtg HMP Update Mtgs, Plan Review Worksheet
Wetumpka Building Dept – Jason Baker, City Building Official Michael Robinson, Fire Marshall Stayce Carter, Secretary	12/12/2013 12/12/2013 12/12/2013	HMP Update Mtg HMP Update Mtg HMP Update Mtg
Wetumpka Economic Development – Lynn Weldon, Director	12/12/2013	HMP Update Mtg
Wetumpka Municipal Airport – Lynn Weldon, Manager	12/12/2013, 05/08/2014	HMP Update Mtgs, Plan Review Worksheet
[J] Town of Coosada – Jon Chapman, Mayor Connie Hand, Mayor	12/13/2010 01/25/2011 06/03/2014	EMA delivered HMP for review Completed Plan Review Worksheet EMA completed HMP Update mtg with mayor & mbrs of staff; briefed on completing HMP Review Worksheet
[J] Town of Deatsville – Sandy Bradshaw, Clerk	05/01/2013, 07/16/2014	HMP Update Mtgs, Plan Review Worksheet
[J] Town of Eclectic – Gary Davenport, Mayor	12/10/2010 04/08/2013	EMA delivered HMP for review
[J] Town of Elmore – Margaret White, Mayor	12/13/2010 04/15/2014	EMA delivered HMP for review EMA completed HMP Update mtg with mayor & mbrs of staff;

Jo McWhorter, Clerk	05/01/2013	briefed on completing HMP Review Worksheet
[J] City of Prattville –	12/17/2010	EMA delivered HMP for review EMA completed HMP Update mtg with mayor & mbrs of staff; briefed on completing HMP Review Worksheet
Prattville Fire Dept – Terry Brown, Chief	04/22/2014	HMP Update Mtg
[J] Poarch Band of Creek Indians – April Sells, Tribal EMA Director/Fire Chief Tim Oliver, Director of Security, WCW	02/02/2014 02/02/2014	HMP Update Mtg, Plan Review Worksheet HMP Update Mtg, Plan Review Worksheet
[J] Elmore County Board of Education – Dr. Jeff Langham, Superintendent	05/28/2014	EMA completed HMP Update mtg with Superintendent & mbrs of staff; briefed on completing HMP Review Worksheet
[J] Tallassee City Schools/Board of Education – Dr. Kenneth Varner, Superintendent	05/29/2014	HMP Update Mtg, Plan Review Worksheet
[J] Prattville Christian Academy –		
Elmore County E-911 – Jean Moe, Director Jason Jackson, Director	10/24/2012 05/01/2013	HMP Update Mtg, Plan Review Worksheet HMP Update Mtg, Plan Review Worksheet
[S] Elmore County Hazardous Materials (HazMat) Team – William "Bill" Drake, Commander	02/07/2013, 11/05/2013	HMP Update Mtgs, Plan Review Worksheet
[S] Elmore County Fire Fighter's Association – John Wilson, President	12/13/2010 10/24/2012, 01/08/2014, 04/21/2014	EMA delivered HMP for review HMP Update Mtgs, Plan Review Worksheet

[J] Elmore County Highway Dept –	12/17/2010	EMA delivered HMP for review
Richie Beyer, County Engineer	05/19/2014	EMA completed HMP Update mtg with mayor & mbrs of staff; briefed on completing HMP Review Worksheet
Kevin Boone, Asst County Engineer	10/24/2012	HMP Update Mtgs, Plan Review Worksheet
Luke McGinty, Asst County Engineer	05/01/2013, 11/05/2013	Consulted on NFIP; provided input
Charles King, Asst County Engineer	Dec 2014, Mar 2015	Consultant/SME on NFIP to plan writers; provided verbiage regarding NFIP
[S] Elmore County Dept of Human Resources (DHR)– Michelle Wood, Director	11/07/2012, 02/07/2013, 11/07/2013	HMP Update Mtgs, Plan Review Worksheet
[S] Elmore County Amateur Radio Society (ECARS) –		
Farris Mosley, Emergency Coordinator	11/07/2013, 03/11/2014	HMP Update Mtgs, Plan Review Worksheet; ECARS Mtg – Discussed HMP Update process
Deborah Mosley, Director	11/07/2013, 03/11/2014	HMP Update Mtgs, Plan Review Worksheet; ECARS Mtg – Discussed HMP Update process
Terry Sprinkle, Secretary/Treasurer	03/11/2014	ECARS Mtg – Discussed HMP Update process
Howard Marshall, Director	03/11/2014	ECARS Mtg – Discussed HMP Update process
Jason Smith, Director	03/11/2014	ECARS Mtg – Discussed HMP Update process
David Brunson, Vice President	03/11/2014	ECARS Mtg – Discussed HMP Update process
[S] Elmore County Voluntary Agencies Active in Disaster (VOAD) –		

Judy Whidbee, President, Vice President Don Woodall, President	11/07/2012, 02/07/2013, 11/07/2013 11/07/2012, 02/07/2013	HMP Update Mtgs, Plan Review Worksheet HMP Update Mtgs, Plan Review Worksheet
[S] Haynes Ambulance – Dale Grimes, Manager, Wetumpka	10/24/2012, 02/07/2013, 11/05/2013, 05/08/2014	HMP Update Mtgs, Plan Review Worksheet
[S] Alabama Dept of Public Health/Elmore County Health Dept – Skip Gray, Coordinator Emergency Preparedness Team Area 8 Mary Conway, RN Surveillance Nurse / Emergency Preparedness Public Health Area 8 Dee Hardin, Environmental Supervisor Patti Stallberger, Nurse Ann Langley, Office Manager	11/07/2012 11/07/2012, 11/07/2013, 02/07/2013 11/07/2013 02/07/2013 11/07/2013	HMP Update Mtgs, Plan Review Worksheet HMP Update Mtgs, Plan Review Worksheet HMP Update Mtg HMP Update Mtg HMP Update Mtg
[S] Alabama Dept of Rehabilitative Services – Jana Munro, Director	11/07/2013	HMP Update Mtg
[S} Alabama Emergency Management Agency – Robert Bayliss, Mitigation Planner Craig Bolling, Planner Robert Thomas, Regional Coordinator	05/01/2013 05/01/2013 11/07/2012	Attended local HMPC meeting, provided technical advice Attended local HMPC meeting, provided technical advice Attended local HMPC meeting, provided technical advice
[S] American Red Cross – Grover Henry, Territory Disaster Program Manager	11/07/2012	HMP Update Mtgs, Plan Review Worksheet

Niki Davidson, Emergency Services Felicia Love, Emergency Services	11/07/2012, 11/07/2013 11/07/2012	HMP Update Mtgs, Plan Review Worksheet HMP Update Mtgs, Plan Review Worksheet
Fire Services: [S] Buyck VFD -		
Fire Services: [S] Coosada VFD – Rusty Monfee, Chief Scott Kramer, LT,	02/13/2014, 05/30/2014, 06/3/2014 02/13/2014	Completed 3 HMP Update mtgs, provided the HMP Review Worksheet, EMA completed mtg conducted with mbrs of department HMP Update Mtg, Plan Review Worksheet
Fire Services: [S] Deatsville VFD – Charles Ellis, Chief	07/16/2014	HMP Update Mtg, Plan Review Worksheet
Fire Services: [S] Eclectic VFD – Adam Graham, Chief	06/30/2014	HMP Update Mtg, Plan Review Worksheet
Fire Services: [S] Elmore VFD – Andrew Crawford, Chief Ed Gray, Asst Chief	02/21/2014 02/21/2014	HMP Update Mtg, Plan Review Worksheet HMP Update Mtg
Fire Services: [S] Emerald Mountain VFD -		
Fire Services: [S] Friendship VFD – Steve Dennis, Chief	05/01/2013	HMP Update Mtg, Plan Review Worksheet
Fire Services: [S] Holtville/Slapout VFD -		
Fire Services: [S] Kowaliga VFD -		
Fire Services: [S] Lightwood VFD – Keith Barnes, Chief	02/13/2014	HMP Update Mtg, Plan Review Worksheet

Gly Woodall, Asst Fire Chief	02/13/2014	HMP Update Mtg, Plan Review Worksheet
Fire Services: [S] Millbrook Fire & Rescue - Larry Brown, Chief Doyle Brown, Captain, Fire Marshall	12/13/2010 06/06/2014, 01/11/2011 06/06/2014	EMA delivered HMP for review City of Millbrook Stakeholders Mtg, HMP Update Mtg, Plan Review Worksheet City of Millbrook Stakeholders Mtg
Fire Services: [S] Real Island VFD -		
Fire Services: [S] Red Hill VFD -		
Fire Services: [S] Redland VFD – William "Bill" Drake, Chief	10/24/2012, 02/07/2013, 11/05/2013	HMP Update Mtg, Plan Review Worksheet
Fire Services: [S] Santuck VFD – David Brunson, Firefighter Eric Jones, Training Officer/Firefighter		
Fire Services: [S] Seman VFD – Howard Shaw, Chief	07/16/2014	HMP Update Mtg, Plan Review Worksheet
Fire Services: [S] Tallassee VFD – Travis Jones, Chief Troy Mann, Chief Matt Missildine, Chief	12/16/2010 04/16/2014, 06/2014 02/06/2013 01/04/2011	EMA delivered HMP for review HMP Update Mtg, completed Plan Review Worksheet HMP Update Mtg, completed Plan Review Worksheet HMP Update Mtg, completed Plan Review Worksheet
Fire Services: [S] Titus VFD -		
Fire Services: [S] Wetumpka FD – Greg Willis, Chief	12/10/2010 07/01/2014	EMA delivered HMP for review

		City of Wetumpka Stakeholder Mtg
Andrew McCullers, Captain	02/07/2013	HMP Update Mtg, Plan Review Worksheet
Ronnie Bozeman, Firefighter	10/24/2012, 02/07/2013	HMP Update Mtg
Fire Services: [S] Windermere VFD – Rick Borowski, Chief	02/13/2014	HMP Update Mtg, Plan Review Worksheet
Law Enforcement: [S] Elmore County Sheriff's Dept – Ricky Lowery, Chief Deputy	12/10/2010 10/24/2012, 02/06/2013, 11/05/2013	EMA delivered HMP for review HMP Update Mtgs, Plan Review Worksheet
Jeremy Amerson, LT	10/24/2012	HMP Update Mtg
Law Enforcement: [S] Coosada Police Dept – Leon Smith, Chief	12/10/2010 02/07/2013, 05/01/2013, 06/03/2014	EMA delivered HMP for review Completed Plan Review Worksheet; EMA completed HMP Update mtg with mayor & mbrs of staff; briefed on completing HMP Review Worksheet
[S] Morris Rogers, Sgt	06/03/2014	Completed Plan Review Worksheet; EMA completed HMP Update mtg with mayor & mbrs of staff; briefed on completing HMP Review Worksheet
Law Enforcement: [S] Eclectic Police Dept – Gordon M. Ledbetter, Chief	12/10/2010 12/28/2010	EMA delivered HMP for review HMP Update Mtg, Plan Review Worksheet
Ron White, Corporal	10/24/2012	HMP Update Mtg, Plan Review Worksheet
Law Enforcement: [S] Millbrook Police Dept - P.K. Johnson, Chief	12/16/2010 10/24/2012, 02/06/2013, 11/05/2013, 06/06/2014	EMA delivered HMP for review HMP Update Mtgs, Plan Review Worksheet, City of Millbrook Stakeholders Mtg
Johnny Montgomery, Asst Chief	02/06/2013, 06/06/2014	HMP Update Mtgs, Plan Review Worksheet, City of Millbrook Stakeholders Mtg

Law Enforcement: [S] Tallassee Police Dept – James (Jimmy) Rodgers, Chief Chris Miles, Asst. Chief (former) Lee Blalock, LT	12/16/2010 12/15/2010, 10/24/2012, 02/06/2013, 11/05/2013, 06/2014 10/24/2012, 06/2014 06/2014	EMA delivered HMP for review HMP Update Mtgs, Plan Review Worksheet, City of Tallassee Stakeholders Mtg HMP Update Mtgs, Plan Review Worksheet City of Tallassee Stakeholders Mtg
Law Enforcement: [S] Wetumpka Police Dept – Celia Dixon, Chief Anthony Crenshaw, Deputy Chief Terry McInnis, Captain M. Whiten, Corporal	10/12/2010 02/06/2013, 07/01/2014 07/01/2014 10/24/2012 11/05/2013	EMA delivered HMP for review HMP Update Mtgs, Plan Review Worksheet HMP Update Mtg HMP Update Mtg HMP Update Mtg
Water Authorities: **[J]** Central Elmore Water & Sewer (CEW&S) – Bobby Prince, General Manager Chad Shaw, Engineer	10/24/2012 10/24/2012, 12/12/2013	HMP Update Mtgs, Plan Review Worksheet HMP Update Mtgs, Plan Review Worksheet
Water Authorities: [S] Eclectic Water Works & Sewer – Jennifer Lyle,	12/10/2010 06/04/2014	EMA delivered HMP for review HMP Update Mtg
Water Authorities: **[J]** Elmore Water Authority – Billy Eddings, General Manager	12/10/2010 03/01/2011, 05/07/2011, 10/24/2012, 12/12/2013, 05/08/2014	EMA delivered HMP for review HMP Update Mtgs, Plan Review Worksheet
Water Authorities: **[J]** Five Star Water Authority – David Popham, Plant Manager	12/10/2010	EMA delivered HMP for review

Water Authorities: **[J]** Friendship Water Works – Steve Dennis, Manager		
Water Authorities: **[J]** Holtville Water Systems, Inc. – Bob Cramer, Manager	12/17/2010 02/01/2011, 10/24/2012, 05/01/2013	EMA delivered HMP for review HMP Update Mtgs, Plan Review Worksheet
Water Authorities: [S] Millbrook Water and Sewer Authority – Michael Harris, Supervisor	06/09/2014	City of Millbrook Stakeholders Mtg
Water Authorities: **[J]** Tri-Community Water System -		
Water Authorities: [S] Tallassee Water Dept – Steve Oswalt, Supervisor	10/24/2012, 04/16/2014, 06/2014	HMP Update Mtgs, Plan Review Worksheet, City of Tallassee Stakeholders Mtg
Water Authorities: **[J]** Wetumpka Water Works and Sewer Board – Chris Bowar, Wastewater Superintendent Ronnie Windham,	12/10/2010 12/10/2012, 10/24/2012, 05/01/2013 05/01/2013	EMA delivered HMP for review HMP Update Mtgs, Plan Review Worksheet HMP Update Mtgs, Plan Review Worksheet
Water Authorities: **[J]** Marbury Water System -	12/17/2010	EMA delivered HMP for review
[S] Elmore Community Hospital – Cindy Futral, Administrator		
[S] Tallassee Community Hospital – Heather Johnson, Community Outreach	11/07/2012, 02/07/2013, 11/07/2013	HMP Update Mtgs, Plan Review Worksheet
[S] General Public – Private Business Partners: Chambers of Commerce:	10/22/2012	Each Director was contacted via telephone, emailed, and asked to disseminate an attached

Millbrook (345), Tallassee (175), Wetumpka (391) members; Elmore County Economic Development Authority (ECEDA) (50)		electronic Threat/Hazards Survey to each of their members (or post on their website) seeking their membership's participation/involvement in the Planning process.
Elmore County Community Emergency Response Team (CERT) Members (75)	10/23/2012	Emailed each member with Threat/Hazards Survey attached seeking each member's participation/involvement
General Public	Invited to attend/participate in all scheduled meetings of the: HMPC/MAC Group, Elmore County Commission, and Public Meetings. All meetings conducted according to Alabama's Open Meetings Act.	Encouraged to attend meetings, ask questions, provide feedback, complete surveys, review draft plan, etc.

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Section 5 – Hazard Identification and Risk Assessment

This section of the plan addresses requirements of Final Rule (FR) Section 201.6. A copy of the FR is provided for reference in **Appendix B** of this document.

Contents of this Section

5.1 Final Rule Requirements for Risk Assessments
5.2 Overview of Type, Location and Extent of Hazards That Can Affect Elmore County
5.3 Methodology for Identifying Natural Hazards for Additional Analysis
5.4 General Discussion of Vulnerability and Risk
5.5 Vulnerability Assessment and Loss Estimation
5.6 Jurisdictions Most Threatened and Vulnerable to Damage and Loss
5.7 Impacts of Development Trends on Vulnerability

What has been updated?

The 2010 *Elmore County Natural Hazard Mitigation Plan* was completely revised during the 2015 plan update process. For the 2015 update, the Plan underwent a *major* re-write, was completely restructured and reformatted, and vastly broadened to include *all* hazards relative to Elmore County--natural, technological, and human-related (man-made)--thus warranting the new title: *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*.

Certain informational elements of the 2010 Plan were retained and carried forward into the 2015 plan update, like various maps, storm events data, census data, facilities, methodologies, strategies, action items, etc. All retained informational elements were refreshed and updated as appropriate and expanded where applicable. Numerous informational elements were added to the Plan to support the newly incorporated technological and human-related (man-made) threats and hazards, as well as additional natural hazards not previously covered, such as fog, sinkholes, and land subsidence.

Given the broad scope of changes resulting from this update, users are highly encouraged to read this plan "cover to cover," expecting numerous differences between the *2010* and *2015* editions. The scope of change contained herein extends far beyond the typical, minor, or expected changes one might see in a standard plan update.

The primary driving factors behind the complete "over-haul" of this Plan include:

- ✓ The desire to standardize its structure to more closely aligned it with that of the governing Final Rule (FR), thus improving its organization, cohesiveness, and flow;

- ✓ The desire to incorporate a number of threats and hazards not previously addressed in the Elmore County HMP; and

- ✓ The desire to more closely mirror the Alabama State Hazard Mitigation Plan, Updated April 2013.

5.1 Final Rule Requirements for Risk Assessments

The Final Rule (FR) 201.6(c)(2) requires the plan include: "*Risk Assessments* that provide 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 (i) A description of the type, 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. (ii) 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. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of: (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; (B) 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; and (C) 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. (iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area." The FR Subsection 201.6 (5) (d) (3) states: "*A local jurisdiction must review and revise its plan to reflect changes in development…"*

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5.2 Overview of Type, Location, and Extent of Hazards That Can Affect Elmore County

In the initial phase of the planning process, the Hazard Mitigation Planning Committee (HMPC) (later known as the Multi-Agency Coordination ((MAC)) Group), reviewed the 2010 *Elmore County Natural Hazard Mitigation Plan* which contained nine natural hazards that created risks for Elmore County: Flooding, Thunderstorms, Tornados, High Winds, Lightning, Wildfires, Drought and Heat Wave, Hurricanes/Tropical Storms, and Winter Storms.

In 2012, EMA began discussing the need to pursue an "all-hazards" approach to hazard mitigation with the members of the HMPC/MAC Group. All feedback indicated a unanimous agreement to update the county's hazard mitigation plan to an *all-hazards* plan and to no longer limit the plan to natural hazards. Therefore, the *Elmore County Multi-Jurisdictional, All-Hazards Mitigation Plan, December 2014* now includes natural, technological and human-related (man-made) threats and hazards.

The list of hazards below include ones that have previously occurred in Elmore County as well as ones that may occur in the future. In addition, the natural hazards with the greatest chance of significantly affecting Elmore County and its citizens will be further detailed beginning **Section 5.3** Risk Assessment, of this Plan. A variety of sources were used as part of this study to determine hazards that have impacted the state and county historically or may occur in the future. These sources included national, regional, and local sources such as websites, published documents, databases, and maps. Some of the specific sources include:

- Alabama Emergency Management Agency
- United States Geological Survey (USGS)
- Alabama Forestry Commission
- National Oceanic and Atmospheric Administration (NOAA)
- Geological Survey of Alabama (GSA)
- Alabama Department of Economic and Community Affairs (ADECA)
- U.S. Department of Homeland Security
- Federal Emergency Management Agency (FEMA)
- Michigan Hazard Mitigation Plan, March 2011
- Michigan's 2012 Threat Hazard Inventory and Risk Assessment (August 2012 Draft)

The updated list of hazards for the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* is as follows:

1. Thunderstorms*/Severe Thunderstorms
2. Lightning*
3. Hail
4. Tornadoes* and High Wind Events*
5. Flooding (includes Flash Flooding*, River Flooding*)
6. Hurricanes* and Tropical Storms*
7. Extreme Temperatures – Heat* and Cold*

8. Winter Storms*
9. Drought*
10. Wildfire*
11. Landslides
12. Sinkholes and Land Subsidence
13. Earthquakes*
14. Dam Failure*
15. Dense Fog
16. Celestial Impact (Includes Space Weather*)
17. Hazardous Materials*
18. Transportation System Failures*
19. Epidemiological*/Public Health*
20. Civil Unrest*
21. Adversarial Threats* (Includes: Terrorism*, Radiological Dispersal Device*/Nuclear Attack*, Biological Attack-Non-Food*, Biological*/Chemical Food Contamination, Chemical Attack*-Non-Food, Aircraft* Accident/as Weapons, Explosive Devices*, Armed Assault*, Cyber Attack*)

* Hazard specifically identified in the *Elmore County Vulnerability Analysis and Threat/Hazard Profile (THIRA Information as requested by AEMA) November, 2013*

Hazards

For the purpose of this plan, hazards are aligned under one of three broad headings: Natural, Technological, or Human-Related.

Natural Hazards addressed herein relate to: weather hazards, hydrological hazards, ecological hazards, and geological hazards.

Technological Hazards addressed herein relate to: industrial hazards and infrastructure problems.

Human-Related Hazards addressed herein relate to: civil unrest/disturbances, nuclear attack, public health emergencies, terrorism, and criminal activities.

The following outline summarizes the significant hazards covered in this section of the plan that fall under one of the above headings:

Natural Hazards: thunderstorms/severe thunderstorms; lightning; hail, tornadoes and high wind events; flooding (includes flash flooding & river flooding); hurricanes and tropical storms; extreme temperatures – heat & cold; winter storms; drought; wildfire; landslides; sinkholes and land subsidence; earthquakes; dam failure; dense fog; and celestial impact (includes space weather).

Technological Hazards: transportation system failures; hazardous materials.

Human-Related Hazards: human pandemic & animal disease; riot, demonstrations, violent protest, illegal assembly; adversarial threats—terrorism, radiological dispersal device/nuclear

attack, biological attack-non-food, biological/chemical food contamination, chemical attack-non-food, aircraft accident/as weapons, explosive devices, armed assault, and cyber attack.

The ***Local Mitigation Plan Review Tool,*** **Section 1. Regulation Checklist, Element B. Hazard Identification and Risk Assessment**, establishes the following requirements for the local plan:

- B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))
- B2. Does the Plan include information on previous occurrences of hazard events and of the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
- B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))
- B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))

In meeting the requirements of B1, B2, and B3 above to describe the *location* and *extent* of natural hazards, *probability* of future hazard events, and each hazard's *impact* on the community, respectively, the **Definitions for Classifications**, as found in ***Worksheet 5.1 Hazard Summary Worksheet, Local Mitigation Planning Handbook***, are employed to the fullest extent possible in this section of the Plan. The definitions are as follows:

- *Location (Geographic Area Affected):*
  - *Negligible:* Less than 10 percent of planning area of isolated single-point occurrences
  - *Limited:* 10 to 25 percent of the planning area or limited single-point occurrences
  - *Significant:* 25 to 75 percent of the planning area or frequent single-point occurrences
  - *Extensive:* 75 to 100 percent of planning area or consistent single-point occurrences
- *Extent, Maximum Probable (Magnitude/Strength based on historic events or future probability of a hazard):*
  - *Weak:* Limited classification on scientific scale, slow speed of onset or moderate duration of event, resulting in little to no damage
  - *Moderate:* Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of services for days
  - *Severe:* Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months
  - *Extreme:* Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions

- *Probability of Future Events*:
  - *Unlikely:* Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 year
  - *Occasional:* 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years
  - *Likely:* 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
  - *Highly Likely:* 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year
- *Overall Significance*
  - *Low*: Two or more criteria fall in lower classifications or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential
  - *Medium*: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating
  - *High*: The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with sever strength over a significant to extensive portion of the planning area.

To achieve the integration of "all-hazards" (including natural, technological, and human-related ((man-made)) threats and hazards into the *Multi-Jurisdictional All-Hazards Mitigation Plan*, results from the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, have been incorporated into the Plan. The *Vulnerability Analysis and Threat/Hazard Profile* also contains a set of descriptors/definitions of classifications. They are different however, from those descriptors found in the ***Local Mitigation Planning Handbook, Worksheet 5.1 Hazard Summary Worksheet***. Because of the differences between the two sets of descriptors, every effort has been made to establish a reasonable correlation between those definitions/descriptors most closely related. Where used, descriptors will be identified by their source—as either from the THIRA or the *Local Mitigation Planning Handbook, Worksheet 5.1 Hazard Summary Worksheet,* as applicable.

The following descriptors/grading criteria are found in the ***Elmore County Vulnerability Analysis:***

- ***History*** – How often the hazard occurred in the county
  - *Low:* at least one occurrence every 11-100 years
  - *Medium:* at least one occurrence every 5-10 years
  - *High:* at least one occurrence every 1-4 years
- ***Probability*** *of the hazard occurring – determined on basis of observations, experience, or scientific reason/documentation*
  - *Low:* less than 30% chance of occurrence
  - *Medium:* greater than 30% chance but less than 70% chance of occurrence

- *High:* greater than 70% chance of occurrence

- ***Vulnerability*** *indicates total number of people and property of the county that could be affected should the hazard occur*

  - **Population**
    - *Low:* less than 30% of population
    - *Medium:* greater than 30% but less than 70% of population
    - *High:* greater than 70% of population
  - **Property**
    - *Low:* less than 30% of property
    - *Medium:* greater than 30% but less than 70% of property
    - *High:* greater than 70% of property

- ***Maximum Threat*** – the greatest destruction that can be expected from a hazard

  Population – loss of life or injury
    - *Low:* less than 5% of population
    - *Medium:* 5% to 10% of population
    - *High:* greater than 10% of population

  Property homes, businesses, infrastructure losses (i.e., bridges, roads, government buildings)
    - *Low:* less than 5% of property
    - *Medium:* 5% to 10% of property
    - *High:* greater than 10% of property

- ***Economic impact*** – losses of jobs and revenue. Economic instability or environmental insults from the hazard
    - *Low:* impacts less than 5% of county's economy
    - *Medium:* impacts 5% to 20% of county's economy
    - *High:* impacts greater than 20% of county's economy

The following descriptors/grading criteria are found in the ***Elmore County Threat/Hazard Profile:***

- ***Frequency of Occurrence***
    - *Frequent = 1*
    - *Occasional = 2*
    - *Infrequent = 3*
    - *Rare = 4*
    - *Very Rare = 5*
    - *Never = 6*
- ***Risk***
    - *Very High = 1*
    - *High = 2*
    - *Substantial = 3*
    - *Moderate = 4*
    - *Low = 5*
    - *Very Low = 6*
- ***Impact on Public***
    - *Catastrophic = 1*

  - *Disaster = 2*
  - *Very Serious = 3*
  - *Serious = 4*
  - *Important = 5*
  - *Noticeable = 6*
- ***Impact on Responders***
  - *Very High = 1*
  - *High = 2*
  - *Substantial = 3*
  - *Moderate = 4*
  - *Low = 5*
  - *Very Low = 6*
- ***Continuity of Operations***
  - *Very High = 1*
  - *High = 2*
  - *Substantial = 3*
  - *Moderate = 4*
  - *Low = 5*
  - *Very Low = 6*
- ***Infrastructure***
  - *Very High = 1*
  - *High = 2*
  - *Substantial = 3*
  - *Moderate = 4*
  - *Low = 5*
  - *Very Low = 6*
- ***Delivery of Services***
  - *Very High = 1*
  - *High = 2*
  - *Substantial = 3*
  - *Moderate = 4*
  - *Low = 5*
  - *Very Low = 6*
- ***Environment***
  - *Very High = 1*
  - *High = 2*
  - *Substantial = 3*
  - *Moderate = 4*
  - *Low = 5*
  - *Very Low = 6*
- ***Economic***
  - *Very High = 1*
  - *High = 2*
  - *Substantial = 3*
  - *Moderate = 4*

- *Low = 5*
- *Very Low = 6*

Hazard Profiles Summary

The following table summarizes the results of the hazard profiles and assigns a level of overall planning significance to each hazard of low, medium, or high. Significance was determined based on the hazard profile, focusing on key criteria such as frequency and resulting damage, including deaths/injuries and property, crop, and economic damage. This assessment was used by the Elmore County HMPC/MAC Group to prioritize those hazards of greatest significance to the planning area; thus enabling the County to focus resources where they are most needed. Those hazards that occur infrequently or have little or no impact on the planning area were determined to be of low significance. Those hazards determined to be of high and moderate significance were characterized as priority hazards that required further evaluation in **Section 5.3** Vulnerability Assessment.

Table 5.2-1 Elmore County Hazards Identification Worksheet (Hazard Profiles Summary)

Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/ Strength)	Frequency of Occurrence	Probability of Future Events	Overall Significance Ranking
Thunderstorm*/ Severe Thunderstorm	Extensive	Public: Very Serious (3) Infrastructure: High (2) Environment: High (2)	Frequent (1)	Medium (35) Occasional/ Likely	High
Lightning*	Extensive	Public: Very Serious (3) Infrastructure: High (2) Environment: High (2)	Frequent (1)	Medium (35) Occasional/ Likely	High
Hail	Extensive	Public: Noticeable (6) Infrastructure: Very Low (6) Environment: Very Low (6)	Occasional (2)	Low (7) Unlikely/ Occasional	Low
Tornados*	Extensive	Public: Serious (4) Infrastructure: High (2) Environment: High (2)	Frequent (1)	Medium (35) Occasional/ Likely	High

Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/ Strength)	Frequency of Occurrence	Probability of Future Events	Overall Significance Ranking
High Wind Events*	Extensive	Public: Very Serious (3) Infrastructure: High (2) Environment: High (2)	Frequent (1)	Medium (35) Occasional/ Likely	High
Flooding - Flash Flooding*	Extensive	Public: Very Serious (3) Infrastructure: Very High (1) Environment: Very High (1)	Occasional (2)	Medium (35) Occasional/ Likely	High
Flooding - River*	Limited	Public: Very Serious (3) Infrastructure: Very High (1) Environment: Very High (1)	Occasional (2)	Medium (35) Occasional/ Likely	High
Hurricanes* & Tropical Storms*	Extensive	Public: Disaster (2) Infrastructure: High (2) Environment: Moderate (4)	Occasional (2)	Medium (35) Occasional/ Likely	High
Extreme Temperatures Heat*	Extensive	Public: Very Serious (3) – Serious (4) Infrastructure: Moderate (4) Environment: Moderate (4)	Occasional (2)	Low (7) Unlikely/ Occasional	Medium
Extreme Temperatures Cold*	Extensive	Public: Very Serious (3) Infrastructure: Substantial (3) Environment: Low (5)	Infrequent (3)	Low (7) Unlikely/ Occasional	Low
Winter Storms*	Extensive	Public: Very Serious (3) Infrastructure: Substantial (3) Environment: Low (5)	Infrequent (3)	Low (7) Unlikely/ Occasional	Medium

Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/ Strength)	Frequency of Occurrence	Probability of Future Events	Overall Significance Ranking
Drought*	Extensive	Public: Very Serious (3) Infrastructure: High (2) Environment: High (2)	Occasional (2)	Medium (35) Occasional/ Likely	Medium
Wildfire*	Extensive	Public: Serious (4) Infrastructure: Very Low (6) Environment: High (2)	Occasional (2)	Low (7) Unlikely/ Occasional	Low
Landslides	Negligible	Public: Noticeable (6) Infrastructure: Low (5) Environment: Very Low (6)	Very Rare (5)	Low (7) Unlikely/ Occasional	Low
Sinkholes and Land Subsidence	Negligible	Public: Noticeable (6) Infrastructure: Low (5) Environment: Very Low (6)	Very Rare (5)	Low (7) Unlikely/ Occasional	Low
Earthquakes*	Extensive	Public: Noticeable (6) Infrastructure: Low (5) Environment: Very Low (6)	Infrequently (3)	Low (7) Unlikely/ Occasional	Low
Dam Failure*	Limited	Public: Disaster (2) Infrastructure: Very High (1) Environment: Very High (1)	Very Rare (5)	Low (7) Unlikely/ Occasional	High
Dense Fog	Extensive	Public: Important (5) Infrastructure: Very Low (6) Environment: Very Low (6)	Infrequently (3)	Medium (35) Occasional/ Likely	Low

Celestial Impact (Includes Space Weather*)	Extensive	Public: Very Serious (3) Infrastructure: Very High (1) Environment: Very Low (6)	Very Rare (5)	Low (7) Unlikely/ Occasional	Low
Hazard	**Location (Geographic Area Affected)**	**Maximum Probable Extent (Magnitude/ Strength)**	**Frequency of Occurrence**	**Probability of Future Events**	**Overall Significance Ranking**
Hazardous Materials*	Significant	Public: Disaster (2) Infrastructure: Moderate (4) Environment: Low (5)	Rare (4)	Low (7) Occasional	High
Transportation System Failures*	Significant	Public: Serious (4) Infrastructure: Substantial (3) – Low (5) Environment: Very Low (6)	Rare (4)	Low (7) Occasional	High
Epidemiological*	Extensive	Public: Very Serious/ Serious (3/4) Infrastructure: Substantial (3) Environment: Low (5)	Very Rare (5)	Low (7) Unlikely/ Occasional	Medium
Public Health* (Animal Disease)	Extensive	Public: Very Serious (3) Infrastructure: Low (5) Environment: Low (5)	Rare (4)	Low (7) Unlikely/ Occasional	Low
Civil Unrest*	Negligible	Public: Important (5) Infrastructure: Moderate (4) Environment: Low (5)	Rare (4)	Low (7) Unlikely/ Occasional	Low
Adversarial Threats*: Terrorism*	Negligible	Public: Disaster (2) Infrastructure: High (2) Environment: High (2)	Very Low (6)	Low (7) Unlikely	Low

Radiological Dispersal Device*	Limited	Public: Disaster (2) Infrastructure: High (2) Environment: Very High (1)	Very Low (6)	Low (7) Unlikely	Low
Hazard	**Location (Geographic Area Affected)**	**Maximum Probable Extent (Magnitude/ Strength)**	**Frequency of Occurrence**	**Probability of Future Events**	**Overall Significance Ranking**
Nuclear Attack*	Extensive	Public: Disaster (2) Infrastructure: High (2) Environment: Very High (1)	Very Low (6)	Low (7) Unlikely	Low
Biological Attack – Non Food*	Negligible	Public: Disaster (2) Infrastructure: High (2) Environment: High (2)	Very Low (6)	Low (7) Unlikely	Low
Biological* / Chemical Food Contamination	Negligible	Public: Disaster (2) Infrastructure: High (2) Environment: High (2)	Very Low (6)	Low (7) Unlikely	Low
Chemical Attack* – Non Food	Negligible	Public: Disaster (2) Infrastructure: High (2) Environment: High (2)	Very Low (6)	Low (7) Unlikely	Low
Aircraft* Accident	Extensive - Negligible	Public: Serious (4) Infrastructure: Moderate (4) – Low (5) Environment: Substantial (3)	Rare (4)	Low (7) Unlikely	Low
Aircraft* As Weapons	Extensive - Negligible	Public: Serious (4) Infrastructure: Moderate (4) – Low (5) Environment: Substantial (3)	Rare (4)	Low (7) Unlikely	Low

Explosive Devices*	Negligible	Public: Disaster (2) Infrastructure: Substantial (3) Environment: Very Low (6)	Very Low (6)	Low (7) Unlikely	Low
Hazard	**Location (Geographic Area Affected)**	**Maximum Probable Extent (Magnitude/ Strength)**	**Frequency of Occurrence**	**Probability of Future Events**	**Overall Significance Ranking**
Armed Assault*	Negligible	Public: Important (5) Infrastructure: Very Low (6) Environment: Very Low (6)	Rare (4)	Low (7) Unlikely	Low
Cyber Attack*	Significant	Public: Serious (4) – Important (3) Infrastructure: Moderate (4) Environment: Very Low (6)	Very Low (6)	Low (7) Unlikely/ Occasional	Low

Note: Threats and hazards annotated with "*" are specifically identified in the Elmore County Vulnerability Analysis and Threat/Hazard Profile (THIRA Information as requested by AEMA) November, 2013. All other threats and hazards determined for inclusion in the plan in addition to those analyzed in the above document.

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Table 5.2-2 Natural Hazards (Jurisdictions w/Enhanced Vulnerability) (Also: Table 6.8.2-2 Natural Hazards)

Elmore County Natural Hazard Concerns by Jurisdiction	**Natural Hazards**															
	Flooding (includes Flash & River)	Thunderstorms/ Severe Thunderstorms	Tornados/High Wind	Hail	Lightning	Wildfires (includes grass fires)	Drought	Hurricanes/ Tropical Storms	Winter Storms	Extreme Temperatures (Heat & Cold)	Landslides	Sinkholes & Land Subsidence	Earthquakes	Dam Failure	Dense Fog	Celestial Impact (including Space Weather)
Elmore County	√+	√	√	√	√	√+	√	√	√	√	√+	√	√	√+	√	√
Coosada, Town of	√+	√	√	√	√	√+	√	√	√	√	√	√	√	√+	√	√
Deatsville, Town of	√	√	√	√	√	√+	√	√	√	√	√	√	√	√	√	√
Eclectic, Town of	√	√	√	√	√	√+	√	√	√	√	√	√	√	√	√	√
Elmore, Town of	√+	√	√	√	√	√+	√	√	√	√	√	√	√	√+	√	√
Millbrook, City of	√+	√	√	√	√	√	√	√	√	√	√	√	√	√+	√+	√
Tallassee, City of	√+	√	√	√	√	√	√	√	√	√	√+	√	√	√+	√+	√
Wetumpka, City of	√+	√	√	√	√	√	√	√	√	√	√+	√	√	√+	√+	√
Central Elmore Water & Sewer	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Eclectic Water Works & Sewer	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Elmore Water Authority	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√	√	√
Five Star Water Authority	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Friendship Water Works	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Holtville Water Systems, Inc.	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Millbrook Water & Sewer Authority	√+	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Tri-Community Water System	√+	√	√	√	√+	√	√+	√	√	√	√	√	√	√	√	√
Tallassee Water Dept.	√+	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Wetumpka Water Works & Sewer Board	√+	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Elmore County Board of Education	√	√	√+	√	√	√	√	√	√	√	√	√	√	√	√+	√
Tallassee City Schools	√	√	√+	√	√	√	√	√	√	√	√	√	√	√	√+	√

Note: A "+" means jurisdiction has an enhanced vulnerability to the natural hazard.

Table 5.2-3 Technological Hazards
(Also: Table 6.8.2-3 Technological Hazards)

Elmore County Technological Hazard Concerns by Jurisdiction	**Technological Hazards**	
	Transportation System Failures	Hazardous Materials Releases
Elmore County	√	√
Coosada, Town of	√	√
Deatsville, Town of	√	√
Eclectic, Town of	√	√
Elmore, Town of	√	√
Millbrook, City of	√	√
Tallassee, City of	√	√
Wetumpka, City of	√	√
Central Elmore Water & Sewer	√	√
Eclectic Water Works & Sewer	√	√
Elmore Water Authority	√	√
Five Star Water Authority	√	√
Friendship Water Works	√	√
Holtville Water Systems, Inc.	√	√
Millbrook Water & Sewer Authority	√	√
Tri-Community Water System	√	√
Tallassee Water Dept.	√	√
Wetumpka Water Works & Sewer Board	√	√
Elmore County Board of Education	√	√
Tallassee City Schools	√	√

Table 5.2-4 Human-Related (man-made) Hazards
(Also: Table 6.8.2-4 Human-Related (man-made) Hazards

Elmore County Human-Related Hazard Concerns by Jurisdiction	**Human-Related**									
	Human Pandemic & Animal Disease	Riot, Violent Protest Demonstrations, Illegal Assembly	Terrorism	Radiological Dispersal Device/Nuclear Attack	Biological Attacks/ Contamination	Chemical Attacks /Contamination	Aircraft Accidents / Used as Weapons	Explosive Devices	Armed Assault	Cyber Attack
Elmore County	√	√	√	√	√	√	√	√	√	√
Coosada, Town of	√	√	√	√	√	√	√	√	√	√
Deatsville, Town of	√	√	√	√	√	√	√	√	√	√
Eclectic, Town of	√	√	√	√	√	√	√	√	√	√
Elmore, Town of	√	√	√	√	√	√	√	√	√	√
Millbrook, City of	√	√	√	√	√	√	√	√	√	√
Tallassee, City of	√	√	√	√	√	√	√	√	√	√
Wetumpka, City of	√	√	√	√	√	√	√	√	√	√
Central Elmore Water & Sewer	√	√	√	√	√	√	√	√	√	√
Eclectic Water Works & Sewer	√	√	√	√	√	√	√	√	√	√
Elmore Water Authority	√	√	√	√	√	√	√	√	√	√
Five Star Water Authority	√	√	√	√	√	√	√	√	√	√
Friendship Water Works	√	√	√	√	√	√	√	√	√	√
Holtville Water Systems, Inc.	√	√	√	√	√	√	√	√	√	√
Millbrook Water & Sewer Authority	√	√	√	√	√	√	√	√	√	√
Tri-Community Water System	√	√	√	√	√	√	√	√	√	√
Tallassee Water Dept.	√	√	√	√	√	√	√	√	√	√
Wetumpka Water Works & Sewer Board	√	√	√	√	√	√	√	√	√	√
Elmore County Board of Education	√	√	√	√	√	√	√	√	√	√
Tallassee City Schools	√	√	√	√	√	√	√	√	√	√

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5.2.1 Thunderstorms/Severe Thunderstorms

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA) including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Thunderstorms

History: High, 20
Frequency of Occurrence: Frequent (1)
Probability: Medium, 35; Occasional/Likely Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Medium, 30
Property: Medium, 20
Economic Impact: Medium, 25
Total Points: 155

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3)
Infrastructure: High (2)
Environment: High (2)

Jurisdictions	Extent of the Natural Hazard – Thunderstorms/Severe Thunderstorms
All	Flash Flooding/Flooding of depths of one to several feet, affecting structures, open space and agricultural areas; Hail up to 2-3 inches in diameter that can injure/cause damage to people, livestock, pets, glass, crops, etc.; Lightning that can cause concentrated property damage; High Winds (straight line, tornadic, microburst) that may range from 58 – over 200 mph.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to thunderstorms/severe thunderstorms.
Overall Significance Ranking: High

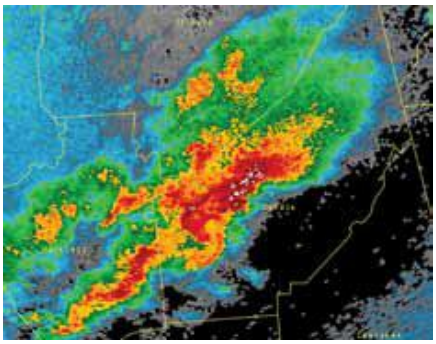
According to the National Weather Service Weather Forecast Office Birmingham's *Alabama All Hazards Awareness* Book, thunderstorms area a common occurrence in Alabama, producing damaging winds, heavy rainfall, hail, and tornadoes. Severe thunderstorms are more frequent during the active severe weather months of the spring and fall, but can occur anytime of the year, at any time of the day. What exactly makes a thunderstorm "severe"? One of several things: a tornado, winds at or above 58 mph, or quarter-size (one inch diameter) hail or larger. Several different types of thunderstorms exist; all are capable of becoming severe. **Figures 5.2.1-1, 5.2.1-2, 5.2.1-3** provide radar views with descriptions of single cell, multicell, and supercell thunderstorms.

Single cell thunderstorms usually occur during the summer months when the air is warm, moist, and unstable, and winds are weak. These thunderstorms, also known as pulse or airmass storms, form as individual cells or unorganized clusters of thunderstorms and have little to no movement. They can produce large hail, flash flooding, and microbursts.

Figure 5.2.1-1 Single Cell Thunderstorms Source: NWS Birmingham

Multicell thunderstorms and squall lines are organized complexes of thunderstorms that cover large areas. These storms are more likely to produce severe weather, particularly damaging winds, since they move rapidly across an area. Tornadoes, hail and flash flooding are also possible.

Figure 5.2.1-2 Multicell Thunderstorms Source: NWS Birmingham



Supercell thunderstorms are the strongest and most dangerous type of thunderstorms. They can produce long-lived tornadoes, winds in excess of 100 mph, and large hail. Fortunately, these storms are not common and usually cover small areas.

Figure 5.2.1-3 Supercell Thunderstorm Source: NWS Birmingham

Thunderstorms form when a shallow layer of warm, moist air is overrun by a deeper layer of cool, dry air. Cumulonimbus clouds, frequently called "thunderheads," are formed in these conditions. These clouds are often enormous (up to six miles or more across and 40,000 to 50,000 feet high) and may contain tremendous amounts of water and energy. That energy is often released in the form of high winds, excessive rains, lightning, and possibly hail and tornadoes.

Thunderstorms are typically short-lived (often lasting no more than 30-40 minutes) and fast moving (30-50 miles per hour). Strong frontal systems, however, may spawn one squall line after another, composed of many individual thunderstorm cells. Severe thunderstorms may also cause severe flood problems because of the torrential rains that they may bring to an area. Thunderstorms sometimes move very slowly, and can thus dump a tremendous amount of precipitation onto a location. Flooding can result, including flash floods and riverine flooding.

Thunderstorm Guidance for Local Hazard Mitigation Planning

Thunderstorms are hazards that bring a variety of problems during the spring, summer, and fall seasons throughout the United States, and Alabama is no exception. Thunderstorms are meteorological phenomena that result from the clashing of warm and cold air masses, or during afternoons with unstable atmospheric conditions. Thunderstorms can bring potential lightning, flash flooding, and hail risks, while severe thunderstorms can produce large hail, extremely strong winds, and even tornadoes. Detailed information will be provided later in this section for the associated hazards of hail, lightning, strong winds, and tornadoes.

In terms of the risk of thunderstorm occurrence for Elmore County, there are three general categories of thunderstorm occurrence for the county. Prediction of occurrences is measured in the number of days during a year that have thunderstorm activity.

One positive aspect of assessing thunderstorm risks comes from the fact that thunderstorm hazards have some degree of predictability and are closely monitored by the National Weather Service. In addition to daily forecasts, which predict the probability of rainy or stormy weather, the NWS system of Watches and Warnings helps communities understand when there is a potential risk of severe thunderstorms, or if severe thunderstorms are imminent. When the NWS issues a "Severe Thunderstorm Watch", that implies that thunderstorms with large hail and damaging winds are possible in your area. When the NWS issues a "Severe Thunderstorm

Warning," it signifies that severe thunderstorms (with the damaging winds and hail) are in your area or are imminent.

The NWS has four offices that serve Alabama and are responsible for monitoring and providing predictions and bulletins for the entire state. The four offices are in Huntsville, Birmingham, Mobile, and Tallahassee (Florida). These stations provide information on severe weather watches and warnings, but also provide useful Doppler Radar images that track the movement of thunderstorms in your area. The NWS Weather Forecast Office in Birmingham is responsible for Elmore County (www.weather.gov/bmx).

Since thunderstorms bring the potential for dangerous hail, lightning, straight-line winds, and tornadoes, it is necessary to further examine each of those hazards. **Useful historical information on hail, severe winds, lightning, and tornadoes for your county can be found through the National Climatic Data Center's Storm Data website at** http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms.

Data for each county in the state is listed there, and there are historical records of significant events for numerous categorical events, from as far back as 1950. Not all categories reflect reported events, though local historic files document otherwise.

Table 5.2.1-1

Storm Events Database

Search Results for Elmore County, Alabama

218 events were reported between 01/01/1950 and 02/28/2014 (23435 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	155
Number of Days with Event and Death:	1
Number of Days with Event and Death or Injury:	5
Number of Days with Event and Property Damage:	87
Number of Days with Event and Crop Damage:	2
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Wind Magnitude Definitions:

Measured Gust:'MG', Estimated Gust:'EG', Measured Sustained:'MS', Estimated Sustained:'ES'

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								1	5	1.607 M	5.00 K
ELMORE CO.	ELMORE CO.	AL	10/19/1960	15:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/07/1970	19:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/26/1973	06:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	02/21/1974	20:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/21/1974	02:45	CST	Thunderstorm Wind	75 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/29/1974	03:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/18/1978	06:05	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/18/1978	06:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/11/1979	17:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/06/1980	18:07	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/07/1980	18:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/30/1981	03:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/30/1981	03:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/05/1981	02:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/21/1982	14:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/26/1982	15:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/16/1983	01:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/03/1983	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K

ELMORE CO.	ELMORE CO.	AL	12/03/1983	19:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/06/1983	03:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/06/1983	04:00	CST	Thunderstorm Wind	0 kts.	0	2	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/06/1983	04:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/19/1984	18:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/10/1984	15:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/07/1985	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	10/15/1985	14:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/31/1986	17:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/31/1986	17:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/18/1987	14:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/26/1987	11:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/16/1987	23:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/15/1987	04:10	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/15/1987	04:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/18/1988	17:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/10/1988	13:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/15/1988	14:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/15/1989	21:55	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/15/1989	22:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/04/1989	14:44	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/15/1989	15:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	02/10/1990	03:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K

ELMORE CO.	ELMORE CO.	AL	02/16/1990	07:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	02/16/1990	08:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/01/1990	16:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/20/1990	12:55	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/08/1990	18:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/08/1990	19:07	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/19/1990	15:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/29/1991	07:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/12/1991	17:55	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/12/1991	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/05/1991	14:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/05/1991	14:20	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/18/1992	19:00	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/20/1992	15:28	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/05/1992	14:30	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/26/1992	15:00	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/26/1992	15:15	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/27/1992	13:15	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/04/1993	14:10	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Eclectic	ELMORE CO.	AL	05/15/1995	14:45	CST	Thunderstorm Wind	0 kts.	0	0	2.00K	0.00K
Tallassee	ELMORE CO.	AL	07/03/1995	13:40	CST	Thunderstorm Wind	0 kts.	0	0	3.00K	0.00K
Tallassee	ELMORE CO.	AL	07/04/1995	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Wetumpka	ELMORE CO.	AL	07/17/1995	17:25	CST	Thunderstorm Wind	0 kts.	0	0	7.00K	0.00K

Wetumpka	ELMORE CO.	AL	07/18/1995	18:00	CST	Thunderstorm Wind	0 kts.	0	0	4.00K	0.00K
Central section	ELMORE CO.	AL	07/29/1995	18:20	CST	Thunderstorm Wind	0 kts.	0	0	3.00K	0.00K
Red Hill	ELMORE CO.	AL	08/19/1995	21:30	CST	Thunderstorm Wind	0 kts.	0	0	85.00K	0.00K
Wetumpka	ELMORE CO.	AL	08/19/1995	21:50	CST	Thunderstorm Wind	0 kts.	0	0	22.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/24/1996	03:40	CST	Thunderstorm Wind	50 kts.	0	0	8.00K	0.00K
ECLECTIC	ELMORE CO.	AL	04/29/1996	13:45	CST	Thunderstorm Wind	55 kts.	0	0	20.00K	2.00K
WETUMPKA	ELMORE CO.	AL	05/28/1996	06:00	CST	Thunderstorm Wind	50 kts.	0	0	10.00K	0.00K
TALLASSEE	ELMORE CO.	AL	12/01/1996	01:56	CST	Thunderstorm Wind	50 kts.	0	0	40.00K	0.00K
MILLBROOK	ELMORE CO.	AL	01/24/1997	07:30	CST	Thunderstorm Wind	55 kts.	0	0	15.00K	1.00K
SANTUCK	ELMORE CO.	AL	01/24/1997	07:52	CST	Thunderstorm Wind	50 kts.	0	0	18.00K	2.00K
WETUMPKA	ELMORE CO.	AL	04/05/1997	15:25	CST	Thunderstorm Wind	50 kts.	0	0	5.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	01/07/1998	11:15	CST	Thunderstorm Wind	70 kts.	0	1	50.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/20/1998	01:00	CST	Thunderstorm Wind	55 kts.	0	0	5.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/05/1998	15:15	CST	Thunderstorm Wind	50 kts.	0	0	5.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/15/1998	20:57	CST	Thunderstorm Wind	50 kts.	0	0	45.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/20/1998	15:00	CST	Thunderstorm Wind	50 kts.	0	0	5.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	07/20/1998	15:45	CST	Thunderstorm Wind	55 kts.	0	0	20.00K	0.00K
MILLBROOK	ELMORE CO.	AL	02/27/1999	20:28	CST	Thunderstorm Wind	55 kts.	0	0	15.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/03/1999	01:11	CST	Thunderstorm Wind	70 kts.	1	0	135.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	05/23/1999	13:30	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	06/05/1999	19:10	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	02/17/2000	18:00	CST	Thunderstorm Wind	60 kts. E	0	0	20.00K	0.00K

WETUMPKA	ELMORE CO.	AL	03/19/2000	17:15	CST	Thunderstorm Wind	55 kts. E	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/12/2000	10:00	CST	Thunderstorm Wind	55 kts. E	0	0	30.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/20/2000	16:05	CST	Thunderstorm Wind	55 kts. E	0	0	2.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	07/20/2000	17:20	CST	Thunderstorm Wind	55 kts. E	0	0	3.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	08/10/2000	19:45	CST	Thunderstorm Wind	50 kts. E	0	0	2.00K	0.00K
WARE	ELMORE CO.	AL	01/19/2001	09:30	CST	Thunderstorm Wind	50 kts. E	0	0	1.00K	0.00K
ECLECTIC	ELMORE CO.	AL	01/19/2001	09:30	CST	Thunderstorm Wind	50 kts. E	0	0	3.00K	0.00K
MILLBROOK	ELMORE CO.	AL	02/16/2001	19:30	CST	Thunderstorm Wind	50 kts. E	0	0	3.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/15/2001	01:42	CST	Thunderstorm Wind	55 kts. E	0	0	5.00K	0.00K
TALLASSEE	ELMORE CO.	AL	05/28/2001	15:40	CST	Thunderstorm Wind	50 kts. E	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/03/2001	16:15	CST	Thunderstorm Wind	50 kts. E	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/04/2001	14:30	CST	Thunderstorm Wind	50 kts. E	0	0	1.00K	0.00K
TITUS	ELMORE CO.	AL	11/11/2002	03:15	CST	Thunderstorm Wind	60 kts. E	0	0	20.00K	0.00K
ECLECTIC	ELMORE CO.	AL	03/06/2003	05:45	CST	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/13/2003	15:15	CST	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/13/2003	15:30	CST	Thunderstorm Wind	55 kts. EG	0	0	18.00K	0.00K
ECLECTIC	ELMORE CO.	AL	04/24/2003	14:29	CST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K

TITUS	ELMORE CO.	AL	04/25/2003	14:40	CST	Thunderstorm Wind	60 kts. EG	0	0	600.00K	0.00K
WETUMPKA	ELMORE CO.	AL	11/24/2004	07:07	CST	Thunderstorm Wind	50 kts. EG	0	0	8.00K	0.00K
TALLASSEE	ELMORE CO.	AL	11/24/2004	07:29	CST	Thunderstorm Wind	55 kts. EG	0	1	85.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	03/07/2005	19:28	CST	Thunderstorm Wind	53 kts. EG	0	0	17.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	04/30/2005	05:22	CST	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	07/06/2005	13:25	CST	Thunderstorm Wind	50 kts. EG	0	0	22.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/20/2006	18:00	CST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/22/2006	13:36	CST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	08/15/2006	16:45	CST	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
TITUS	ELMORE CO.	AL	08/30/2006	16:50	CST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
TITUS	ELMORE CO.	AL	08/30/2006	16:55	CST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
MILLBROOK	ELMORE CO.	AL	06/18/2007	18:12	CST-6	Thunderstorm Wind	30 kts. EG	0	0	2.00K	0.00K
WALLSBURG	ELMORE CO.	AL	08/17/2007	16:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
WARE	ELMORE CO.	AL	02/26/2008	06:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	04/04/2008	16:55	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
TALLASSEE	ELMORE CO.	AL	04/04/2008	17:14	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
TUCKABATCHIE	ELMORE CO.	AL	04/04/2008	17:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K

MARTIN LAKE SOUTH	ELMORE CO.	AL	05/08/2008	18:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
JORDAN LAKE	ELMORE CO.	AL	06/09/2008	18:26	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	06/28/2008	20:00	CST-6	Thunderstorm Wind	39 kts. EG	0	0	0.50K	0.00K
KENT	ELMORE CO.	AL	07/05/2008	17:07	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ECLECTIC	ELMORE CO.	AL	07/11/2008	16:25	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
CLAUD	ELMORE CO.	AL	07/12/2008	13:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
COTTON	ELMORE CO.	AL	07/13/2008	12:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
SANTUCK	ELMORE CO.	AL	07/13/2008	12:48	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
WETUMPKA	ELMORE CO.	AL	07/22/2008	17:29	CST-6	Thunderstorm Wind	40 kts. EG	0	0	1.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	08/31/2008	17:45	CST-6	Thunderstorm Wind	40 kts. EG	0	0	10.00K	0.00K
MILLBROOK	ELMORE CO.	AL	09/08/2008	16:25	CST-6	Thunderstorm Wind	30 kts. EG	0	0	1.00K	0.00K
COBBS FORD	ELMORE CO.	AL	05/03/2009	14:08	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/03/2009	14:08	CST-6	Thunderstorm Wind	50 kts. EG	0	0	6.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/03/2009	14:20	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
SANTUCK	ELMORE CO.	AL	06/14/2009	12:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	20.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/14/2009	12:09	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
COOSADA	ELMORE CO.	AL	06/14/2009	12:12	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K

TUCKABATCHIE	ELMORE CO.	AL	06/15/2009	23:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
SYKES MILL	ELMORE CO.	AL	06/28/2009	17:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/05/2009	17:11	CST-6	Thunderstorm Wind	39 kts. EG	0	0	1.00K	0.00K
SANTUCK	ELMORE CO.	AL	07/05/2009	17:16	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	07/05/2009	17:22	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/26/2009	16:48	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
WETUMPKA	ELMORE CO.	AL	08/04/2009	15:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
WETUMPKA	ELMORE CO.	AL	08/05/2009	13:22	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
MAN	ELMORE CO.	AL	08/05/2009	13:40	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
WETUMPKA	ELMORE CO.	AL	08/11/2009	18:05	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/24/2010	11:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	06/15/2010	15:40	CST-6	Thunderstorm Wind	45 kts. EG	0	0	3.00K	0.00K
DEXTER	ELMORE CO.	AL	06/19/2010	14:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
TALLASSEE	ELMORE CO.	AL	06/19/2010	14:22	CST-6	Thunderstorm Wind	39 kts. EG	0	0	1.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	06/21/2010	13:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/21/2010	13:46	CST-6	Thunderstorm Wind	60 kts. EG	0	0	20.00K	0.00K
ECLECTIC	ELMORE CO.	AL	07/09/2010	13:45	CST-6	Thunderstorm Wind	40 kts. EG	0	0	10.00K	0.00K

MILLBROOK	ELMORE CO.	AL	07/09/2010	18:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
WALLSBURG	ELMORE CO.	AL	07/09/2010	19:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
WARE	ELMORE CO.	AL	07/23/2010	17:35	CST-6	Thunderstorm Wind	60 kts. EG	0	0	3.00K	0.00K
DEXTER	ELMORE CO.	AL	07/30/2010	16:20	CST-6	Thunderstorm Wind	55 kts. EG	0	0	1.00K	0.00K
NORTH ELMORE	ELMORE CO.	AL	08/04/2010	13:20	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.50K	0.00K
MILLBROOK	ELMORE CO.	AL	11/30/2010	10:13	CST-6	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
ECLECTIC	ELMORE CO.	AL	11/30/2010	10:45	CST-6	Thunderstorm Wind	45 kts. EG	0	0	5.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	04/04/2011	20:18	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/04/2011	20:31	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/04/2011	20:37	CST-6	Thunderstorm Wind	50 kts. EG	0	0	7.00K	0.00K
COOSADA	ELMORE CO.	AL	04/11/2011	20:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/26/2011	13:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	05/26/2011	13:21	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
SYKES MILL	ELMORE CO.	AL	05/26/2011	13:41	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/11/2011	13:45	CST-6	Thunderstorm Wind	40 kts. EG	0	0	0.50K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/11/2011	14:04	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/11/2011	14:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K

ELMORE CO.	ELMORE CO.	AL	06/17/2011	12:49	CST-6	Thunderstorm Wind	45 kts. EG	0	0	1.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/17/2011	13:00	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/26/2011	16:44	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/02/2011	15:30	CST-6	Thunderstorm Wind	35 kts. EG	0	0	1.00K	0.00K
CLAUD	ELMORE CO.	AL	07/03/2011	15:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
WETUMPKA	ELMORE CO.	AL	08/13/2011	16:20	CST-6	Thunderstorm Wind	43 kts. EG	0	0	5.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	09/20/2011	14:30	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
WARE	ELMORE CO.	AL	11/16/2011	11:27	CST-6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
TITUS	ELMORE CO.	AL	12/22/2011	14:16	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
TITUS	ELMORE CO.	AL	12/22/2011	14:23	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/23/2012	15:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
SPEIGENER	ELMORE CO.	AL	06/05/2012	08:53	CST-6	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/11/2012	21:08	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MAN	ELMORE CO.	AL	06/11/2012	21:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/14/2012	17:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLAUD	ELMORE CO.	AL	06/14/2012	17:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
FLOYD	ELMORE CO.	AL	06/14/2012	17:02	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K

WARE	ELMORE CO.	AL	07/03/2012	14:48	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/10/2012	15:08	CST-6	Thunderstorm Wind	39 kts. EG	0	1	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/10/2012	15:54	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	07/10/2012	16:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COTTON	ELMORE CO.	AL	07/17/2012	13:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	07/17/2012	14:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
SYKES MILL	ELMORE CO.	AL	12/20/2012	10:33	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	12/20/2012	10:44	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
PRATTVILLE JCT	ELMORE CO.	AL	12/25/2012	21:05	CST-6	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/30/2013	10:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	01/30/2013	11:48	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	03/05/2013	14:52	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/18/2013	16:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/17/2013	15:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
SEMAN	ELMORE CO.	AL	06/27/2013	17:05	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COTTON	ELMORE CO.	AL	06/27/2013	17:18	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
RED HILL	ELMORE CO.	AL	06/27/2013	17:22	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K

ROBINSON SPGS	ELMORE CO.	AL	06/28/2013	11:53	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/28/2013	12:00	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/28/2013	12:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	06/28/2013	12:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
JORDAN LAKE	ELMORE CO.	AL	07/23/2013	14:39	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
COBBS FORD	ELMORE CO.	AL	07/23/2013	14:39	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	07/23/2013	14:40	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	07/23/2013	14:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/23/2013	14:50	CST-6	Thunderstorm Wind	54 kts. MG	0	0	0.00K	0.00K
COOSADA	ELMORE CO.	AL	07/23/2013	15:10	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/23/2013	15:20	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	01/11/2014	06:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WALLSBURG	ELMORE CO.	AL	01/11/2014	07:08	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
Totals:								1	5	1.607M	5.00K

Figure 5.2.1-4 NWS BMX HWO, April 14, 2014

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FLUS44 KBMX 140935
HWOBMX

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE BIRMINGHAM AL
435 AM CDT MON APR 14 2014

ALZ011>015-017>050-150945-
MARION-LAMAR-FAYETTE-WINSTON-WALKER-BLOUNT-ETOWAH-CALHOUN-CHEROKEE-
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CLEBURNE-PICKENS-TUSCALOOSA-JEFFERSON-SHELBY-ST. CLAIR-TALLADEGA-
CLAY-RANDOLPH-SUMTER-GREENE-HALE-PERRY-BIBB-CHILTON-COOSA-TALLAPOOSA-
CHAMBERS-MARENGO-DALLAS-AUTAUGA-LOWNDES-ELMORE-MONTGOMERY-MACON-
BULLOCK-LEE-RUSSELL-PIKE-BARBOUR-
435 AM CDT MON APR 14 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL WEATHER SERVICE OFFICE
IN BIRMINGHAM.

.DAY ONE...TODAY AND TONIGHT.

WIDESPREAD SHOWERS AND THUNDERSTORMS WILL AFFECT CENTRAL ALABAMA TODAY AND TONIGHT. LOCALLY HEAVY
RAINFALL COULD LEAD TO FLASH FLOODING.

IN THE WAKE OF THE MORNING ACTIVITY...ADDITIONAL THUNDERSTORM DEVELOPMENT IS EXPECTED LATE THIS
AFTERNOON INTO THE EVENING. AN ISOLATED SEVERE STORM WITH DAMAGING WINDS OR HAIL CANNOT BE RULED
OUT...BUT THE THREAT APPEARS TO BE VERY LIMITED.

FLOODING WILL CONTINUE ON A FEW SOUTH CENTRAL ALABAMA RIVERS.
PLEASE REFER TO THE LATEST RIVER FLOOD STATEMENTS FOR SPECIFIC STAGE DETAILS.

.DAYS TWO THROUGH SEVEN...TUESDAY THROUGH SUNDAY.

A COLD FRONT WILL MOVE THROUGH CENTRAL ALABAMA EARLY TUESDAY.
WINDS OF 10 AND 20 MPH WITH HIGHER GUSTS WILL OCCUR BOTH AHEAD AND BEHIND THE FRONT.

TEMPERATURES ON WEDNESDAY MORNING MAY DROP NEAR FREEZING FOR AREAS GENERALLY ALONG AND NORTH OF
THE INTERSTATE 20 CORRIDOR.
PRECAUTIONS TO PROTECT TENDER VEGETATION MAY BECOME NECESSARY.

FLOODING WILL CONTINUE ON A FEW CENTRAL ALABAMA RIVERS...PERHAPS UNTIL THURSDAY...ESPECIALLY ON
THE LOWER TOMBIGBEE...LOWER BLACK WARRIOR...AND LOWER CAHABA. ADDITIONAL RAINFALL ON MONDAY AND
TUESDAY COULD PROLONG AREAS OF RIVER FLOODING. PLEASE REFER TO THE LATEST RIVER FLOOD STATEMENTS
FOR SPECIFIC DETAILS.

.SPOTTER INFORMATION STATEMENT...

ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT MAY BE NEEDED TODAY AND TONIGHT.
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Hazard Mitigation Strategies for Weather Hazards

As part of the hazard mitigation planning process, the identification of an area's vulnerabilities should start suggesting some possible means of mitigating risks and reducing those vulnerabilities. Here is a list of mitigation possibilities to consider while reading about each type of hazard. (Parts of this list reappear in each hazard section.)

<u>Thunderstorm Hazards (General)</u>

- Increased coverage and use of NOAA Weather Radio.
- Producing and distributing family emergency preparedness information relating to thunderstorm hazards.
- Public education and awareness of thunderstorm dangers.
- Training and increased use of weather spotters.
- Public early warning systems and networks.
- Tree trimming and maintenance to prevent limb breakage and safeguard nearby utility lines. (Ideally, the establishment of a community forestry program with a main goal of creating and maintaining a disaster-resistant landscape in public rights-of-way.)
- Buried/protected power and utility lines.

- Inclusion of safety strategies for severe weather events in driver education classes and materials.
- Encourage residents to develop a Family Disaster Plan which includes the preparation of a Disaster Supplies Kit.

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5.2.2 Lightning

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan*, *December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA*) including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Lightning

History: High, 20
Frequency of Occurrence: Frequent (1)
Probability: Medium, 35; Occasional/Likely Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Medium, 30
Property: Medium, 20
Economic Impact: Medium, 25
Total Points: 155

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3)
Infrastructure: High (2)
Environment: High (2)

Jurisdictions	Extent of the Natural Hazard – Lightning
All	Can cause death, injury, and property damage, including damage to buildings, communications systems, power lines, and electrical systems. Can

	cause concentrated property damage in excess of one million dollars resulting from fire at a critical facility. Causes wild land and structural fires.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to lightning associated with thunderstorms/severe thunderstorms.
Overall Significance Ranking: High

The discharge of electricity from within a thunderstorm.

Hazard Description
Lightning is a random and unpredictable product of a thunderstorm's tremendous energy. The energy in the storm produces an intense electrical field like a giant battery, with the positive charge concentrated at one end and the opposite charge concentrated at the other. Lightning strikes when a thunderstorm's electrical potential (the difference between its positive and negative charges) becomes great enough to overcome the resistance of the surrounding air. Bridging that difference, lightning can jump from cloud to cloud, cloud to ground, ground to cloud, or even from the cloud to the air surrounding the thunderstorm. Lightning strikes can generate current levels of 30,000 to 40,000 amperes, with air temperatures often superheated to higher than 50,000 degrees Fahrenheit (hotter than the surface of the sun) and speeds approaching one-third the speed of light. The action of rising and descending air in a thunderstorm separates positive and negative charges, with lightning the result of the buildup and discharge of energy between positive and negative charge areas **(Figure 5.2.2-1)**. Water and ice particles may also affect the distribution of the electrical charge. In only a few millionths of a second, the air near a lightning strike is heated to 50,000°F, a temperature hotter than the surface of the sun. Thunder is the result of the very rapid heating and cooling of air near the lightning that causes a shock wave.

Figure 5.2.2-1
Formation of Lightning
Source: University Corporation for Atmospheric Research (UCAR).

Hazard Analysis

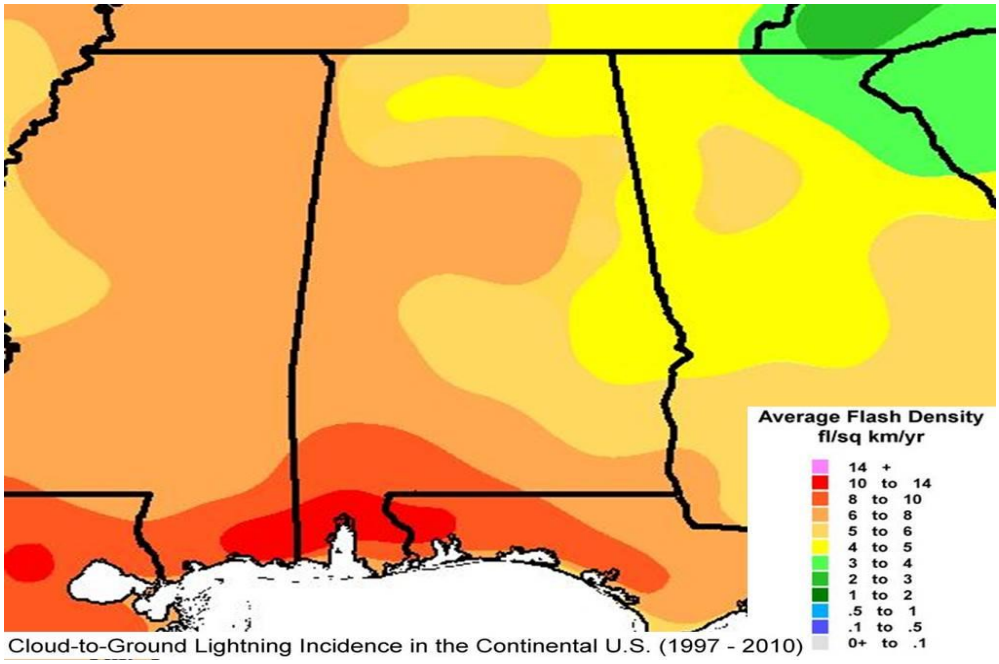
Globally, there are about 2,000 thunderstorms occurring at any given time, and those thunderstorms cause approximately 100 lightning strikes to earth each second. In the United States, approximately 100,000 thunderstorms occur each year, and every one of those storms generates lightning. It is not uncommon for a single thunderstorm to produce hundreds or even thousands of lightning strikes. However, to the majority of the general public, lightning is perceived as a minor hazard. That perception lingers despite the fact that lightning damages many structures and kills and injures more people in the United States per year, on average, than tornadoes or hurricanes. Many lightning deaths and injuries could be avoided if people would have more respect for the threat lightning presents to their safety. Lightning deaths are usually caused by the electrical force shocking the heart into cardiac arrest or throwing the heartbeat out of its usual rhythm. Lightning can also cut off breathing by paralyzing the chest muscles or damaging the respiratory center in the brain stem. It takes only about one-hundredth of an ampere of electric current to stop the human heartbeat or send it into ventricular fibrillation. Lightning can also cause severe skin burns that can lead to death if complications from infection set in.

The hazard posed by lightning is significantly underrated. High winds, rainfall, and a darkening cloud cover are the warning signs for possible cloud-to-ground lightning strikes. While many lightning casualties happen at the beginning of an approaching storm, more than half of lightning deaths occur after a thunderstorm has passed. The lightning threat diminishes after the last sound of thunder, but may persist for more than 30 minutes. When thunderstorms are in the area, but not overhead, the lightning threat can exist when skies are clear. Lightning has been known to strike more than 10 miles from the storm in an area with clear sky above. According to the National Oceanic and Atmospheric Administration (NOAA), an average of 20 million cloud-to-ground flashes has been detected every year in the continental United States. About half of all flashes have more than one ground strike point, so at least 30 million points on the ground are struck on the average each year. In addition, there are roughly 5 to 10 times as many cloud-to-cloud flashes as there are to cloud-to-ground flashes (NOAA, July 7, 2003).

Lightning is the most dangerous and frequently encountered weather hazard that most people in the United States experience annually. Lightning is the second most frequent killer in the U.S., behind floods and flash floods, with nearly 100 deaths and 500 injuries annually. These numbers are likely to underestimate of the actual number of casualties because of the under reporting of suspected lightning deaths and injuries. Cloud-to-ground lightning can kill or injure people by either direct or indirect means. The lightning current can branch off to strike a person from a tree, fence, pole, or other tall object. It is not known if all people are killed who are directly struck by the flash itself. In addition, electrical current may be conducted through the ground to a person after lightning strikes a nearby tree, antenna, or other tall object. The current also may travel through power lines, telephone lines, or plumbing pipes to a person who is in contact with an electric appliance, telephone, or plumbing fixture. Lightning may use similar processes to damage property or cause fires.

Area intentionally left blank.

Figure 5.2.2-2 Cloud-to-Ground Lightning Incidence in Continental U.S. Source: NWS Birmingham



Frequency Rate of Lightning Strikes

The term "severe lightning" is a common but invalid descriptor of lightning, as there is no simple way to compare the intensity of one bolt to another. Here are some usual numbers associated with lightning bolts: 54,000 degrees F; 100 kiloAmperes (thousand); 1 gigavolts (billion); and 1 terawatt (trillion). When it comes down to it, all lightning is severe! What is measurable by observers, and useful for meteorologists, is the frequency of lightning. A rate of 1 to 3 flashes per minute (FPM) is that of an occasional nature; 4 to 11 per minute is frequent; and, 12 or more strikes per minute (1+ every 5 seconds, over a full minute time duration) is continuous or excessive. Generally speaking, the higher the frequency, the stronger the updraft. Continuous lightning is often associated with a severe thunderstorm; and when considered in light of the flash rate jump study above, can provide insight into the potential severity of a thunderstorm.

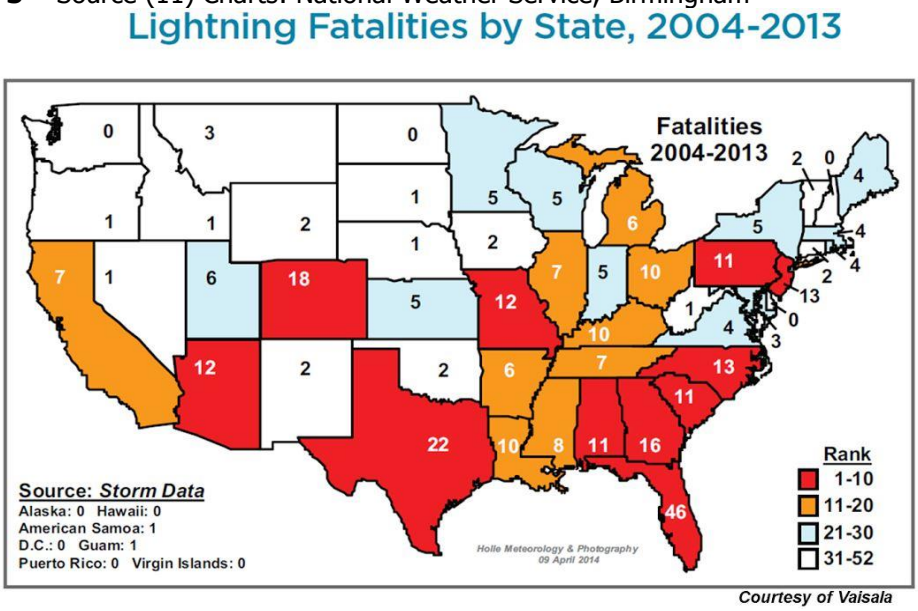
Heat Lightning

Heat lightning is a misnomer. While lightning can occur outside of thunderstorms in dust storms, volcanic eruptions, and massive updrafts from intense forest fires, heat lightning does not occur. What some people call "heat lightning" is actually lightning illuminating the sky from thunderstorms far over the horizon or otherwise unseen, from which no thunder is heard. Terrain, wind, precipitation, the atmosphere itself and shear distance are all factors in whether or not thunder will be heard when a flash of lightning is observed. Lightning just simply doesn't happen out of hot, thin air!

As an indicator of the circumstances involving lightning fatalities, injuries and damage in the United States, consider the following statistics compiled by the National Oceanic and Atmospheric Administration (NOAA) and the National Lightning Safety Institute (NLSI) for the period of 2004-2013:

According to the following map, Alabama ranks 9th in the nation for lightning fatalities, with 11 deaths between 2004 and 2013. Florida ranked 1st with 46 deaths, followed by Texas, 2nd with 22 deaths, Colorado, 3rd with 18, Georgia, 4th with 16, New Jersey, 5th with 13 deaths, North Carolina, 6th with 13, Arizona, 7th with 12, Missouri, 8th with 12, Alabama, 9th with 11 deaths and Pennsylvania, 10th with 11 reported lightning fatalities.

Figure 5.2.2-3 Source (11) Charts: National Weather Service, Birmingham



Courtesy of Vaisala

Figure 5.2.2-4

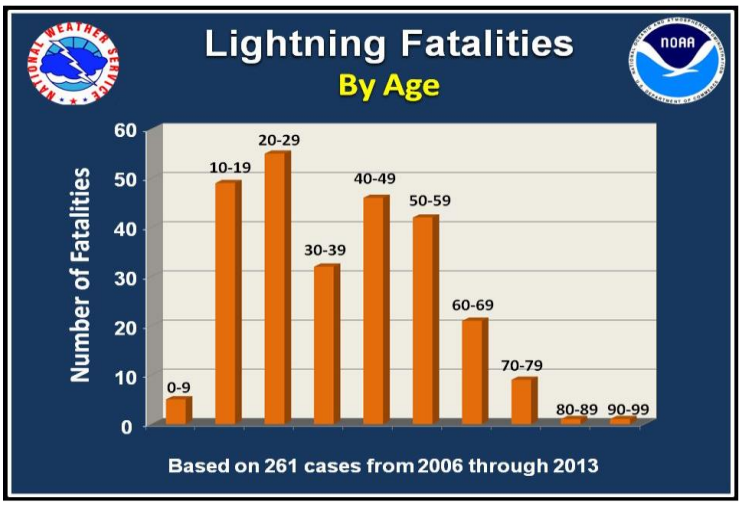


Figure 5.2.2-5

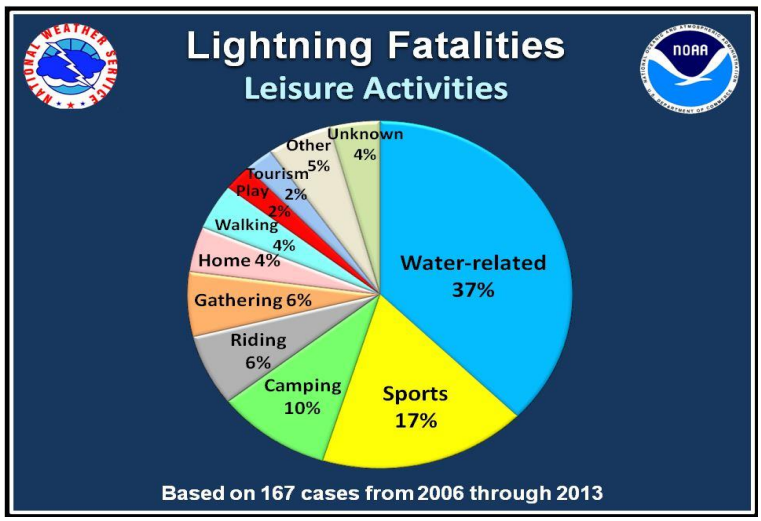


Figure 5.2.2-6

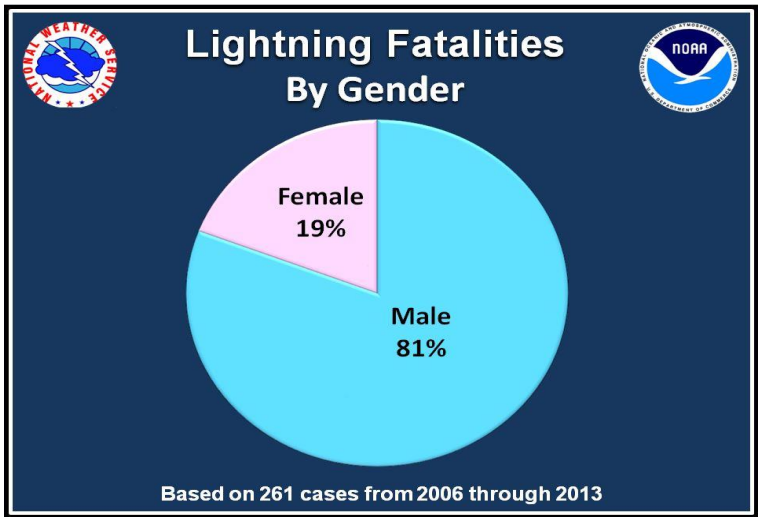


Figure 5.2.2-7

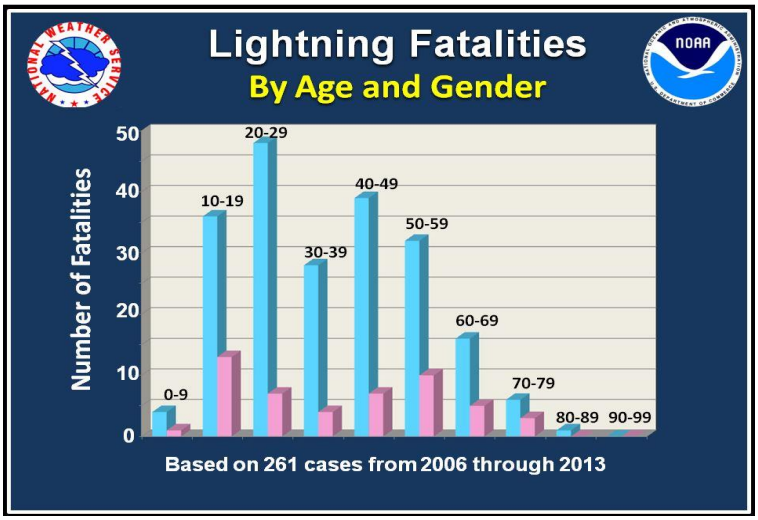
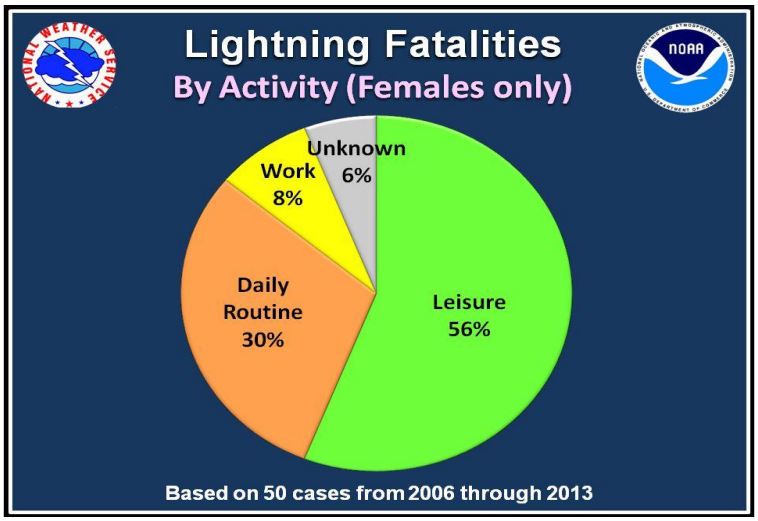


Figure 5.2.2-8



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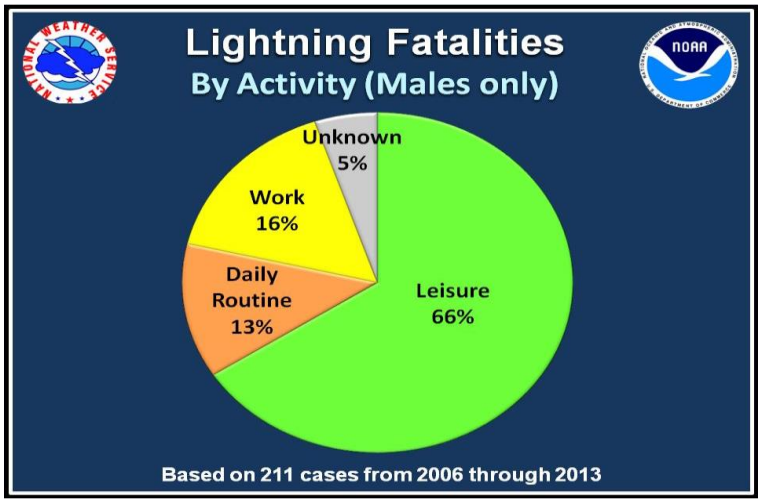

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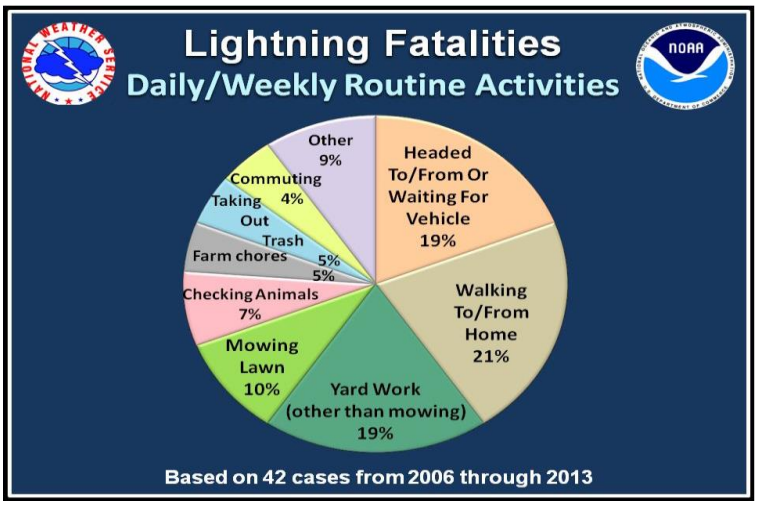

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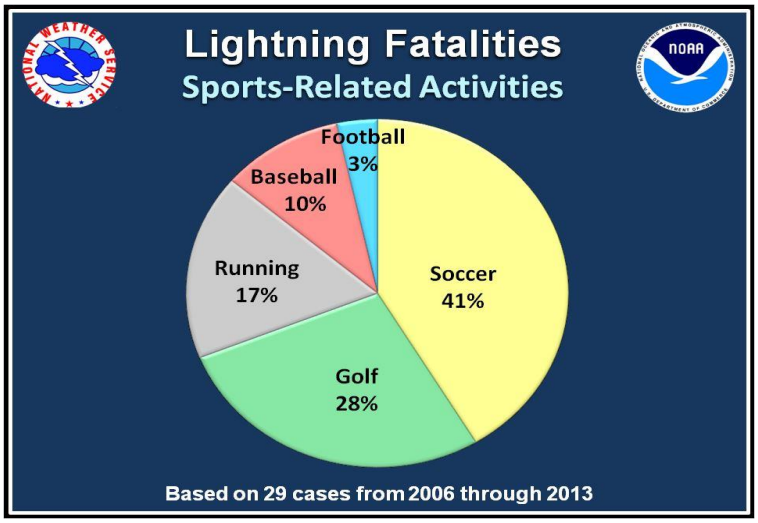

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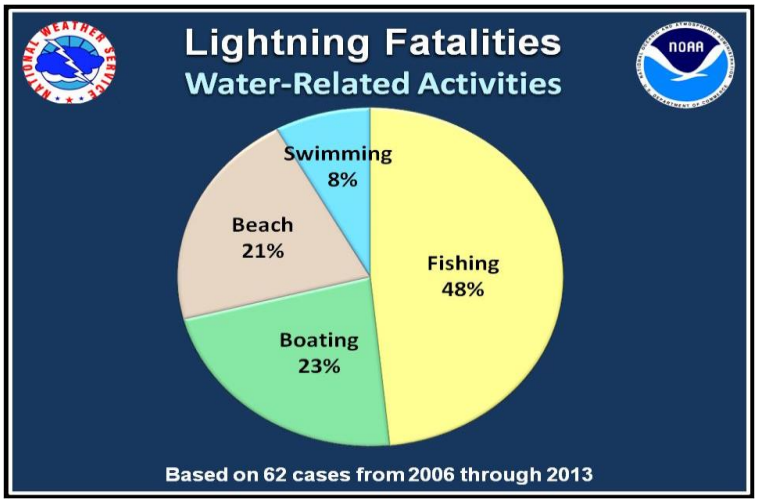

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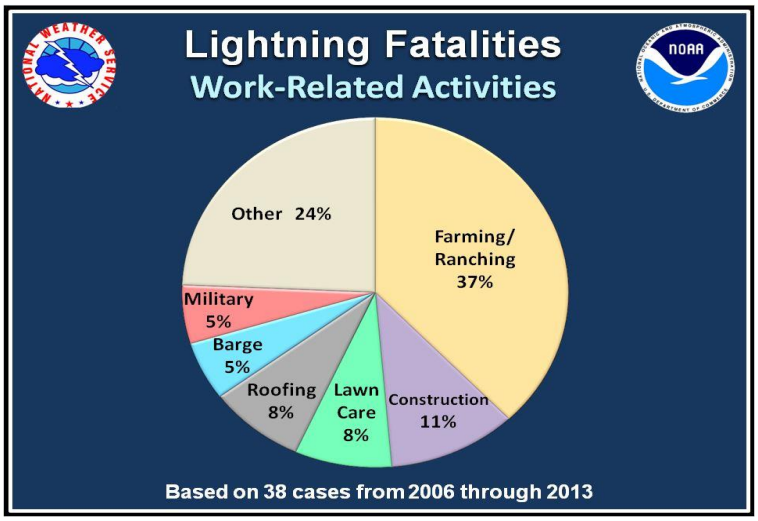

Table 5.2.2-1

Storm Events Database

Search Results for Elmore County, Alabama

11 events were reported between 01/01/1950 and 02/28/2014 (23435 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	10
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	2
Number of Days with Event and Property Damage:	8
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	2	135.00K	0.00K
PRATTVILLE	ELMORE CO.	AL	04/22/1997	14:30	CST	Lightning		0	0	18.00K	0.00K
MILLBROOK	ELMORE CO.	AL	08/19/2002	10:58	CST	Lightning		0	0	6.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/13/2003	18:15	CST	Lightning		0	0	12.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/06/2005	13:18	CST	Lightning		0	0	4.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/10/2006	16:00	CST	Lightning		0	0	20.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2007	16:00	CST-6	Lightning		0	1	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/15/2008	11:22	CST-6	Lightning		0	0	50.00K	0.00K
NORTH ELMORE	ELMORE CO.	AL	07/05/2009	11:40	CST-6	Lightning		0	1	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/15/2010	15:43	CST-6	Lightning		0	0	5.00K	0.00K
COTTON	ELMORE CO.	AL	06/21/2010	13:47	CST-6	Lightning		0	0	10.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/21/2010	13:50	CST-6	Lightning		0	0	10.00K	0.00K
Totals:								0	2	135.00K	0.00K

Because it is virtually impossible to provide complete protection to individuals and structures from lightning, this hazard will continue to be a problem for Elmore County, Alabama residents and communities. However, lightning deaths, injuries, and property damage can be reduced through

a combination of public education, human vigilance, technology, proper building safety provisions, and simple common sense.

Large outdoor gatherings (e.g., sporting events, concerts, campgrounds, fairs, festivals, etc.) are particularly vulnerable to lightning strikes that could result in many deaths and injuries. This vulnerability underscores the importance of developing site-specific emergency procedures for these types of events, with particular emphasis on adequate early detection, monitoring, and warning of approaching thunderstorms. Early detection, monitoring, and warning of lightning hazards, combined with prudent protective actions, can greatly reduce the likelihood of lightning injuries and deaths. In addition, close coordination between event organizers, local emergency management officials, and response agencies (i.e., police, fire, emergency medical care) can help prevent unnecessary (and often tragic) delays and mistakes in rendering care should a lightning incident occur.

Impact on the Public

Lightning has a discouraging effect on outdoor activities, and has also caused casualties (including death) and severe property damage, including the ignition of structural fires and wildfires, which in turn present serious additional risks and harm to the public and its property. Electrical and communications infrastructure can be affected by lightning strikes, causing widespread inconvenience and, in some cases, life-threatening impairment of needed medical equipment and emergency response.

Impact on Continuity of Operations

The impact from lightning is unlikely to cause relocation of government operations. Infrastructure will be affected and delays/closures due to debris in roadways (includes thunderstorms, lightning, and high winds). When lightning causes infrastructure failure, a question may be raised about the adequacy of that infrastructure, its maintenance, and its design and regulation. In events that require mass sheltering, such as schools or large gatherings (e.g. a county fair or community-sponsored event), the ability of local and state government to adequately plan for severe weather is often vital to the success of such events, which themselves are often important for various sectors of the local and state economy. Citizen discontent and media-exacerbated controversies have arisen from situations in which inadequate planning was evident, or provisions for public sheltering were inadequate.

Impact on Responders

Responders tend to be working outdoors in conditions from which most residents are taking shelter. Although special training and safety precautions have usually been taken (e.g. for line-repair workers), nevertheless, responders are more exposed to and at-risk from lightning. This makes the use of various equipment more difficult and inhibits the ability of responders to work safely outdoors.

Impact on the Environment

Trees can be blown apart completely if struck by lightning, or have branches and bark broken off that can scar and even kill them. Lightning can cause trees and natural vegetation to catch fire,

and large wildfires (q.v.) can be devastating upon an area's short-term ecological condition. Dry lightning is lightning that occurs with no precipitation at ground level, and this type of lightning is the most common natural cause of wildfires. Humans and wildlife can both be killed or injured when struck by lightning, and smoke from wildfires is unhealthy to breathe.

Programs and Initiatives

Unfortunately, lightning prevention or protection, in an absolute sense, is impossible. However, the consequences of lightning strikes have been diminished (both in terms of deaths and injuries and property damage) through the implementation of the following programs and special initiatives:

National Weather Service Education

The National Weather Service issues severe thunderstorm watches and warnings when there is a threat of severe thunderstorms. However, lightning, by itself, is not sufficient criteria for the issuance of a watch or warning (every storm would require a watch or warning). The National Weather Service has an extensive public information program aimed at educating citizens about the dangers of lightning and ways to prevent lightning-related deaths and injuries.

Severe Weather Awareness Week

Each spring, the National Weather Service, the Alabama Emergency Management Agency, the American Red Cross, and local emergency management agency offices, in conjunction with myriad local media outlets, sponsor/promote Severe Weather Awareness Week. This annual public information and education campaign focuses on such severe weather events as tornadoes, thunderstorms, hail, high winds, flooding and lightning

Lightning Protection for Structures

The National Lightning Safety Institute (NLSI) has identified a systematic lightning hazard mitigation approach that can be followed to protect structures from lightning damage. That approach attempts to mitigate both the direct and indirect effects of lightning strikes through the application of appropriate structural safety improvements, as identified

Mitigation Alternatives for Lightning

- Increased coverage and use of NOAA Weather Radio.
- Producing and distributing family emergency preparedness information relating to thunderstorm hazards.
- Public education and awareness of thunderstorm dangers.
- Training and increased use of weather spotters.
- Public early warning systems and networks.
- Tree trimming and maintenance to prevent limb breakage and safeguard nearby utility lines. (Ideal: Establishment of a community forestry program with a main goal of creating and maintaining a disaster resistant landscape in public rights-of-way.)
- Buried/protected power and utility lines. (NOTE: May cause additional problems and costs in case of breakage, due to the increased difficulty in locating and repairing the problem.)
- Inclusion of safety strategies for severe weather events in driver education classes and materials.

- Encourage residents to develop a Family Disaster Plan that includes the preparation of a Disaster Supplies Kit.
- Pre-planning for debris management staging and storage areas. (Debris could be rubble, vehicles, objects from destroyed/damaged structures, vegetation or other items knocked down or blown by winds.)
- Using surge protectors on critical electronic equipment.
- Installing lightning protection devices on the community's communications infrastructure.

Lightning Guidance for Local Hazard Mitigation Planning

Lightning is an unpredictable phenomenon associated with thunderstorms that occurs 100 times each second globally. Lightning can be as hot as 50,000°F, and can cause damage to buildings, trees, and other structures. Damage from lightning strikes has been estimated by the National Lightning Safety Institute to be $5 billion annually. Lightning can be especially damaging for electrical infrastructure, causing localized power outages and damage to phone lines and communication systems. Computers are also especially vulnerable to lightning strikes.

Lightning is a very dangerous hazard for people, as well. Lightning strikes kill and injure more people each year than tornadoes and hurricanes in the United States. According to NOAA's Annual Summaries of Storm Data and Unusual Weather Phenomena, Alabama reported nine fatalities related to lightning between 2003 and 2011.

Since lightning is an isolated phenomenon that causes great damage to a limited area and minimal damage to the structures adjacent to the lightning strike, it is necessary to determine lightning risks for some of the important buildings in your community. This is in addition to the general risk assessment of lightning strikes per year for a given county in the state. One way to calculate the risk of lightning strikes for a type of structure in your area is by using an on-line "Lightning Risk Calculator" from HLP Systems, Inc. at http://www.apltd.com/cgilocal/aestiva/start.cgi/riskhlp.htm. This lightning calculator examines the risk associated with various types of building sizes, materials, heights, uses, and roof types. It is not a foolproof source for assessing lightning risks for buildings in your community, but it does provide a simple way to begin to look at how some areas may be affected by lightning strikes.

5.2.3 Hail

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Hail (was included in the Thunderstorms Analysis)
History: High, 20
Frequency of Occurrence: Occasional (2)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Medium, 30
Property: Medium, 20
Economic Impact: Medium, 25
Total Points: 155

Maximum Probable Extent (Magnitude/Strength):
Public: Noticeable (6)
Infrastructure: Very Low (6)
Environment: Very Low (6)

Jurisdictions	Extent of the Natural Hazard – Hail
All	Large size hail up to 2-3 inches in diameter resulting in property damage and/or injury to people, livestock, pets, glass, crops

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to hail associated with thunderstorms/severe thunderstorms. Overall Significance Ranking: Low

Hail at Children's Harbor, south side of Lake Martin in Elmore County. Pictures courtesy of Tammy Jackson, March 18, 2013.

Conditions where atmospheric water particles from thunderstorms form into rounded or irregular lumps of ice that fall to the earth.

Hazard Description

Hail is a product of the strong thunderstorms that frequently move across the state. As one of these thunderstorms passes over, hail usually falls near the center of the storm, along with the heaviest rain. Sometimes, strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, causing an unexpected hazard at places that otherwise might not appear threatened.

Most hailstones range in size from a pea to a golf ball, but hailstones larger than baseballs have occurred with the most severe thunderstorms. Hail is formed when strong updrafts within the storm carry water droplets above the freezing level, where they remain suspended and continue to grow larger until their weight can no longer be supported by the winds. They finally fall to the ground, battering crops, denting autos, and injuring wildlife and people. Large hail is a characteristic of severe thunderstorms, and it may precede the occurrence of a tornado.

Hail is an outgrowth of severe thunderstorms and develops within a low-pressure front as warm air rises rapidly in to the upper atmosphere and is subsequently cooled, as shown in **Figure 5.2.3-1**, leading to the formation of ice crystals. These are bounced about by high-velocity updraft winds and accumulate into frozen droplets, falling as precipitation after developing enough weight (FEMA, 1997).

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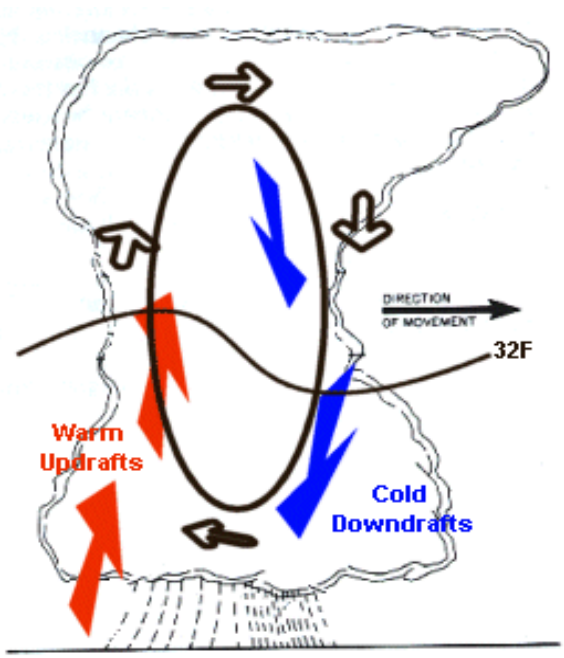

Figure 5.2.3-1
How Hail Is Formed
Source: NWS, January 10, 2003

The National Weather Service (NWS) defines severe thunderstorms as those with downdraft winds in excess of 58 miles an hour and/or hail at least 3/4 inches in diameter. While only about 10 percent of thunderstorms are classified as severe, all thunderstorms are dangerous because they produce numerous dangerous conditions, including one or more of the following: hail, strong winds, lightning, tornadoes, and flash flooding (National Weather Service – Flagstaff).

Hailstorms occur most frequently during the late spring and early summer, when the jet stream moves northward across the Great Plains. During this period, extreme temperature changes occur from the surface up to the jet stream, resulting in the strong updrafts required for hail formation.

The size of hailstones varies and is related to the severity and size of the thunderstorm that produced it. The higher the temperatures at the Earth's surface, the greater the strength of the updrafts, and the greater the amount of time the hailstones are suspended, giving the hailstones more time to increase in size. Hailstones vary widely in size, as shown in **Table 5.2.3-1**. Note that penny size (3/4 inches in diameter) or larger hail is considered severe.

Table 5.2.3-1
Estimating Hail Size

Size	Inches in Diameter
Pea	1/4 inch
Marble/mothball	1/2 inch
Dime/Penny	3/4 inch
Nickel	7/8 inch
Quarter	1 inch
Ping-Pong	1 1/2 inch
Golf Ball	1 3/4 inches
Tennis Ball	2 1/2 inches
Baseball	2 3/4 inches
Tea cup	3 inches
Grapefruit	4 inches
Softball	4 1/2 inches

Source: NWS, January 10, 2003.

Hail is sometimes measured with the Torro Hailstorm Intensity Scale are shown in Table 5.2.3-2.

Table 5.2.3-2
TORRO Hailstorm Intensity Scale

	Type	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy, J-m2
F0	Hard Hail	5	0-20	No damage
F1	Potentially Damaging	5-**15**	>20	Slight general damage to plants, crops
F2	Significant	10-**20**	>100	Significant damage to fruit, crops, vegetation
F3	Severe	20-**30**	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
F4	Severe	25-**40**	>500	Widespread glass damage, vehicle bodywork damage
F5	Destructive	30-**50**	>800	Wholesale destruction of glass, damage to

				tiled roofs, significant risk of injuries
F6	Destructive	40-**60**		Bodywork of grounded aircraft dented, brick walls pitted
F7	Destructive	50-**75**		Severe roof damage, risk of serious injuries
F8	Destructive	60-**90**		(Severest recorded in the British Isles) Severe damage to aircraft bodywork
F9	Super Hailstorms	75-**100**		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
F10	Super Hailstorms	>100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: http://www.torro.org.uk/site/hscale.php

Hazard Analysis

The first recorded hail activity in Elmore County according to NOAA's National Climate Data Center (NCDC) database goes back to 1966. Statistics since that time indicate 91 hail reports occurring on 63 separate days. Of the 91 hail reports, 68 (nearly 75%) occurred during the months of March, April, and May, during the first half of the Central Alabama's prime growing season of March through August. As a result, the damage to crops from hail is often extensive. Data indicates only 28% of reported thunderstorms (61 thunderstorm reports) occurred during that same March – May timeframe. NCDC records indicate 13 hail reports (14%) occurred during the months of June and July, when over 41% of thunderstorm activity was reported. The incidence of hail follows the incidence of severe thunderstorms. Therefore, those areas of the state most prone to severe thunderstorms are also areas most prone to large and damaging hail. Damaging hail has occurred in every part of Elmore County as all of the county is subject to severe thunderstorms. A major damaging hail event can be expected at least every 2 to 3 years.

The National Weather Service forecasts of severe thunderstorms usually gives sufficient warning time to allow residents to take appropriate action to reduce the effects of hail damage on vehicles and some property. However, little can be done to prevent damage to crops. More details about the severity of Elmore County events, and resulting damages, can be found later in this subsection, and crop damage has occurred from hail events in the county since 1950.

Table 5.2.3-3

Storm Events Database

Search Results for Elmore County, Alabama

91 events were reported between 01/01/1950 and 02/28/2014 (23435 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	63
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	18
Number of Days with Event and Crop Damage:	4
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	719.00K	43.00K
ELMORE CO.	ELMORE CO.	AL	06/30/1966	20:30	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/28/1973	17:50	CST	Hail	1.00 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/18/1978	22:21	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/11/1979	17:40	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/17/1980	21:30	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/26/1982	15:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/19/1984	18:15	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/03/1984	06:15	CST	Hail	0.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/03/1984	17:25	CST	Hail	1.75 in.	0	0	0.00K	0.00K

ELMORE CO.	ELMORE CO.	AL	04/18/1988	22:00	CST	Hail	1.00 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/10/1988	12:35	CST	Hail	1.00 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/10/1988	13:40	CST	Hail	1.25 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/24/1988	11:00	CST	Hail	1.00 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/04/1989	14:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/16/1996	16:35	CST	Hail	0.75 in.	0	0	10.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/18/1996	18:24	CST	Hail	0.75 in.	0	0	10.00K	10.00K
ECLECTIC	ELMORE CO.	AL	03/18/1996	18:53	CST	Hail	1.75 in.	0	0	15.00K	10.00K
MILLBROOK	ELMORE CO.	AL	03/18/1996	19:50	CST	Hail	1.00 in.	0	0	10.00K	5.00K
ECLECTIC	ELMORE CO.	AL	03/18/1996	20:18	CST	Hail	1.75 in.	0	0	10.00K	10.00K
WETUMPKA	ELMORE CO.	AL	06/13/1996	17:45	CST	Hail	0.75 in.	0	0	10.00K	1.00K
ECLECTIC	ELMORE CO.	AL	01/08/1997	09:45	CST	Hail	0.75 in.	0	0	3.00K	0.00K
ELMORE	ELMORE CO.	AL	03/13/1997	15:35	CST	Hail	0.75 in.	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/22/1997	14:59	CST	Hail	1.00 in.	0	0	4.00K	0.00K
TALLASSEE	ELMORE CO.	AL	04/22/1997	15:24	CST	Hail	1.75 in.	0	0	8.00K	0.00K
MILLBROOK	ELMORE CO.	AL	08/18/1997	14:12	CST	Hail	0.88 in.	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/08/1998	17:40	CST	Hail	0.88 in.	0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	04/08/1998	16:10	CST	Hail	0.88 in.	0	0	0.00K	0.00K
KENT	ELMORE CO.	AL	04/08/1998	17:50	CST	Hail	1.75 in.	0	0	9.00K	4.00K
WETUMPKA	ELMORE CO.	AL	05/03/1998	14:20	CST	Hail	1.75 in.	0	0	10.00K	3.00K
TALLASSEE	ELMORE CO.	AL	05/03/1998	14:33	CST	Hail	1.00 in.	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/03/1998	15:47	CST	Hail	0.75 in.	0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/05/1998	15:04	CST	Hail	1.00 in.	0	0	2.00K	0.00K

WETUMPKA	ELMORE CO.	AL	06/19/1998	14:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/13/1999	13:37	CST	Hail	0.75 in.	0	0	0.00K	0.00K
RIDDLE	ELMORE CO.	AL	05/23/1999	13:25	CST	Hail	0.75 in.	0	0	0.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	08/20/1999	16:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	01/09/2000	14:55	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/10/2000	18:45	CST	Hail	1.75 in.	0	0	5.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	03/10/2000	19:03	CST	Hail	1.00 in.	0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	04/02/2000	18:10	CST	Hail	1.00 in.	0	0	2.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/20/2000	16:05	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/03/2001	16:15	CST	Hail	1.75 in.	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/04/2001	14:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/04/2002	12:05	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/30/2002	12:50	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/04/2002	16:59	CST	Hail	0.75 in.	0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	04/25/2003	15:00	CST	Hail	2.00 in.	0	0	500.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/25/2003	15:39	CST	Hail	2.75 in.	0	0	50.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/07/2004	22:28	CST	Hail	1.00 in.	0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	11/24/2004	06:50	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/27/2005	11:25	CST	Hail	1.75 in.	0	0	18.00K	0.00K
ECLECTIC	ELMORE CO.	AL	03/27/2005	14:26	CST	Hail	0.75 in.	0	0	0.00K	0.00K
KENT	ELMORE CO.	AL	03/27/2005	15:04	CST	Hail	1.75 in.	0	0	9.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/30/2005	23:07	CST	Hail	0.88 in.	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/30/2005	23:59	CST	Hail	0.75 in.	0	0	0.00K	0.00K

KENT	ELMORE CO.	AL	03/31/2005	00:35	CST	Hail	1.75 in.	0	0	6.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/22/2005	14:05	CST	Hail	1.00 in.	0	0	1.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/22/2005	14:24	CST	Hail	1.00 in.	0	0	1.00K	0.00K
ECLECTIC	ELMORE CO.	AL	04/22/2005	14:35	CST	Hail	1.75 in.	0	0	11.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/22/2005	18:06	CST	Hail	1.00 in.	0	0	1.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/20/2005	14:10	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	12/28/2005	14:14	CST	Hail	0.88 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	12/28/2005	14:24	CST	Hail	0.88 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/20/2006	18:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/19/2006	21:16	CST	Hail	1.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/19/2006	21:27	CST	Hail	0.88 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	08/11/2006	17:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	09/28/2006	16:26	CST	Hail	1.50 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2007	15:47	CST-6	Hail	1.25 in.	0	0	0.00K	0.00K
COOSADA	ELMORE CO.	AL	04/11/2007	15:50	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/11/2007	15:51	CST-6	Hail	2.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2007	15:58	CST-6	Hail	2.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2007	16:00	CST-6	Hail	1.75 in.	0	0	5.00K	0.00K
TALLASSEE	ELMORE CO.	AL	04/11/2007	16:26	CST-6	Hail	2.75 in.	0	0	0.00K	0.00K
SANTUCK	ELMORE CO.	AL	08/17/2007	16:59	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	04/04/2008	17:05	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
MAN	ELMORE CO.	AL	04/04/2008	17:10	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2008	21:35	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K

CLAUD	ELMORE CO.	AL	04/25/2008	16:55	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	07/08/2009	14:20	CST-6	Hail	1.25 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/26/2009	16:48	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/10/2010	15:58	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	03/10/2010	16:10	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/26/2011	14:50	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/26/2011	14:53	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/27/2011	21:19	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	07/03/2011	15:30	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/23/2012	15:05	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
CLAUD	ELMORE CO.	AL	06/14/2012	17:00	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	03/18/2013	15:58	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	03/18/2013	16:00	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
Totals:								0	0	719.00K	43.00K

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5.2.4 Tornadoes and High Wind Events

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Tornado

History: High, 20
Frequency of Occurrence: Frequent (1)
Probability: Medium, 35; Occasional/Likely Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Medium, 30
Property: Medium, 20
Economic Impact: Medium, 25
Total Points: 155

Maximum Probable Extent (Magnitude/Strength):
Public: Serious (4)
Infrastructure: High (2)
Environment: (High)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to tornados associated with severe thunderstorms.
Overall Significance Ranking: High

Hazard: High Winds

History: High, 20
Frequency of Occurrence: Frequent (1)
Probability: Medium, 35; Occasional/Likely Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Medium, 30
Property: Medium, 20
Economic Impact: Medium, 25
Total Points: 155
Maximum Probable Extent (Magnitude/Strength):
Public: Serious (4)
Infrastructure: High (2)
Environment: High (2)

Jurisdictions	Extent of the Natural Hazard – Tornadoes and High Wind Events
All	EF-5 strength tornadoes (winds in excess of 200 mph), strong straight line winds (greater than 60 mph) and down bursts (greater than 100 mph) causing catastrophic damage.

Geographical Areas of Elmore County Susceptible to this hazard/Threat: Extensive: The entire planning area is susceptible to tornados associated with severe thunderstorms.
Overall Significance Ranking: High

Tornado: A tornado is a rapidly rotating funnel (or vortex) of air that extends toward the ground from a cumulonimbus cloud. Most tornadoes do not touch the ground, but when the lower tip of a tornado touches the earth, it can cause extensive damage. Tornadoes often form in convective cells such as thunderstorms or at the front of hurricanes. Tornadoes may also result from earthquake induced fires, wildfires, or atomic bombs (FEMA, 1997). The formation of tornadoes from thunderstorms is explained in **Figures 5.2.4-1 thru 5.2.4-4**

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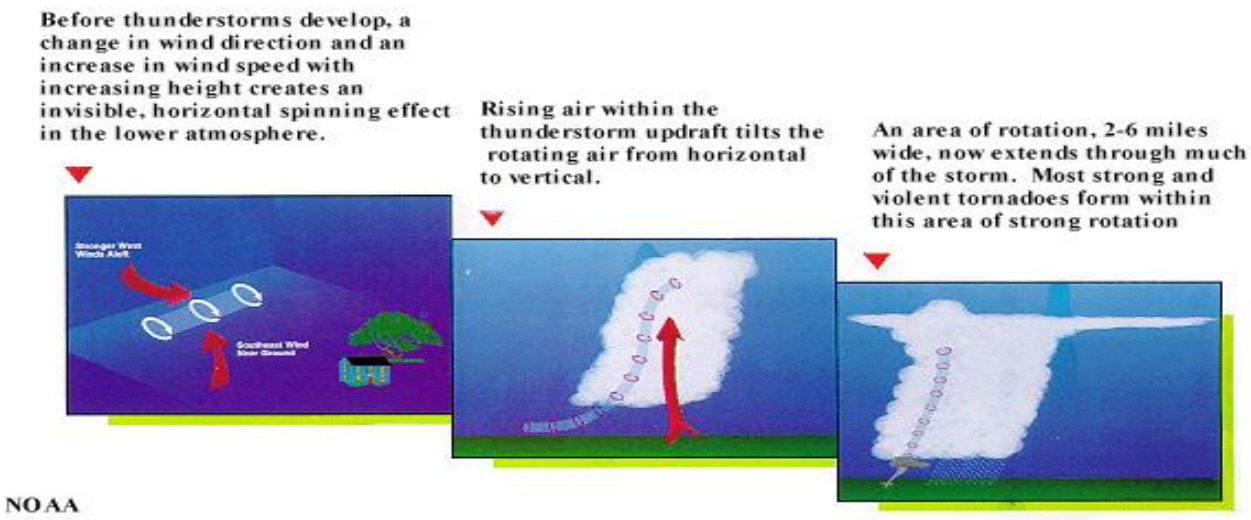

Figure 5.2.4-1
How Do Tornadoes Form?
Source: NWS Phoenix.

Figure 5.2.4-2 Source: NWS Birmingham, Basic Spotter 2011 PowerPoint

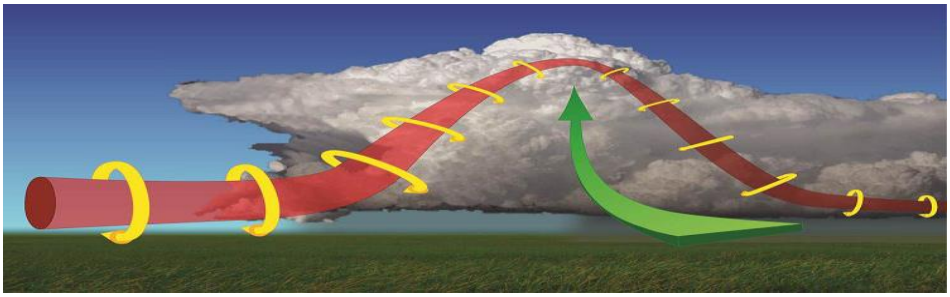

Figure 5.2.4-3 Source: NWS Birmingham, Basic Spotter 2011 PowerPoint

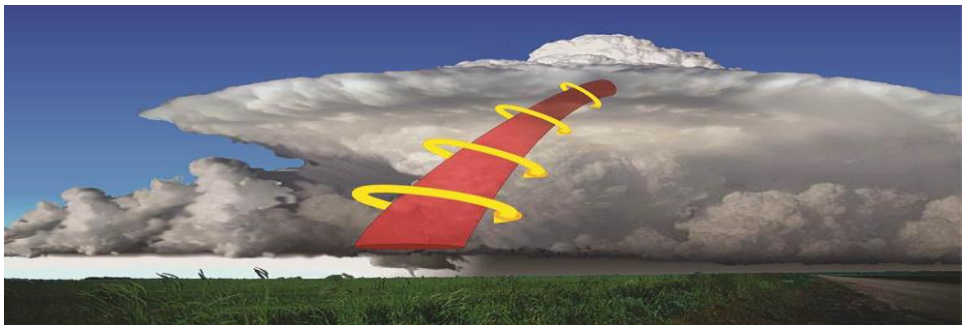

Figure 5.2.4-4 Source: NWS Birmingham, Basic Spotter 2011 PowerPoint

Figure 5.2.4-5 NWS BMX HWO, April 27, 2014

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FLUS44 KBMX 271110
HWOBMX

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE BIRMINGHAM AL
610 AM CDT SUN APR 27 2014

ALZ011>015-017>050-281130-
AUTAUGA-BARBOUR-BIBB-BLOUNT-BULLOCK-CALHOUN-CHAMBERS-CHEROKEE-
CHILTON-CLAY-CLEBURNE-COOSA-DALLAS-ELMORE-ETOWAH-FAYETTE-GREENE-HALE-
JEFFERSON-LAMAR-LEE-LOWNDES-MACON-MARENGO-MARION-MONTGOMERY-PERRY-
PICKENS-PIKE-RANDOLPH-RUSSELL-SHELBY-ST CLAIR-SUMTER-TALLADEGA-
TALLAPOOSA-TUSCALOOSA-WALKER-WINSTON-
610 AM CDT SUN APR 27 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL WEATHER SERVICE OFFICE
IN BIRMINGHAM.

.DAY ONE...TODAY AND TONIGHT.

MULTIPLE ROUNDS OF SEVERE WEATHER ARE LIKELY FOR THE UPCOMING WEEK ACROSS CENTRAL ALABAMA. A
MARGINAL SEVERE THREAT WILL BE POSSIBLE LATE TONIGHT ACROSS THE NORTHWEST 5 COUNTIES OF CENTRAL
ALABAMA...GENERALLY AFTER 3 AM...WITH DAMAGING WINDS THE MAIN THREAT. HOWEVER...A BRIEF ISOLATED
TORNADO WILL ALSO BE POSSIBLE.

.DAYS TWO THROUGH SEVEN...MONDAY THROUGH SATURDAY.

THE MARGINAL SEVERE THREAT WILL CONTINUE FOR NORTHWEST CENTRAL ALABAMA THROUGH ABOUT 10 AM MONDAY
MORNING.

A MUCH MORE SIGNIFICANT THREAT...INCLUDING STRONG TORNADOES...
APPEARS LIKELY FROM AROUND 6 PM MONDAY EVENING THROUGH 10 AM TUESDAY MORNING...WITH WIDESPREAD
DAMAGING WINDS...LARGE HAIL AND FLASH FLOODING ALL POSSIBLE. THE GREATEST THREAT AREA DURING THIS
TIME FRAME APPEARS TO BE GENERALLY ALONG AND NORTHWEST OF A LINE FROM DEMOPOLIS...TO CLANTON...TO
ANNISTON. HOWEVER...ALL OF CENTRAL ALABAMA WILL HAVE A RISK FOR SEVERE WEATHER WITH THIS ROUND OF
STORMS.

ANOTHER ROUND OF SEVERE WEATHER IS POSSIBLE FOR ALL OF CENTRAL ALABAMA TUESDAY AFTERNOON THROUGH
EARLY WEDNESDAY MORNING. ALL FORMS OF SEVERE WEATHER WILL BE POSSIBLE WITH THIS THIRD ROUND.

.SPOTTER INFORMATION STATEMENT...

ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT WILL BE NEEDED MONDAY EVENING THROUGH AS
LATE AS WEDNESDAY MORNING.

$$
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Figure 5.2.4-6 shows the number of tornadoes per square mile for each county from 1950-2009. Although exact tornado probability is impossible to determine, given the relatively long reporting period it is reasonable to assume that the average annual countywide figure cited in **Table 5.2.4-1** will remain relatively constant in the future. Note however, the numbers of deaths, injuries, and dollar amount of damages can fluctuate drastically depending on the severity of the tornadoes and the locations that they impact.

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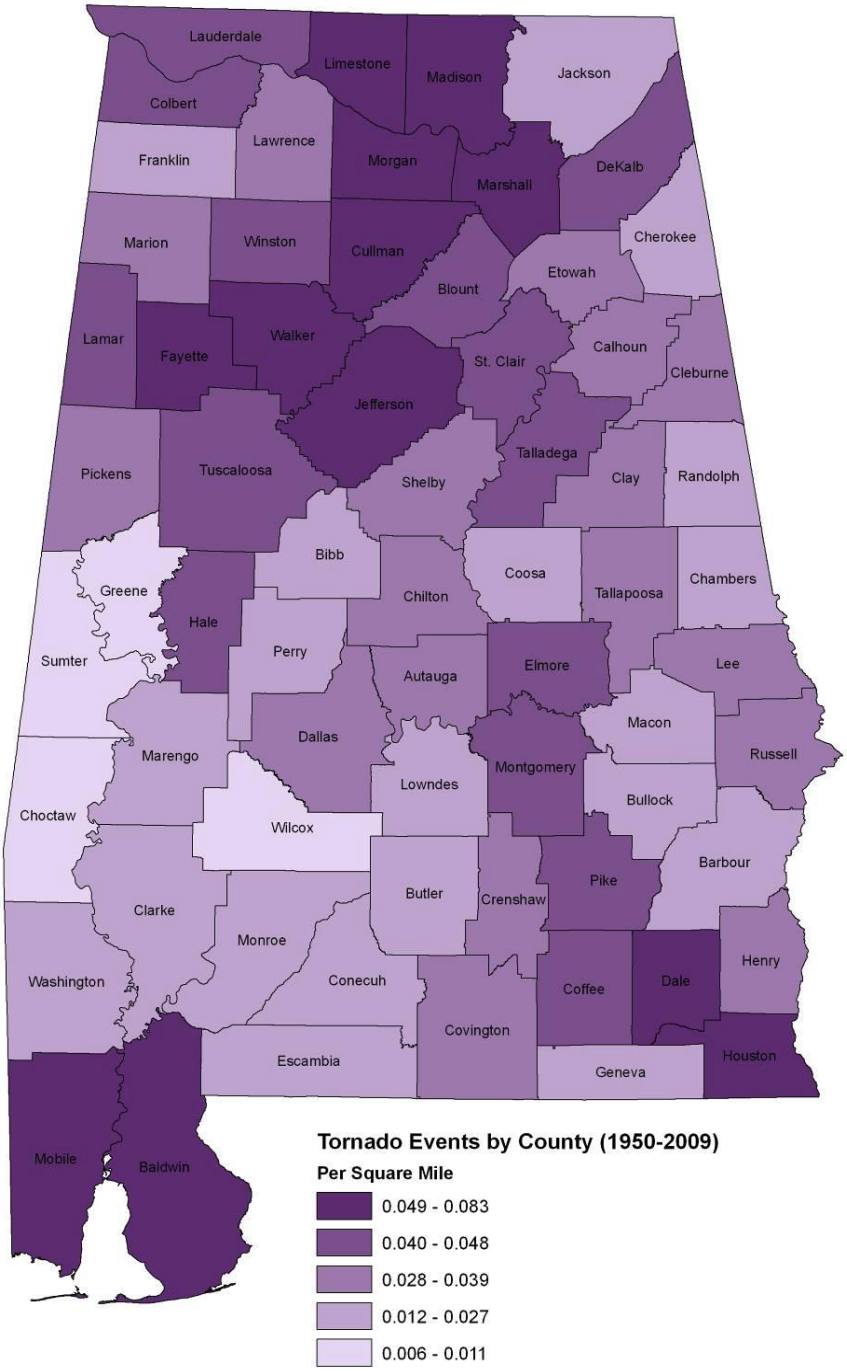

Figure 5.2.4-6
Tornadoes per Square Mile per County, 1950-2009
Source: National Climatic Data Center

Table 5.2.4-1

Storm Events Database

Search Results for Elmore County, Alabama

38 events were reported between 01/01/1950 and 01/31/2014 (23407 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	30
Number of Days with Event and Death:	1
Number of Days with Event and Death or Injury:	3
Number of Days with Event and Property Damage:	26
Number of Days with Event and Crop Damage:	1
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								6	37	61.790M	100.00K
ELMORE CO.	ELMORE CO.	AL	12/23/1956	00:50	CST	Tornado	F2	0	0	0.25K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/12/1976	21:20	CST	Tornado	F3	0	15	2.500M	0.00K
ELMORE CO.	ELMORE CO.	AL	03/29/1977	15:20	CST	Tornado	F2	0	2	250.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/04/1979	13:51	CST	Tornado	F0	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/25/1979	13:00	CST	Tornado	F3	0	0	2.500M	0.00K
ELMORE CO.	ELMORE CO.	AL	11/25/1979	13:50	CST	Tornado	F2	0	0	250.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/26/1982	15:25	CST	Tornado	F1	0	0	250.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/12/1982	13:30	CST	Tornado	F0	0	0	2.50K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/23/1983	14:10	CST	Tornado	F1	0	0	0.25K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/03/1984	06:12	CST	Tornado	F3	0	0	2.500M	0.00K
ELMORE CO.	ELMORE CO.	AL	08/27/1992	13:13	CST	Tornado	F1	0	0	250.00K	0.00K
Elmore	ELMORE CO.	AL	04/11/1995	10:15	CST	Tornado	F1	0	0	25.00K	0.00K
ECLECTIC	ELMORE CO.	AL	03/18/1996	18:52	CST	Tornado	F1	0	0	500.00K	50.00K

WETUMPKA	ELMORE CO.	AL	03/18/1996	20:05	CST	Tornado	F1	0	0	150.00K	0.00K
ECLECTIC	ELMORE CO.	AL	03/18/1996	20:23	CST	Tornado	F3	0	0	700.00K	50.00K
ELMORE	ELMORE CO.	AL	01/24/1997	07:37	CST	Tornado	F1	0	0	45.00K	0.00K
WETUMPKA	ELMORE CO.	AL	09/28/1998	16:19	CST	Tornado	F0	0	0	18.00K	0.00K
KENT	ELMORE CO.	AL	05/07/1999	14:28	CST	Tornado	F0	0	0	0.00K	0.00K
KENT	ELMORE CO.	AL	05/07/1999	14:30	CST	Tornado	F0	0	0	0.00K	0.00K
KENT	ELMORE CO.	AL	12/14/2001	03:48	CST	Tornado	F0	0	0	12.00K	0.00K
TALLASSEE	ELMORE CO.	AL	04/25/2003	15:24	CST	Tornado	F0	0	0	45.00K	0.00K
MILLBROOK	ELMORE CO.	AL	11/24/2004	06:48	CST	Tornado	F0	0	0	122.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/06/2005	13:01	CST	Tornado	F0	0	0	8.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/06/2005	13:17	CST	Tornado	F0	0	0	38.00K	0.00K
WETUMPKA	ELMORE CO.	AL	11/28/2005	19:30	CST	Tornado	F0	0	0	11.00K	0.00K
WARE	ELMORE CO.	AL	11/15/2006	10:40	CST-6	Tornado	F1	0	0	25.00K	0.00K
KENT	ELMORE CO.	AL	11/15/2006	11:02	CST-6	Tornado	F1	0	0	30.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/11/2007	16:05	CST-6	Tornado	EF0	0	0	5.00K	0.00K
MILLBROOK	ELMORE CO.	AL	02/17/2008	15:06	CST-6	Tornado	EF1	0	0	100.00K	0.00K
WARE	ELMORE CO.	AL	08/24/2008	13:07	CST-6	Tornado	EF0	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	11/30/2010	10:23	CST-6	Tornado	EF0	0	0	35.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	02/28/2011	17:10	CST-6	Tornado	EF0	0	0	55.00K	0.00K
TITUS	ELMORE CO.	AL	04/15/2011	20:27	CST-6	Tornado	EF0	0	0	12.90K	0.00K
WEOKA	ELMORE CO.	AL	04/15/2011	22:17	CST-6	Tornado	EF2	0	0	1.330M	0.00K
WALLSBURG	ELMORE CO.	AL	04/27/2011	19:12	CST-6	Tornado	EF3	6	20	50.000M	0.00K
DEATSVILLE	ELMORE CO.	AL	12/22/2011	14:14	CST-6	Tornado	EF0	0	0	5.00K	0.00K
SYKES MILL	ELMORE CO.	AL	12/22/2011	14:24	CST-6	Tornado	EF0	0	0	15.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	01/23/2012	07:48	CST-6	Tornado	EF1	0	0	0.00K	0.00K
Totals:								6	37	61.790M	100.00K

Source: NCDC

Tornadoes are more likely to occur during the months of March through May and are most likely to form in the late afternoon and early evening. Tornado events typically last less than 30 minutes, but can exist for more than an hour. Most tornadoes are a few dozen yards wide and touchdown briefly, but even small short-lived tornadoes can inflict tremendous damage. Highly destructive tornadoes may carve out a path over a mile wide and several miles long. They are possible throughout Elmore County and the state of Alabama.

Until February 1, 2007, tornado damage severity was measured by the Fujita Tornado Scale, which assigns a numerical value of 0 to 5 based on wind speeds, as shown in Table 5.2.4-2. The letter F may precede the number (e.g., FO, F1, F2).

Table 5.2.4-2
Fujita Tornado Scale

Category	Wind Speed		Description of Damage
F0	40-72 mph		Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
F1	73-112 mph		Moderate damage. The lower limit is the beginning of hurricane speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
F2	113-157		Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158-206		Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	207-260		Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	261-318 mph		Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100-yards; trees debarked.

Source: FEMA, 1997

As of February 1, 2007, the Fujita Tornado Scale has since been revised and is now called the Enhanced Fujita (EF) Tornado Scale, as shown in **Table 5.2.4-3**. It is a revision of the Fujita Scale to reflect better examinations of tornado damage surveys, so as to align wind speeds more closely with associated storm damage. The new scale takes into account quality of construction and standardizes different kinds of structures. The only differences between the Fujita Scale and

the Enhanced Fujita Scale are adjusted wind speeds, measurements of which weren't used in previous ratings, and refined damage descriptors; to standardize ratings and to make it easier to rate tornadoes which strike few structures.

Table 5.2.4-3
Enhanced Fujita Tornado Scale

Category	Wind Speed	Description of Damage
EF0	65-85 mph	*Light* damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110 mph	*Moderate* damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135 mph	*Considerable/Significant* 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.
EF3	136-165 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.
EF4	166-200 mph	*Devastating* damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200 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. So far only one EF5 tornado has been recorded since the Enhanced Fujita Scale was introduced on February 1, 2007.

Source: NOAA, NWS, Storm Prediction Center, 2007.

Source: *NOAA December 2012 Storm Data and Unusual Weather Phenomena With Late Reports and Corrections*, Pages 255 – 256 (All photographs below courtesy of Brian Smith, Meteorologist, National Weather Service, Valley NE.)

Fig 5.2.4-7 Typical EF0 Tornado Damage
Note trees are stripped of leaves, but the trees remain standing. Only light roof damage and a few missing shingles.

Fig 5.2.4-8 Typical EF1 Tornado Damage
Note uprooted trees and missing shingles from the roof. There is significant roof damage.

Fig 5.2.4-9 Typical EF2 Tornado Damage Home is missing entire roof but the exterior walls remain intact. Some of the stronger hardwood trees remain standing.

Fig 5.2.4-10 Typical EF3 Tornado Damage Home is missing the entire roof as well as the exterior walls. Trees are blown over or snapped near the base and outbuildings are destroyed.

Fig 5.2.4-11 Typical EF4 Tornado Damage This home is almost completely obliterated, with no walls standing. The debris from the home is where the house once stood.

Fig 5.2.4-12 Typical EF5 Tornado Damage The asphalt surface has been peeled off of this

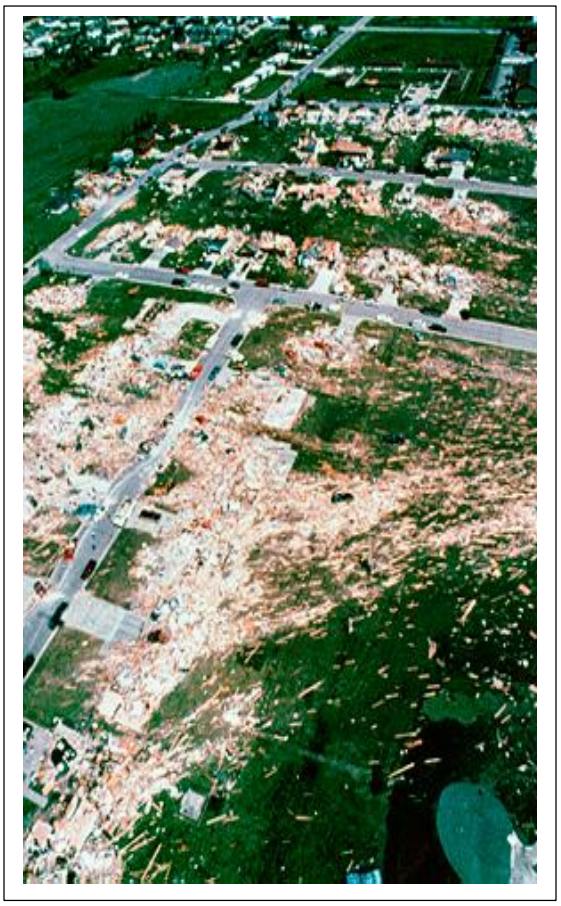

Fig 5.2.4-13 Typical EF5 Tornado Damage These homes have been completely removed from their original locations. The debris field has been scattered some distance from their foundation.

Figure 5.2.4-14 shows tornado activity in the United States based on the number of recorded tornadoes per 1,000 square miles.

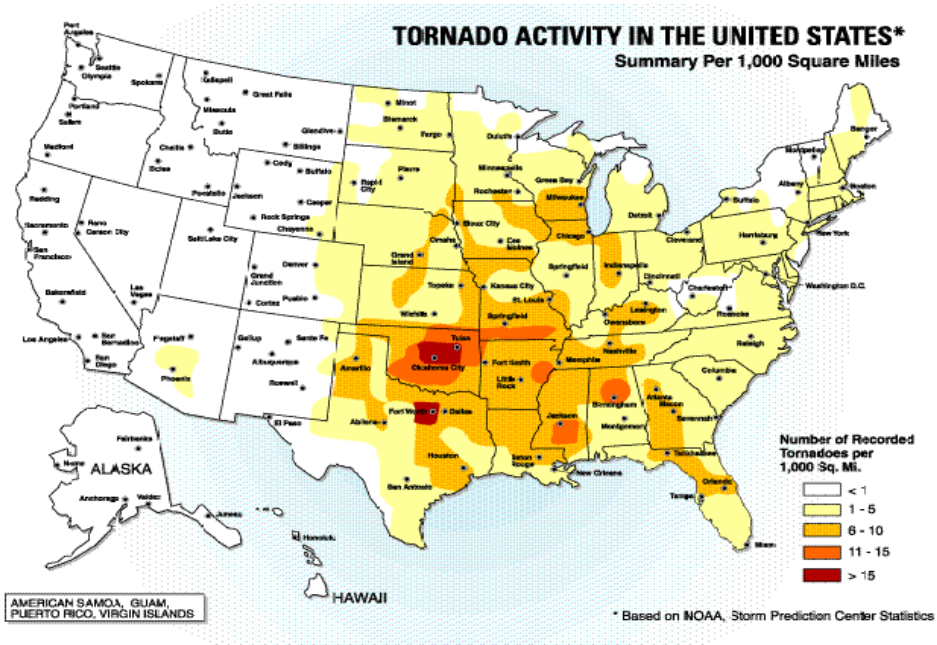

Figure 5.2.4-14
Tornado Activity in the United States
Source: NOAA Storm Prediction Center

High Wind Events

High wind events are possible in Alabama. Such events are typically associated with thunderstorms but may occur as a results of dissipating hurricanes or changing weather patterns, for examples. The following definitions are provided from the NOAA National Severe Storms Laboratory (NSSL) website:

TYPES OF DAMAGING WINDS

Straight-line wind is a term used to define any thunderstorm wind that is not associated with rotation, and is used mainly to differentiate from tornadic winds.

A **downdraft** is a small-scale column of air that rapidly sinks toward the ground.

A **downburst** is a result of a strong downdraft. A downburst is a strong downdraft with horizontal dimensions larger than 4 km (2.5 mi) resulting in an outward burst of damaging winds on or near the ground. (Imagine the way water comes out of a faucet and hits the bottom of the sink.) Downburst winds may begin as a microburst and spread out over a wider area, sometimes producing damage similar to a strong tornado. Although usually associated with thunderstorms, downbursts can occur with showers too weak to produce thunder.

A **microburst** is a small concentrated downburst that produces an outward burst of damaging winds at the surface. Microbursts are generally small (less than 4km across) and short-lived,

lasting only 5-10 minutes, with maximum wind speeds up to 168 mph. There are two kinds of microbursts: wet and dry. A wet microburst is accompanied by heavy precipitation at the surface. Dry microbursts, common in places like the high plains and the intermountain west, occur with little or no precipitation reaching the ground.

A **gust front** is the leading edge of rain-cooled air that clashes with warmer thunderstorm inflow. Gust fronts are characterized by a wind shift, temperature drop, and gusty winds out ahead of a thunderstorm. Sometimes the winds push up air above them, forming a shelf cloud or detached roll cloud.

A **derecho** is a widespread, long-lived wind storm that is associated with a band of rapidly moving showers or thunderstorms. By definition, if the wind damage swath extends more than 240 miles (about 400 kilometers) and includes wind gusts of at least 58 mph (93 km/h) or greater along most of its length, then the event may be classified as a derecho. A typical derecho consists of numerous microbursts, downbursts, and downburst clusters.

Figure 5.2.4-15 shows the FEMA defined wind zones throughout the United States.

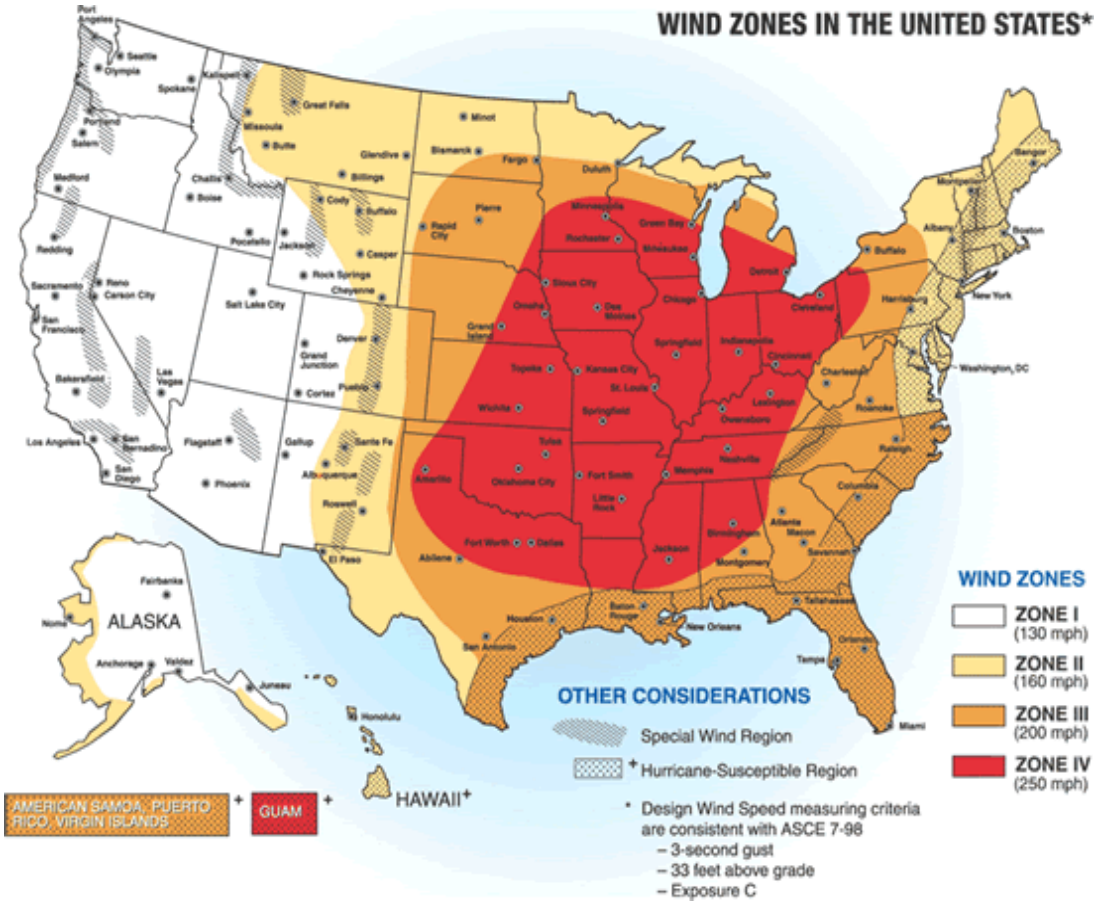

Figure 5.2.4-15
Wind Zones in the United States
Source: FEMA

Nature of the Hazard in Alabama

Source: Alabama State Hazard Mitigation Plan

Figure 5.2.4-16 shows the different wind zones throughout the state of Alabama used by the American Society of Civil Engineers (ASCE) for determining design wind speeds. Design wind speeds are used by engineers to determine what type of winds (i.e., how strong) a building should be designed to withstand.

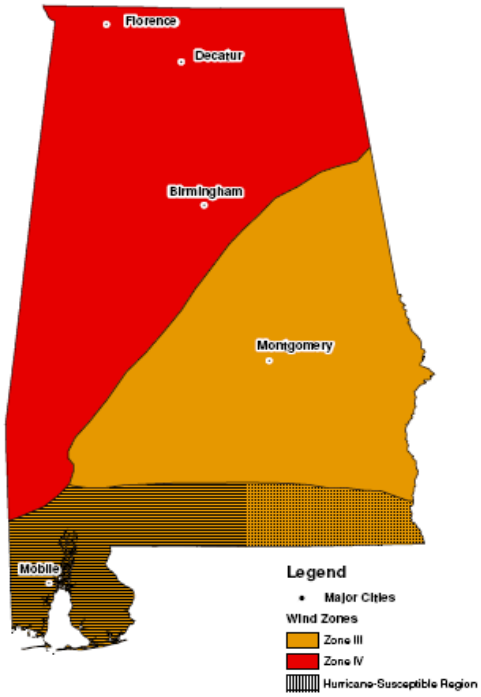

Figure 5.2.4-16
Design Wind Speeds (3 second gust)*
Source: ASCE 7-98
***Zone III represents 200 mph; Zone IV represents 250 mph**

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5.2.5 Flooding

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's 2013 Threat Hazard Inventory and Risk Assessment (THIRA*) by including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Flood, River

History: Low, 2
Frequency of Occurrence: Occasional (2)
Probability: Medium, 35; Occasional/Likely Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Medium, 20
Economic Impact: Medium, 25
Total Points: 105

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3)
Infrastructure: Very High (1)
Environment: Very High (1)

Jurisdictions	Extent of the Natural Hazard – Flooding (River)
All	Can cause deaths, injuries, and property damage, including damage to buildings, communications systems, power lines, and electrical systems. Causes wild land and structural fires.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Limited: Only limited portions of the planning jurisdiction are susceptible to river flooding as indicated on Flood Zone Maps at Figures 5.2.5-7 thru 5.2.5-14, located at the end of this section.
Overall Significance Ranking: High

Hazard: Flood, Flash

History: Medium, 10
Frequency of Occurrence: Occasional (2)
Probability: Medium, 35; Occasional/Likely Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 65
Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3)
Infrastructure: Very High (1)
Environment: Very High (1)

Jurisdictions	Extent of the Natural Hazard – Flooding (Flash)
All	Can cause minor flooding (several inches to one foot with little impact) to several feet affecting structures, open spaces, and agricultural land. Can cause deaths, injuries, and property damage, including damage to buildings, communications systems, power lines, and electrical systems.

Geographical Areas of Elmore County Susceptible to this hazard/Threat: Extensive: The entire planning area is susceptible to flash flooding associated with torrential/heavy rainfall. The City of Millbrook, Town of Coosada, and Town of Elmore are most susceptible to flash flooding due to flat topography that does not drain well. See Flood Zone Maps at Figures 5.2.5-7 thru 5.2.5-14 located at the end of this section.
Overall Significance Ranking: High

Nature of the Hazard in Alabama

Flooding caused by rainfall occurs to some extent almost every year in almost every part of the state. Flooding occurs most frequently between the months of November and April, with a peak from February through April. Flooding is the accumulation of water within a water body (e.g., stream, river, lake, or reservoir) and the overflow of excess water onto adjacent floodplains. As illustrated in **Figure 5.2.5-1,** floodplains are usually lowlands adjacent to water bodies that are

subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected. Alabama receives an average of 56 inches of rainfall annually, creating a high potential for riverine and flash flooding. Digital flood hazard data, in the form of effective FEMA Digital Flood Insurance Rate Maps (DFIRM) data, is currently available (as of August 2012) for all 67 counties, including Elmore County. **Figure 5.2.5-2** shows the 1-percent-annual-chance floodplain for the state. Nationwide, hundreds of floods occur each year, making them one of the most common hazards in the United States. (FEMA, 1997). There are a number of categories of floods in the United States, including the following:

- Riverine flooding, including overflow from a river channel, flash floods, alluvial fan floods and dam-break floods;
- Local drainage or high groundwater levels;
- Fluctuating lake levels;
- Coastal flooding, including storm surges;
- Debris flows; and
- Subsidence.

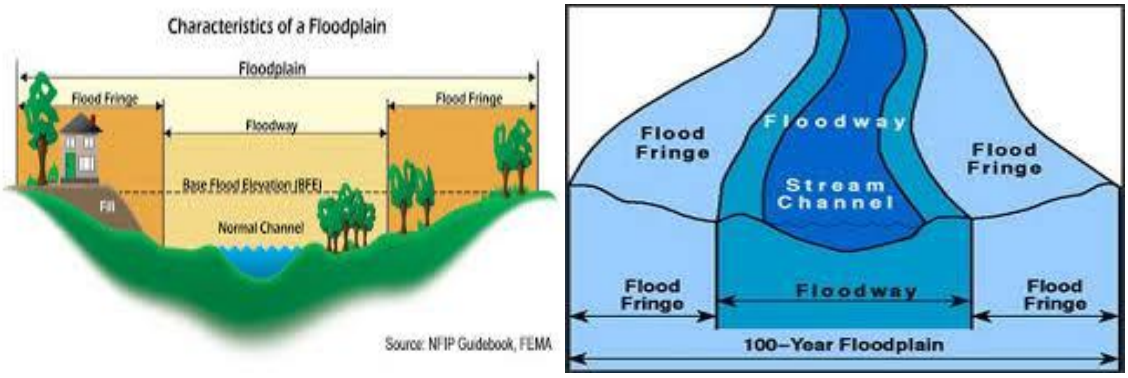

Figure 5.2.5-1 Source: FEMA, August 2001.
Floodplain Definition Sketches

While there is no sharp distinction between riverine floods, flash floods, alluvial fan floods, and dam-break floods, these types of floods are widely recognized and may be helpful in considering the range of flood risk and appropriate responses:

・The most common kind of flooding event is riverine flooding, also known as overbank flooding. Riverine floodplains range from narrow, confined channels in the steep valleys of mountainous and hilly regions, to wide, flat areas in plains and coastal regions. The amount of water in the floodplain is a function of the size and topography of the contributing watershed, the regional and local climate, and land use characteristics. In steep valleys, flooding is usually rapid and deep, but of short duration, while flooding in flat areas is typically slow, relatively shallow, and may last for long periods of time.

- Flash floods involve a rapid rise in water level, high velocity, and large amounts of debris, which can lead to significant damage that includes the tearing out of trees, undermining of buildings and bridges, and scouring new channels. The intensity of flash flooding is a function of the intensity and duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain. Dam failure may also lead to flash flooding.

- Alluvial fan floods occur in the deposits of rock and soil that have eroded from mountainsides and accumulated on valley floors in the pattern of a fan. Alluvial fan floods often cause greater damage than riverine flooding due to the high velocity of the flow, amount of debris, and broad area affected. Human activities may exacerbate flooding and erosion on alluvial fans via increased velocity along roadways acting as temporary drainage channels or changes to natural drainage channels from fill, grading, and structures.

- Dam-break floods may occur due to structural failures (e.g., progressive erosion), overtopping or breach from flooding, or earthquakes.

Local drainage floods may occur outside of recognized drainage channels or delineated floodplains (such as the 1.0-pecent and 0.2-percent annual floodplain identified in the FEMA Digital Flood Insurance Rate Maps) for a variety of reasons, including concentrated local precipitation, a lack of infiltration, inadequate facilities for drainage and storm-water conveyance, and/or increased surface runoff. Such events often occur in flat areas, particularly during winter and spring in areas with frozen ground, and also in urbanized areas with large impermeable surfaces. High groundwater flooding is a seasonal occurrence in some areas, but may occur in other areas after prolonged periods of above-average precipitation. Floods are possible throughout Elmore County and the state of Alabama.

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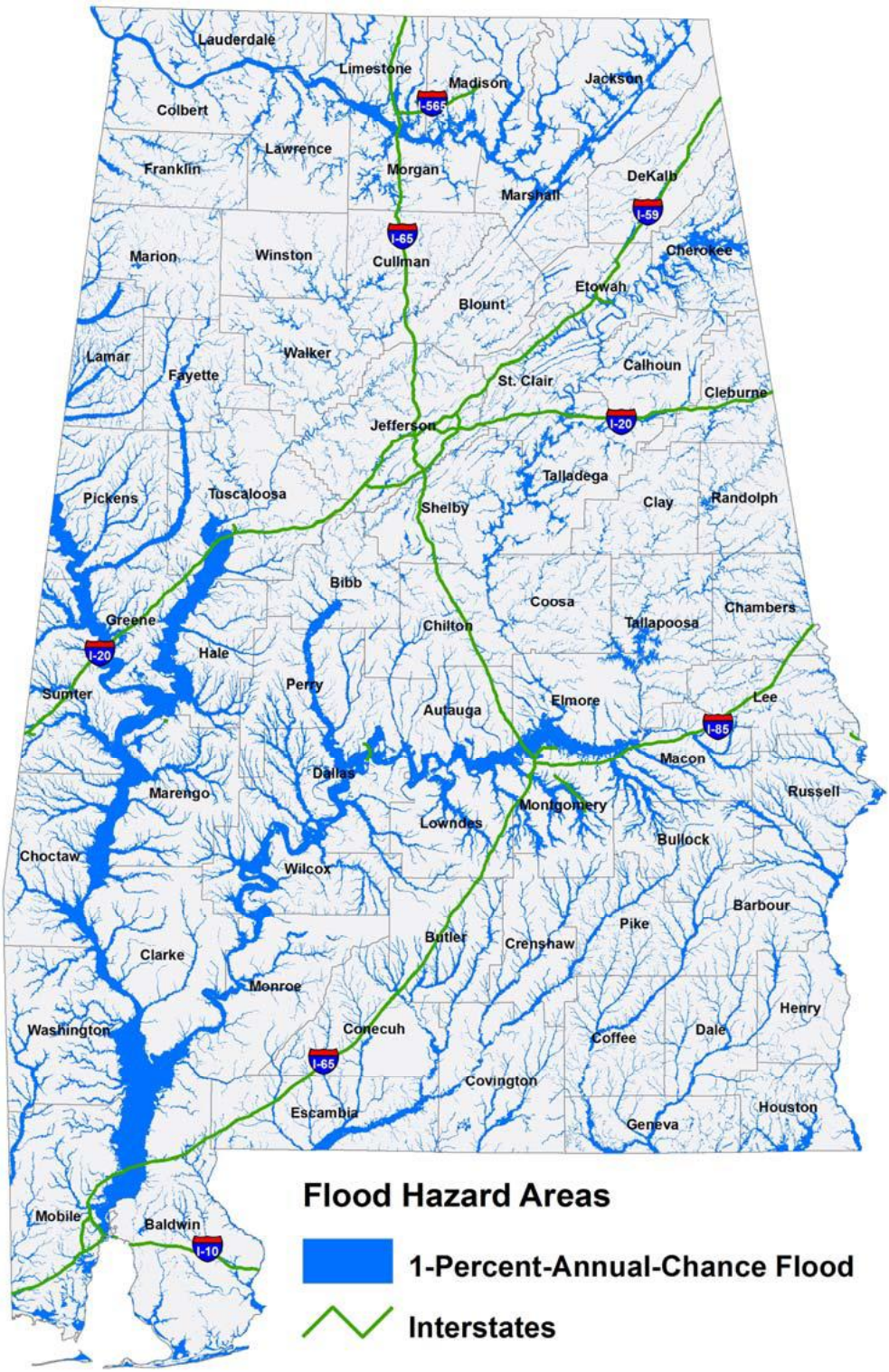
Figure 5.2.5-2 Riverine Flood Hazard Areas -- next page
Source: Federal Emergency Management Agency, 2012


Lauderdale
Limestone
Madison
Jackson
Colbert
Lawrence
Franklin
Morgan
Marshall
DeKalb
Marion
Winston
Cullman
Cherokee
Etowah
Blount
Lamar
Walker
Fayette
St. Clair
Calhoun
Cleburne
Jefferson
Talladega
Pickens
Tuscaloosa
Shelby
Clay
Randolph
Bibb
Coosa
Chambers
Greene
Chilton
Tallapoosa
Hale
Sumter
Perry
Elmore
Lee
Autauga
Macon
Dallas
Marengo
Russell
Montgomery
Lowndes
Bullock
Choctaw
Wilcox
Barbour
Pike
Butler
Crenshaw
Clarke
Monroe
Henry
Washington
Conecuh
Coffee
Dale
Covington
Escambia
Houston
Geneva
Mobile
Baldwin
I-56
I-65
I-59
I-20
I-85
I-10
Flood Hazard Areas
1-Percent-Annual-Chance Flood
Interstates

Impact on the Public

Riverine flooding has caused displacement, property damage, and impacts on the health of residents. In some cases, utility providers have had facilities located in floodplain areas, and these facilities have been negatively impacted by flooding. Floodwaters can also prevent normal access to structures and facilities. Flooding is a hazard whose risks are routinely underestimated by the public, who may be inclined to attempt to walk or drive through shallow waters, or to allow their children and pets to play in the water as if it were part of a beach or swimming pool. Public education is vital so that there is widespread knowledge of the contaminants and germs that floodwaters contain, and a greater awareness of the risks that floodwaters pose to drivers and pedestrians. Drivers need to know that roads and bridges are often weakened and degraded by flood impacts, and that the road they assume is still there under shallow waters may no longer be intact. Less than a foot of flowing water can cause travelers to end up in a ditch or sinkhole, where persons may find that it is impossible to escape from a submerged vehicle under the pressures exerted by flowing water. Those who are tempted to walk through floodwaters should be informed that the waters tend to conceal the presence of open manholes and dangerous debris, such as rusty nails and metal, or live electrical wires that can cause harmful shocks.

Impact on Continuity of Operations

Impact may cause relocation of government operations. Infrastructure will be affected and delays/closures due to flooded roadways may occur. Severity could have catastrophic impact to infrastructure. In cases where any type of flood impact causes negative effects on structures, utilities, or the ability to access them, doubts can arise about the appropriateness of the planning and development mechanisms that may have allowed these flood impacts to occur. Doubts may also arise about the adequacy of the area's drainage infrastructure, whether in the form of channels/drains at the surface or storm sewer systems underneath the ground. Especially controversial are cases in which sewer systems are perceived to have caused basement flooding, and when the original designs of some sewer systems have had their capacities exceeded because of subsequent urban development trends, or when outmoded designs have caused waters to be contaminated with sewage. Public health issues in these cases can thus compound the problems caused by flooding itself, in ways that can seem to be attributable to government.

Impact on Responders

"Ordinary" flood waters in known floodplain areas and riparian lands often contain "hidden" hazards that may not be evident at first. Roads and bridges are often weakened and degraded by flood impacts, and a previously intact roadway area may have been eroded away under a seemingly shallow water surface. Floodwaters tend to conceal the presence of open manholes, dangerous debris (such as rusty nails and metal), and live electrical wires that can cause harmful shocks. Responders in a large flood event therefore deal with numerous hidden hazards as well as floodwaters that are often unclean (containing carcasses, garbage, and filth) and contaminated with chemicals (from area roads, cars, industrial sites, storage facilities, etc.).

Impact on the Environment

Flooding is generally part of a natural cycle that has many important and beneficial functions for the environment. Flooding raises the water table in wetlands, maintains biodiversity, and replenishes nutrients back into the soil. Additionally, higher water tables allow fish and water

plants to recolonize and may also help to control some invasive species. Flooding, however, becomes a problem in the built environment. Drainage systems and city sewers can become overwhelmed, causing raw sewage to back up in basements and onto roadways. Flooding in urban areas can also cause increased runoff, which may carry pollutants through storm sewers into rivers and lakes. Urban runoff can be toxic, as it may contain garbage, fertilizers, oil and other residues from city streets.

Flood History in Alabama
Non-Hurricane Related Flood History in Alabama
Source: Excerpts from the Alabama State Hazard Mitigation Plan, April 2013
(Note: Hurricane/Tropical Storm for Related Flood History in Alabama)

During the 12-month period from February 1990 to January 1991, 63 of 67 counties in the state, including Elmore County, were included in presidential disaster declarations for flooding. In February 1990, a flood disaster occurred from saturation flooding and the inability of the drainage system to accommodate the large volume of water dumped on the central and northeast parts of the state during the first half of the month. Twenty-seven counties in central and northeastern Alabama received disaster declarations due to repetitive rains over a 15-day period. These counties extend through the central and northeast portion of the state.

Immediately following the February 1990 floods, 33 counties in southern Alabama were included in a March 21, 1990 disaster declaration caused by a series of strong thunderstorms that continuously formed and moved over the same area. With rain falling nearly parallel to the affected river basins, flooding was more severe than in the past flood events, where rain fell across the basins. The USGS reported a greater than 100-year flood event on the Choctawhatchee River at Blue Springs and Newton, on the Pea River near Ariton, and on the Conecuh River at Brantley. Flooding along the Alabama River in Selma and Montgomery was characterized as a 50-year event (NOAA, 1997).

Several days of heavy rains between March 27 and April 6, 2005, caused severe flooding across the southern two thirds of the state. In Mobile and Baldwin counties, as much as 20 inches fell, causing damage to bridges and roadways. In Choctaw County, one fatality was reported when a man tried to cross a bridge that washed away. Two bridges, a retaining wall, and a culvert were totally destroyed in Auburn. Damage estimates across the region were $1,056,000 ($1,298,746 in 2012 dollars).

Several counties were flooded on May 7, 2009. In Autauga County, numerous county roads and city streets suffered extensive damage due to flooding caused by torrential rainfall. At least 32 residences and 6 businesses were damaged, and a mobile home community had to be evacuated due to floodwaters. Elmore County suffered damage similar to that of Autauga County. At least 43 residences, 10 businesses and two churches were flooded and the Millbrook city parks and recreation areas suffered substantial damage. Property damage totaled $4.5 million ($4.9 million in 2012 dollars). In Montgomery County an estimated 10 inches of rain fell in a six-hour timeframe. At least 3 feet of water flowed into the basement of the Statehouse building, and state legislators were forced to relocate to chambers in the old Capitol temporarily. One 67-year-

old man drowned when his car was swept away by floodwaters and property damage was estimated to be $1.8 million ($2.0 million in 2012 dollars) in Montgomery alone. Macon, Bullock and Choctaw counties also saw significant flooding and property damage. Rainfall totals were from 3 to 7 inches. Numerous roads were impassible due to the floodwaters.

Flash floods plagued already saturated Northwestern and Central Alabama on May 2-3, 2010. Northwestern Alabama was hardest hit and all areas received 2 to 5 inches of rain over the course of about 24 hours. Lauderdale County reached record flood stage of 23.12 feet on May 3rd. Several roads were washed out due to flooding including County Roads 617 and 637. Far Northwest Alabama experienced heavy rainfall of 3 to 5 inches resulting in flash flooding on June 28, 2011. Several roads were closed as a result of the flooding.

Probability of Flooding in Alabama

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. Flood studies use historical records to determine the probability of occurrence for different extents of flooding. The probability of occurrence is expressed in percentages as the chance of a flood of a specific extent occurring in any given year. The most widely adopted design and regulatory standard for floods in the United States is the 1-percent-annual-chance flood. The 1-percent–annual-chance flood, also known as the base flood, has a 1 percent chance of occurring in any given year. It is also referred to as the 100-year flood event. This expression is a general way to express the statistical likelihood of a flood; actual recurrence periods are variable from instance to instance. Smaller floods occur more often than larger (deeper and more widespread) floods. Thus, a flood equal to a 10-year return period has a greater likelihood of occurring in a given year than a 100-year flood. **Table 5.2-1** shows a range of flood recurrence intervals and their probabilities of occurrence.

Table 5.2.5-1
Flood Probability Terms

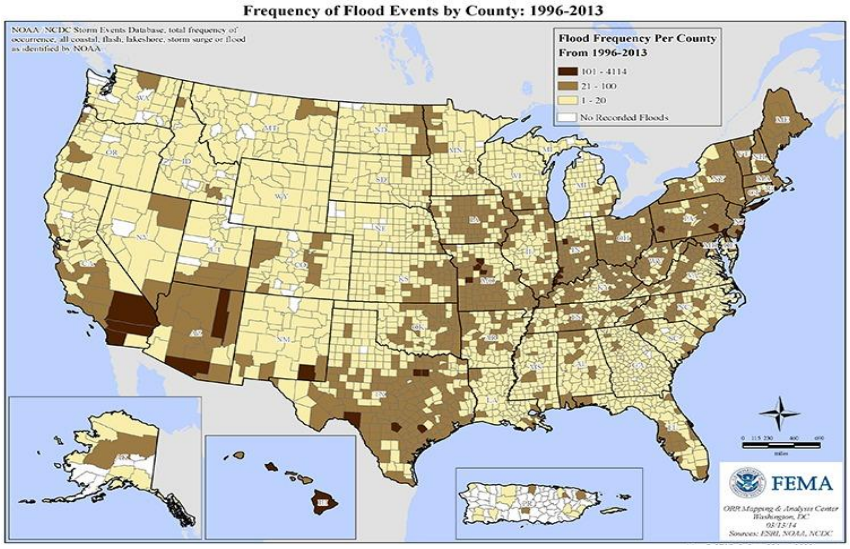
Flood Recurrence Intervals	Percent Chance of Occurrence Annually
10-year	10.0%
50-year	2.0%
100-year	1.0%
500-year	0.2%

Source: FEMA, August 2001

Because Alabama has been significantly affected by flooding caused by tropical storms and hurricanes 15 times (in terms of federally declared disasters) in the last 52 years, this historical average indicates that flooding from hurricanes will cause significant damage in Alabama approximately once every 3.5 years (Note this is a statewide estimate. It is likely that flooding

may occur more frequently based on location such as those areas identified as 1.0-percent annual chance areas through FEMA DFIRMs.) Because the impacts of flooding are severe and events can occur throughout the state and can be widespread, the qualitative ranking for probability for flooding is high.

Figure 5.2.5-3 NOAA NCDC Storm Events Database



Source for below article: NOAA Climate.gov

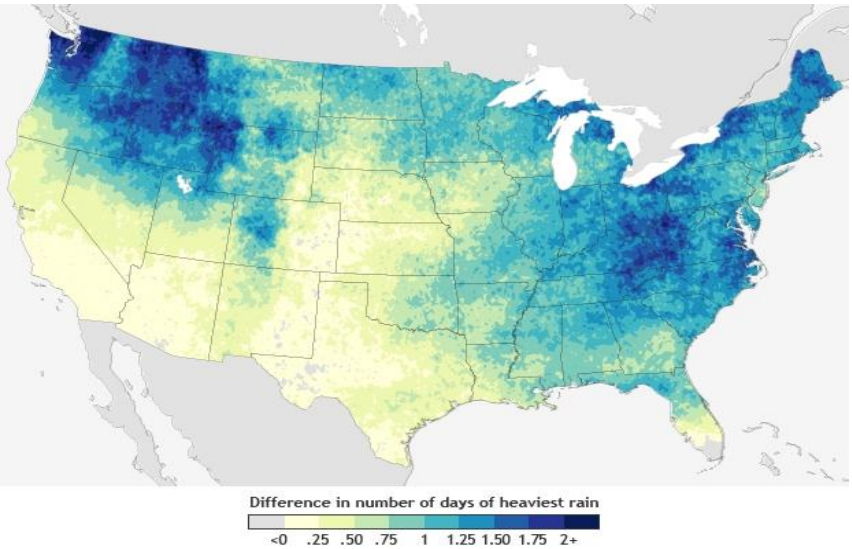
Heavy downpours more intense, frequent in a warmer world

Tuesday, March 4, 2014

According to the 2009 National Climate Assessment, heavy downpours have increased in frequency and intensity during the last 50 years. Models predict that downpours will become still more frequent and intense as greenhouse gas emissions and the planet's temperature continue to rise.

The map at right shows predicted changes in the annual number of days of extreme rainfall (defined as rainfall totals in excess of the historic 98th percentile) across the United States by 2041-2070 as compared to 1971-2000 if greenhouse gases continue to increase at a high rate (A2 scenario). By mid-century, some places could experience two or more additional days per year on which the rainfall totals exceed the heaviest rains historically experienced in the area.

Figure 5.2.5-4



Climate models project increasing days of extreme rainfall in the Northwest, Midwest, and parts of the Northeast, including some populated coastal areas that are already challenged by inundation and sea level rise. Several major watersheds are predicted to have more days of extreme rainfall by the middle of the century, including the Pacific Northwest, the Ohio River Basin, the Great Lakes, and parts of the Great River and Missouri River Basin. Meanwhile, the Southwest and some other areas frequented by drought are expected to see little difference in the number of extreme rainfall days.

One of the major findings of the 2009 assessment report—which will be updated in a new edition this coming spring—is that we're already seeing increases in the amount of heavy precipitation in the United States, particularly in the Northeast and Midwest. The amount of rain falling in the heaviest downpours has increased approximately 20 percent on average in the past century.

Depending on how resilient a natural or manmade landscape is, heavier rain could exacerbate floods that disrupt traffic and transportation, overburden stormwater and runoff systems, damage property and infrastructure, and reduce crop yields due to excess water or field flooding, among other impacts. In Salt Lake City, water resource managers are learning from past extreme rain events and changing their operations so the water system is more resilient in the future.

These trends are widely thought to be associated with the fact that warmer air temperatures fuel more evaporation, which leads to a wetter atmosphere. Scientists have measured a significant increase in specific humidity (the volume of water vapor) over the Earth's surface, which is consistent with the long-term warming trend in our planet's average surface temperature.

Climate model projections that simulate conditions decades into the future are helpful for understanding some of the physical processes behind extreme events—why they occur and how they will change in the future. The Coupled Model Intercomparison Project (CMIP) panel—a subcommittee of the World Climate Research Programme—designs experiments to evaluate differences among climate models in how they simulate our global climate system and predict future changes, and whether model output is consistent with observations.

Maps by NOAA Climate.gov, based on downscaled CMIP3 multi-model data provided by Katharine Hayhoe.

Related Links
USGCRP report Weather and Climate Extremes in Changing Climate, Chapter 3
Global Climate Change Impacts in the United States (2009) (pdf)

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Figure 5.2.5-5 NWS BMX HWO, May 14, 2014

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1247 PM CDT WED MAY 14 2014

ALZ011>015-017>050-151800-
MARION-LAMAR-FAYETTE-WINSTON-WALKER-BLOUNT-ETOWAH-CALHOUN-CHEROKEE-
CLEBURNE-PICKENS-TUSCALOOSA-JEFFERSON-SHELBY-ST. CLAIR-TALLADEGA-
CLAY-RANDOLPH-SUMTER-GREENE-HALE-PERRY-BIBB-CHILTON-COOSA-TALLAPOOSA-
CHAMBERS-MARENGO-DALLAS-AUTAUGA-LOWNDES-ELMORE-MONTGOMERY-MACON-
BULLOCK-LEE-RUSSELL-PIKE-BARBOUR-
1247 PM CDT WED MAY 14 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL WEATHER SERVICE OFFICE
IN BIRMINGHAM.

.DAY ONE…THIS AFTERNOON AND TONIGHT.

THERE IS A THREAT OF HEAVY RAINFALL FROM THUNDERSTORMS THAT COULD LEAD TO FLASH FLOODING.
ALTHOUGH THIS FLOODING THREAT INCLUDES ALL OF CENTRAL ALABAMA…IT APPEARS THE HIGHEST RAIN AMOUNTS
WILL BE ACROSS THE MIDDLE OF THE STATE…INCLUDING THE HIGH POPULATION AREAS OF BIRMINGHAM AND
MONTGOMERY. THE RAIN IS EXPECTED TO TAPER OFF AS A COLD FRONT MOVES THROUGH THE AREA TONIGHT.

.DAYS TWO THROUGH SEVEN…THURSDAY THROUGH TUESDAY.

NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME.

.SPOTTER INFORMATION STATEMENT…

ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT MAY BE NEEDED THIS AFTERNOON THROUGH
TONIGHT FOR FLOODING.
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Figure 5.2.5-6 NWS BMX HWO, April 8, 2014

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HWOBMX

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE BIRMINGHAM AL
647 AM CDT TUE APR 8 2014

ALZ011>015-017>050-091200-
MARION-LAMAR-FAYETTE-WINSTON-WALKER-BLOUNT-ETOWAH-CALHOUN-CHEROKEE-
CLEBURNE-PICKENS-TUSCALOOSA-JEFFERSON-SHELBY-ST. CLAIR-TALLADEGA-
CLAY-RANDOLPH-SUMTER-GREENE-HALE-PERRY-BIBB-CHILTON-COOSA-TALLAPOOSA-
CHAMBERS-MARENGO-DALLAS-AUTAUGA-LOWNDES-ELMORE-MONTGOMERY-MACON-
BULLOCK-LEE-RUSSELL-PIKE-BARBOUR-
647 AM CDT TUE APR 8 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL WEATHER SERVICE OFFICE
IN BIRMINGHAM.

.DAY ONE…TODAY AND TONIGHT.

WIDESPREAD RESIDUAL RUNOFF WILL PRODUCE AREAL AND RIVER FLOODING TODAY. REPORTED RAINFALL AMOUNTS
OF 3 TO 5 INCHES WITH SOME TOTALS AS HIGH AS 8 INCHES OCCURRED ACROSS CENTRAL ALABAMA MONDAY.
MANY CREEKS AND STREAMS REMAIN ABOVE BANKFULL AND SEVERAL ROADWAYS REMAIN IMPASSABLE.
RIVER FLOODING IS ALSO ANTICIPATED AS THE RUNOFF HITS THE MAIN STEM RIVERS.

.DAYS TWO THROUGH SEVEN…WEDNESDAY THROUGH MONDAY.

RISES ALONG AREA RIVERS IN CENTRAL ALABAMA ARE OCCURRING AND WILL CONTINUE THROUGH FRIDAY. SOME
LOCATIONS HAVE CRESTED AND WILL GRADUALLY FALL…WHILE OTHERS ARE FORECAST TO CONTINUE TO RISE.
PLEASE SEE THE LATEST RIVER STATEMENTS FOR MORE INFORMATION.

.SPOTTER INFORMATION STATEMENT…

ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT IS NOT EXPECTED AT THIS TIME.
```

Table 5.2.5-2

Storm Events Database

Search Results for Elmore County, Alabama
28 events were reported between 01/01/1950 and 02/28/2014 (23435 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	27
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	20
Number of Days with Event and Crop Damage:	1
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	5.173M	5.00K
MILLBROOK	ELMORE CO.	AL	12/01/1996	01:43	CST	Flash Flood		0	0	10.00K	0.00K
ELMORE	ELMORE CO.	AL	02/28/1997	12:00	CST	Flash Flood		0	0	10.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	01/07/1998	09:30	CST	Flash Flood		0	0	25.00K	5.00K
MILLBROOK	ELMORE CO.	AL	06/15/1999	15:00	CST	Flash Flood		0	0	3.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	06/27/1999	12:00	CST	Flash Flood		0	0	20.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	06/30/1999	16:30	CST	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	09/01/2000	07:30	CST	Flash Flood		0	0	20.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	03/03/2001	18:00	CST	Flash Flood		0	0	14.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/12/2001	12:45	CST	Flash Flood		0	0	5.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	04/03/2001	19:00	CST	Flash Flood		0	0	5.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	04/07/2003	08:00	CST	Flash Flood		0	0	80.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	07/01/2003	06:00	CST	Flash Flood		0	0	12.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/26/2004	14:30	CST	Flash Flood		0	0	10.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	09/16/2004	09:15	CST	Flash Flood		0	0	5.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	03/31/2005	00:12	CST	Flash Flood		0	0	15.00K	0.00K

WETUMPKA	ELMORE CO.	AL	06/08/2005	18:00	CST	Flash Flood		0	0	8.00K	0.00K
KENT	ELMORE CO.	AL	07/06/2005	14:00	CST	Flash Flood		0	0	1.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/10/2005	16:30	CST	Flash Flood		0	0	6.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/14/2005	13:52	CST	Flash Flood		0	0	22.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/10/2006	15:15	CST	Flash Flood		0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	11/15/2006	11:45	CST-6	Flash Flood		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	11/15/2006	11:45	CST-6	Flash Flood		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/07/2007	17:00	CST-6	Flash Flood		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/07/2009	07:00	CST-6	Flash Flood		0	0	4.900M	0.00K
DEATSVILLE	ELMORE CO.	AL	09/19/2009	01:00	CST-6	Flash Flood		0	0	2.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/30/2010	14:25	CST-6	Flash Flood		0	0	0.00K	0.00K
WEOKA	ELMORE CO.	AL	07/24/2013	17:45	CST-6	Flash Flood		0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	08/14/2013	14:54	CST-6	Flash Flood		0	0	0.00K	0.00K
Totals:								0	0	5.173M	5.00K

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Figure 5.2.5-7 (Also Figure: 5.4.3-4) Flood Zone Map, Elmore County, Alabama

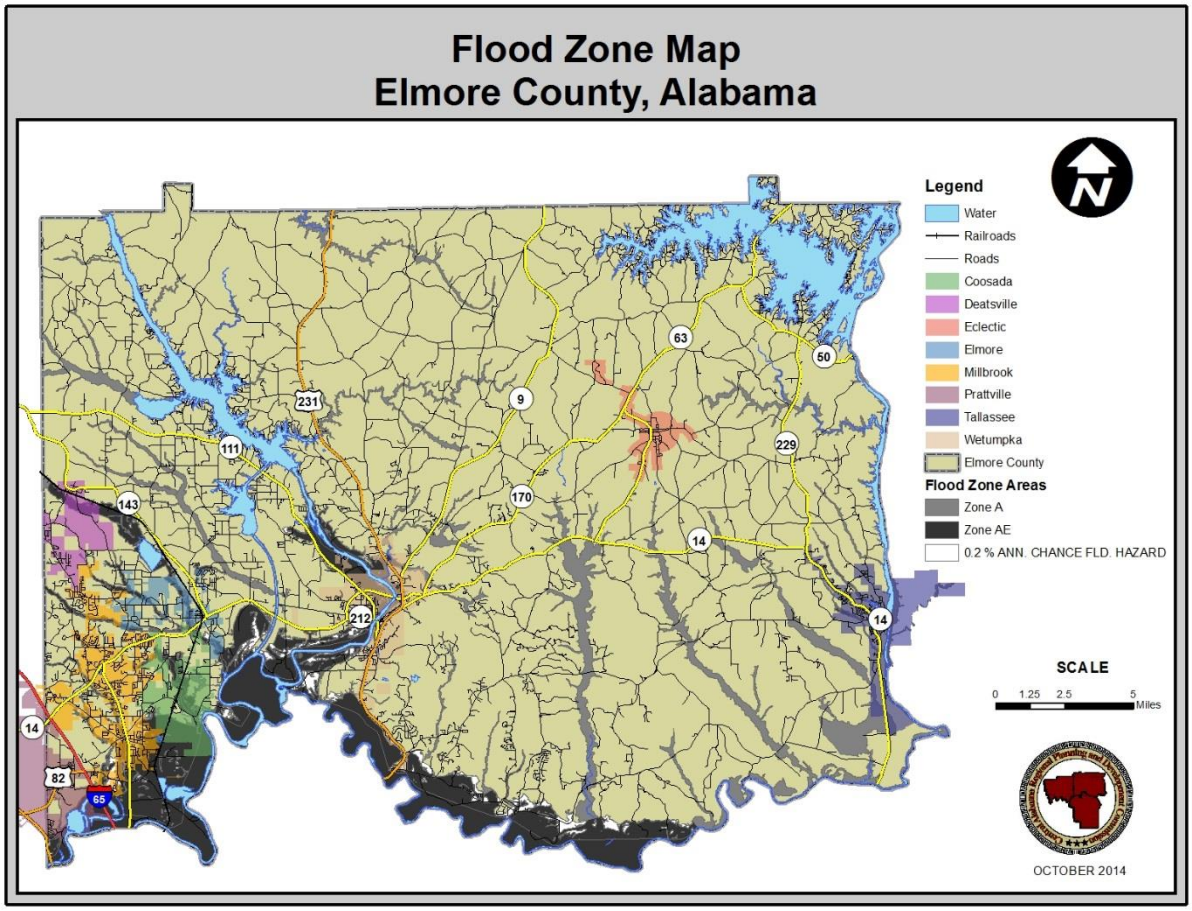


Figure 5.2.5-8 (Also Figure: 5.4.3-5) Town of Coosada Flood Zone Map

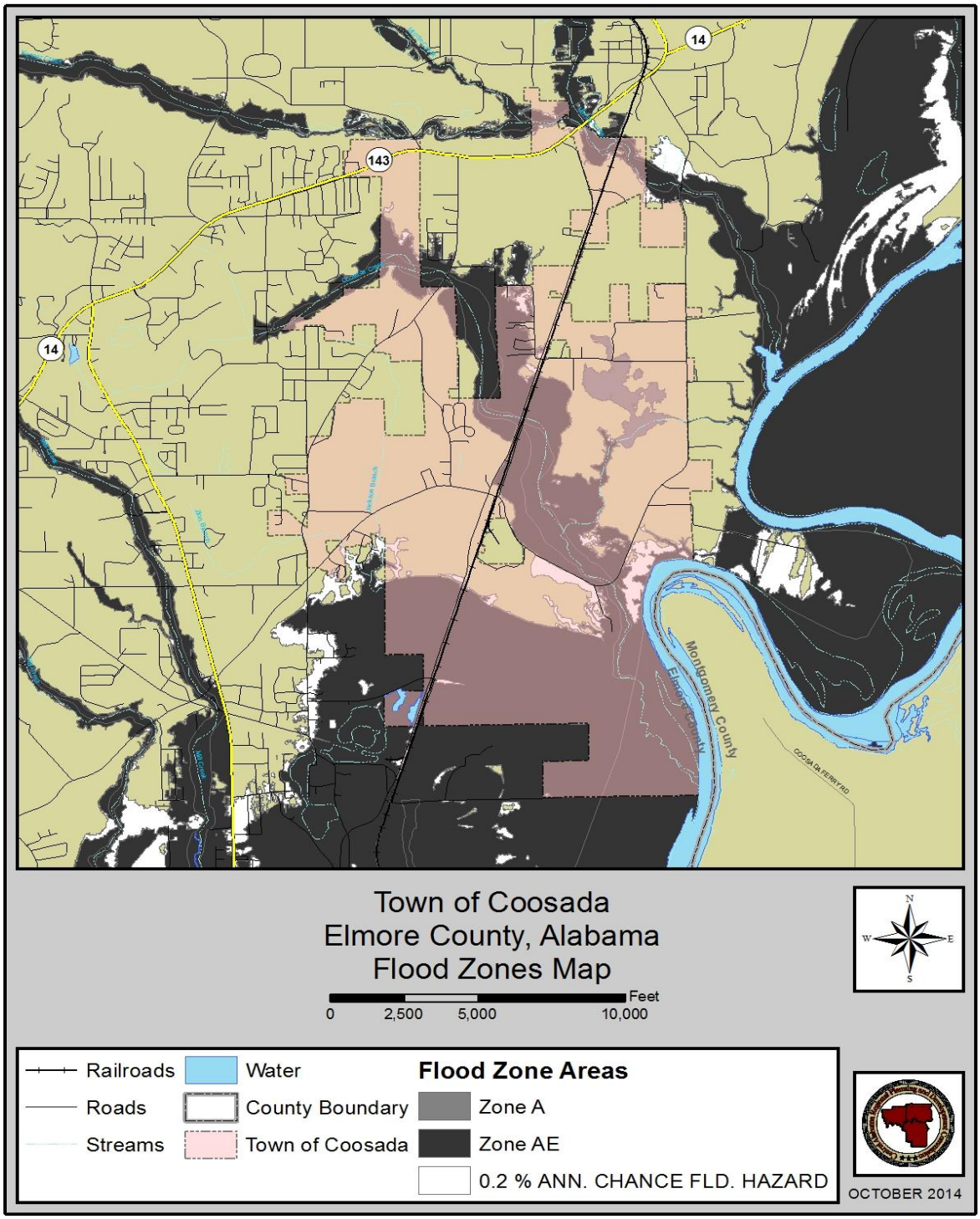


Figure 5.2.5-9 (Also Figure: 5.4.3-6) Town of Deatsville Flood Zone Map

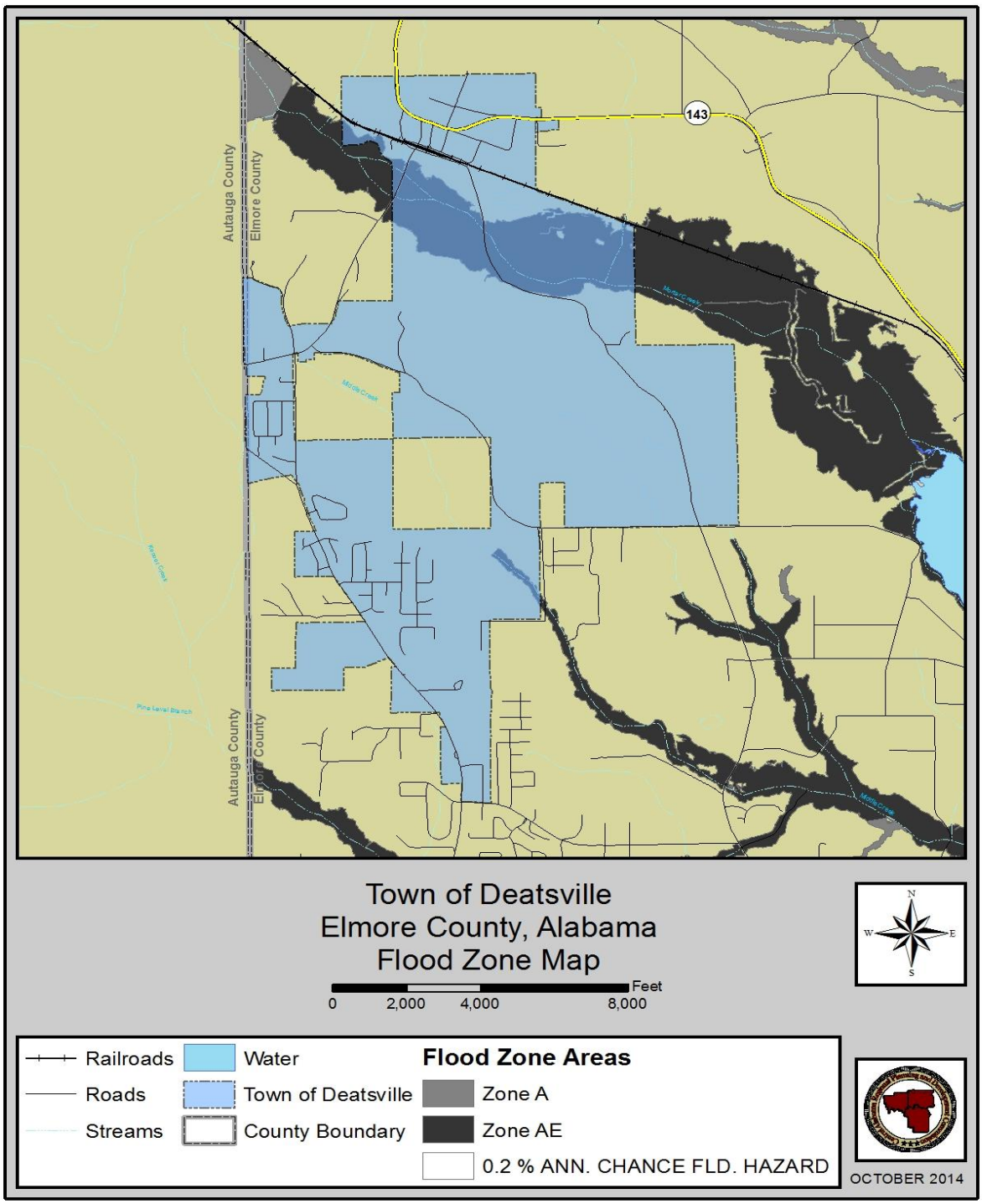


Figure 5.2.5-10 (Also Figure: 5.4.3-7) Town of Eclectic Flood Zone Map

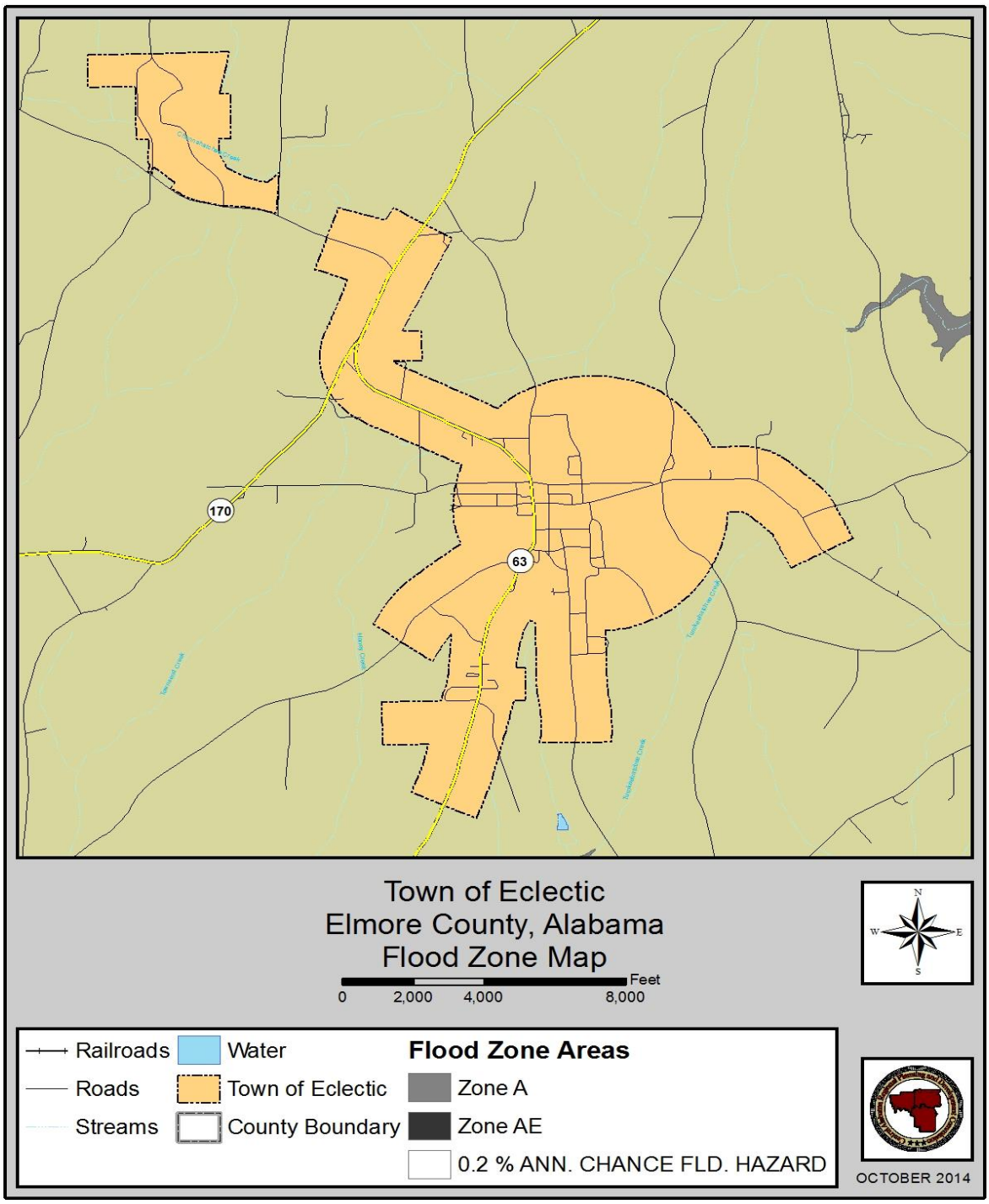


Figure 5.2.5-11 (Also Figure: 5.4.3-8) Town of Elmore Flood Zone Map

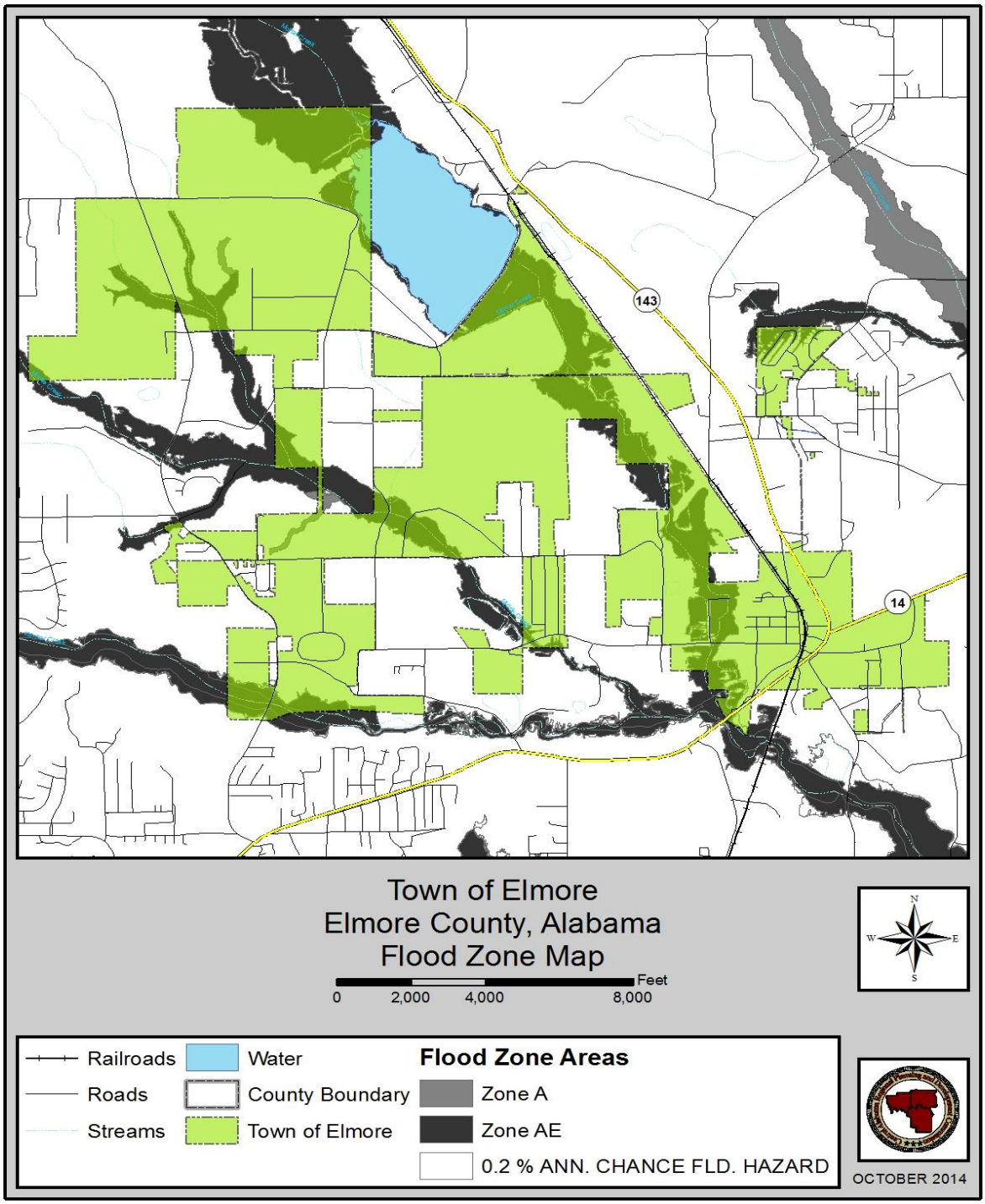


Figure 5.2.5-12 (Also Figure: 5.4.3-9) City of Millbrook Flood Zone Map

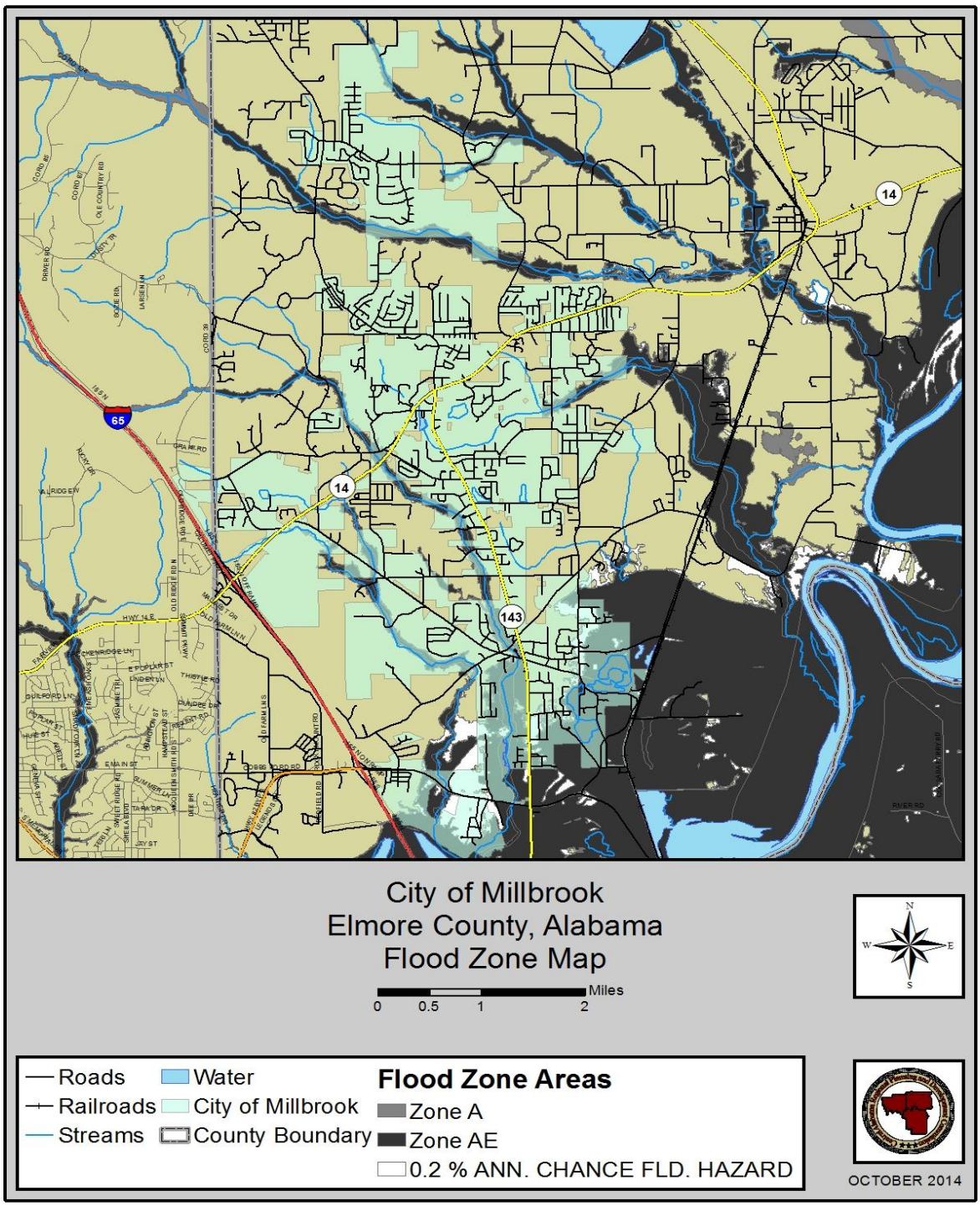


Figure 5.2.5-13 (Also Figure: 5.4.3-10) City of Tallassee Flood Zone Map

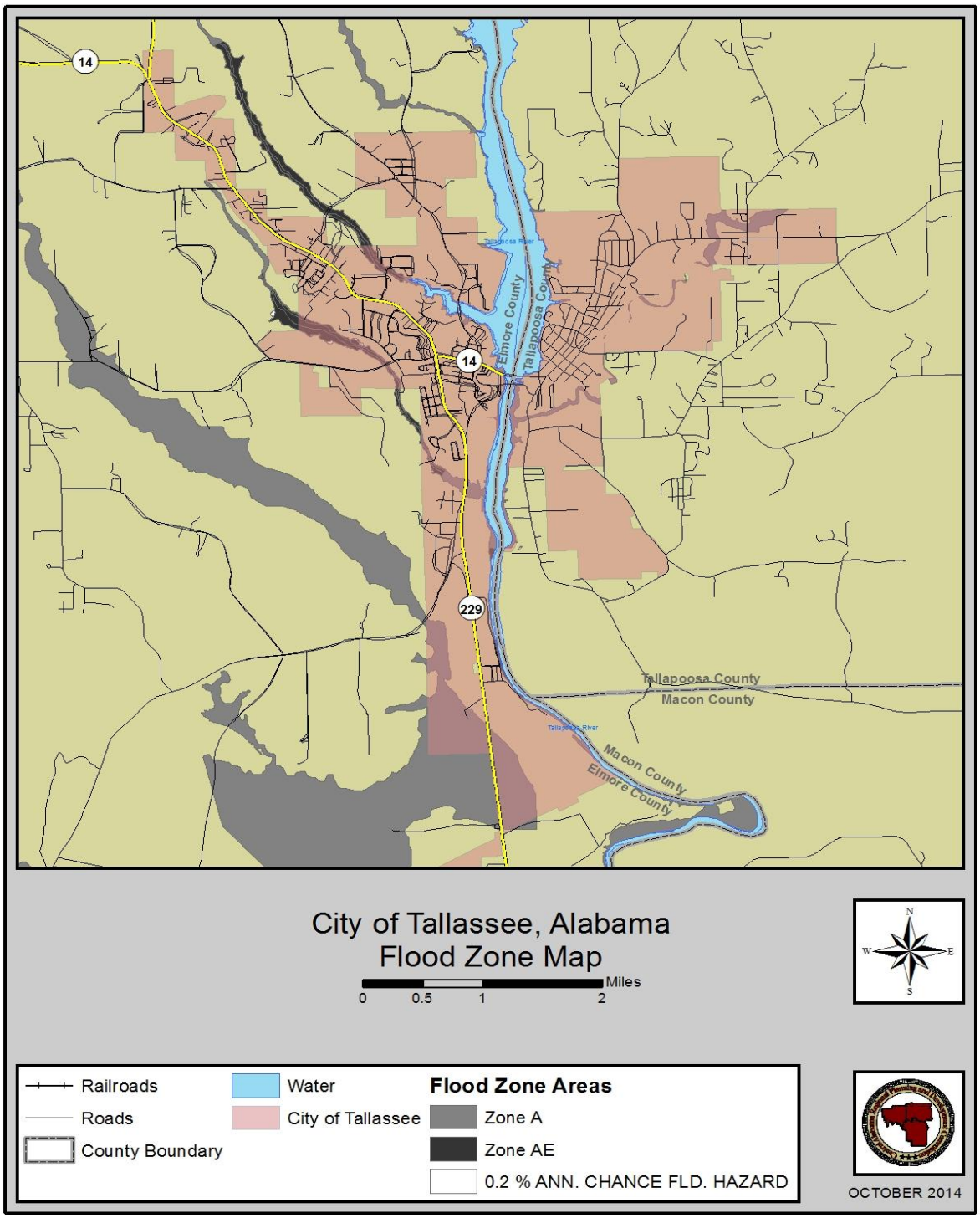
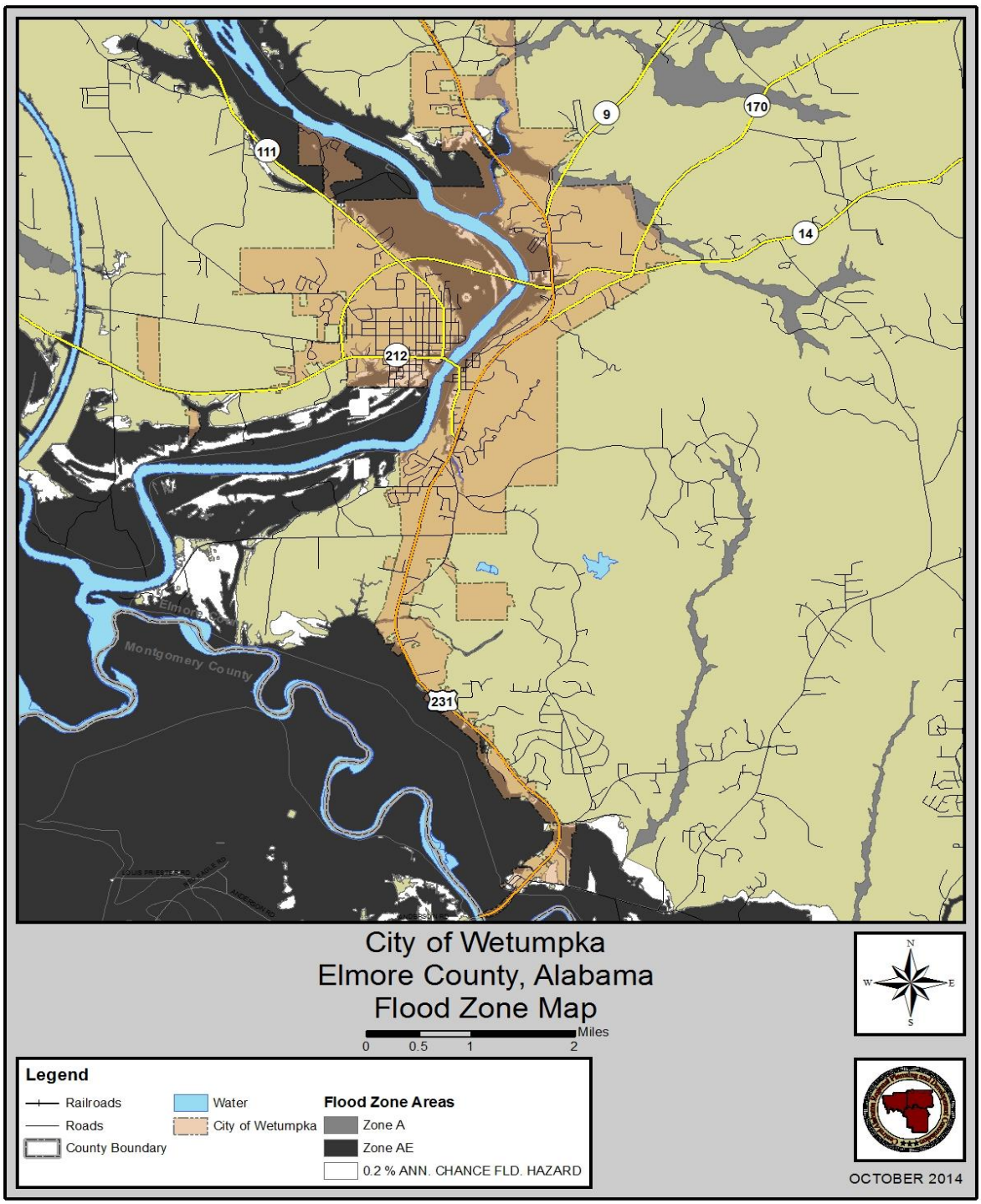


Figure 5.2.5-14 (Also Figure: 5.4.3-11) City of Wetumpka Flood Zone Map


9
170
111
14
212
Elmore
Montgomery County
231
City of Wetumpka
Elmore County, Alabama
Flood Zone Map
Miles
0
0.5
1
2
N
W
E
S
Legend
Railroads
Roads
County Boundary
Water
City of Wetumpka
Flood Zone Areas
Zone A
Zone AE
0.2 % ANN. CHANCE FLD. HAZARD
OCTOBER 2014

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5.2.6 Hurricanes and Tropical Storms

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Hurricanes/Tropical Storms

History: Medium, 10
Frequency of Occurrence: Occasional (2)
Probability: Medium, 35; Occasional/Likely Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 2
Total Points: 77

Maximum Probable Extent (Magnitude/Strength):
Public: Disaster (2)
Infrastructure: High (2)
Environment: Moderate (4)

Jurisdictions	Extent of the Natural Hazard – Hurricanes and Tropical Storms
All	Can cause deaths, injuries, and property damage resulting from tornadoes (EF-0 thru EF-3), straight line winds in excess of 60 mph, lightning, hail, torrential rainfall, flooding.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to the effects of tropical storms and hurricanes to include thunderstorms/severe thunderstorms, extreme lightning, torrential rainfall, hail, straight-line winds, and tornadoes.
Overall Significance Ranking: High

Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters. Tropical cyclones act as a "safety-valve," limiting the continued build-up of heat and energy in tropical regions by maintaining the atmospheric heat and moisture balance between the tropics and the pole-ward latitudes. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation and tornadoes.

The key energy source for a tropical cyclone is the release of latent heat from the condensation of warm water. Their formation requires a low-pressure disturbance, warm sea surface temperature, rotational force from the spinning of the earth and the absence of wind shear in the lowest 50,000 feet of the atmosphere. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea and Gulf of Mexico during the official Atlantic hurricane season, which encompasses the months of June through November. The peak of the Atlantic hurricane season is in early to mid-September and the average number of storms that reach hurricane intensity per year in the Atlantic basin is about six (6).

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Hurricane Wind Scale (**Table 5.2.6-1**), which rates hurricane wind intensity on a scale of 1 to 5, with 5 being the most intense.

Table 5.2.6-1
Saffir-Simpson Scale

Category	Maximum Sustained Wind Speed (MPH)
1	74–95
2	96–110
3	111–129
4	130–156
5	157 +

Source: National Hurricane Center, 2012

The Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds, which is used to estimate potential damage. Hurricanes of category 3, 4, and 5 are classified as "major" hurricanes, and while hurricanes within this range comprise only 20 percent of total tropical cyclone landfalls, they account for over 70 percent of the damage in the United States.

As noted in **Section 5.2**, many wind design maps demonstrate the design wind speeds used to for buildings and storm shelters but they cannot be directly compared with the 1-minute sustained wind speeds over water, which are utilized by the Saffir-Simpson Hurricane Wind Scale above. These must be converted using **Table 5.2.6-2** to compare the wind speed data.

Table 5.2.6-2
Saffir-Simpson Conversion Scale

Saffir-Simpson Hurricane Category	Sustained Wind Speed over Water (mph)	3-Second Gust Wind Speed over Water (mph)	3-Second Gust Wind Speed over Land (mph)
Category 1	74-95	91-116	82-108
Category 2	96-110	117-140	109-130
Category 3	111-130	141-165	131-156
Category 4	131-155	166-195	157-191
Category 5	>155	>195	>191

Coastal Alabama borders a part of the northern Gulf of Mexico that has a high incidence of hurricanes. High winds, wave action, and flooding cause damage at Alabama's shoreline, while wind and water damage can extend far inland. Alabama has identified 17 counties (within 100 miles of the coast) as its primary Hurricane Risk Areas. Studies of Hurricanes Hugo, Andrew, and Opal offer evidence that inland counties can receive significant hurricane damage. Hurricanes often spawn tornadoes and cause flooding from intense rain. In this respect, hurricanes pose a threat to the entire state of Alabama.

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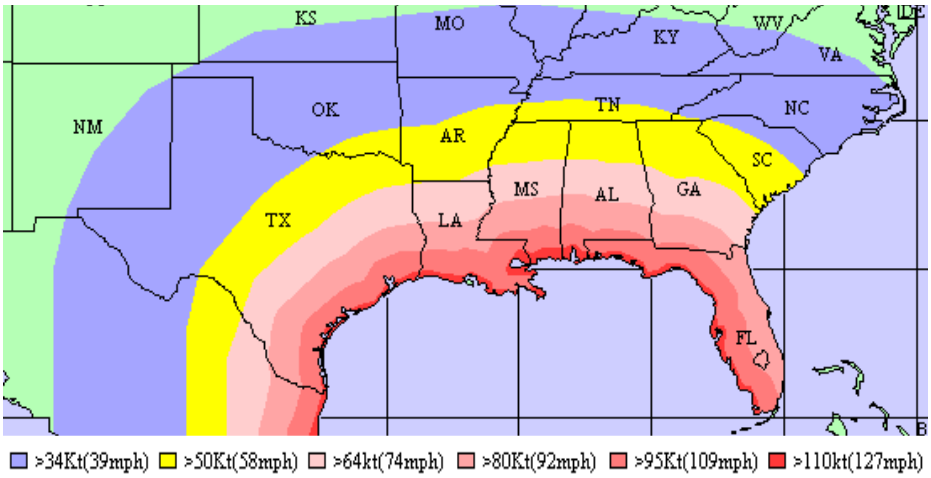

Figure 5.2.6-1
Extent of Inland Winds for a Category 4 Hurricane
Moving Forward at 25 mph
Source: National Hurricane Center

The two coastal counties of Alabama are the most prone to experiencing high winds caused by hurricanes. Hurricanes make landfall at full strength before wind speeds rapidly deteriorate as the storm loses its energy source, the warm ocean waters of the Gulf of Mexico. However, as demonstrated in **Figure 5.2.6-1**, if a fast moving Category 4 hurricane hits the state, the lower two thirds of the state are prone to receiving hurricane force winds (greater than 74 mph). Even the northernmost portion of the state may experience winds in excess of 58 mph for that same storm. As demonstrated in **Figure 5.2.6-2**, even a typical Category 2 hurricane is capable of spreading tropical storm force winds (greater than 39 mph) over nearly the entire state with areas as far north as Montgomery receiving winds in excess of 58 mph.

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Essentially the inland extent of winds as well as wind strength increases with the strength of the hurricane at landfall and the actual forward motion of the storm.

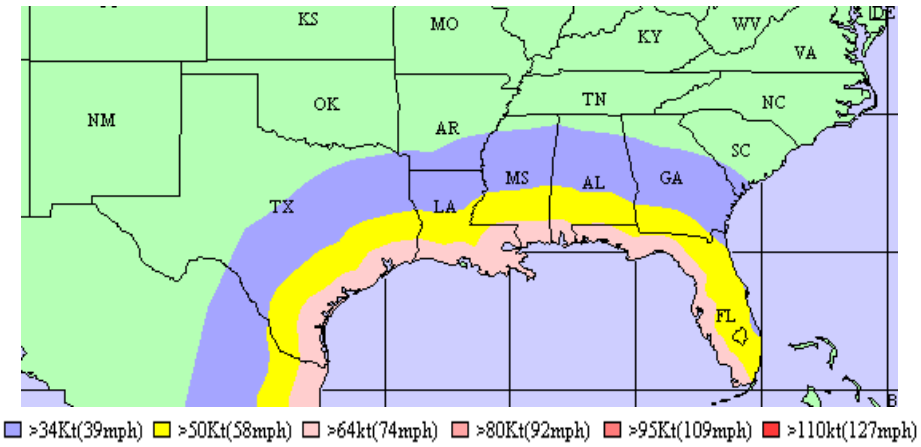

Figure 5.2.6-2
Extent of Inland Winds for a Category 2 Hurricane Moving Forward at 14 mph
Source: National Hurricane Center

Probability of High Winds in Alabama

Source: Alabama State Hazard Mitigation Plan

Alabama has been significantly affected by high winds caused by tropical storms and hurricanes 14 times (i.e., where presidential disaster declarations have been issued) in the last 49 years. This historical average indicates that high winds from tropical cyclone events will cause significant damage in Alabama approximately once every 3.5 years or an approximate 29 percent annual probability.

Figure 5.2.6-3 shows the maximum expected one-minute, open terrain, sustained wind speeds from hurricanes for 10-, 25-, 50-, 100-, and 2,000-year return periods as determined by FEMA. Because the impacts of these high winds are severe and events can occur throughout the state and can be widespread, the qualitative ranking for probability for high winds is high.

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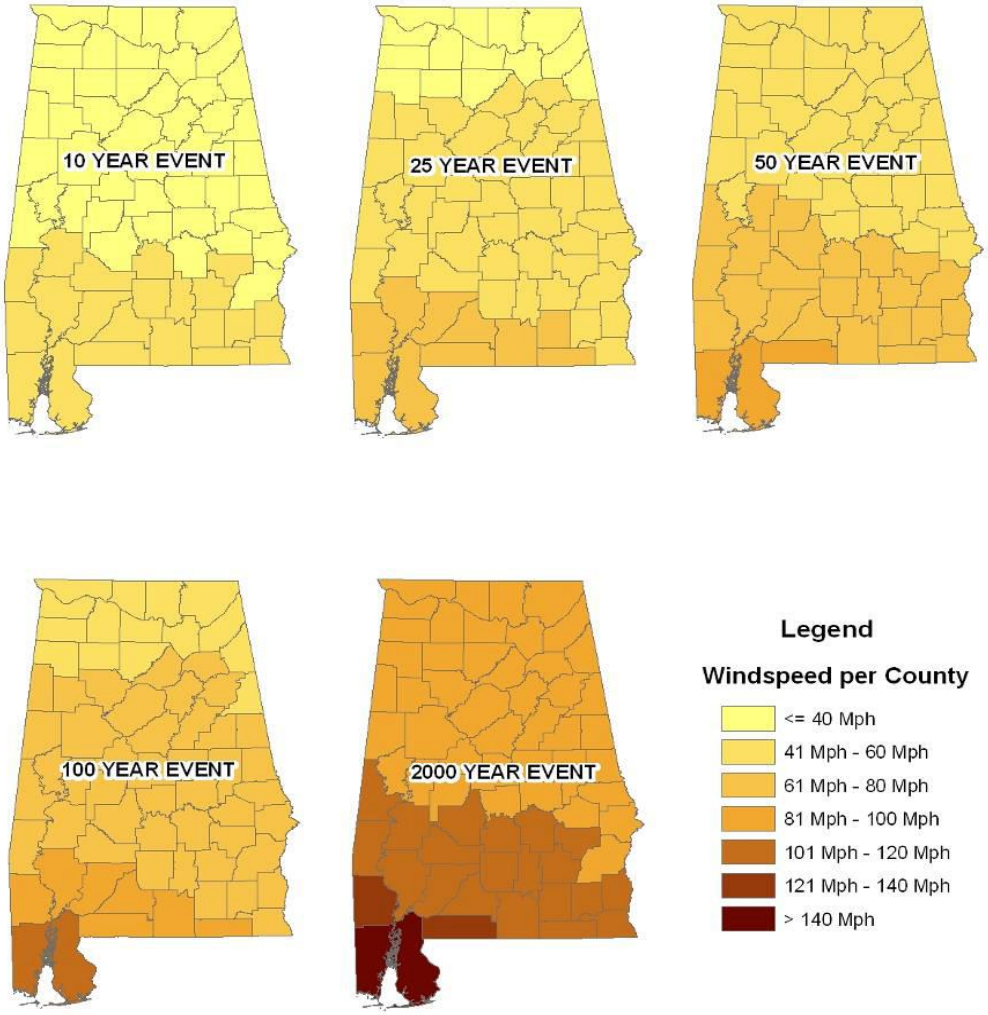

Figure 5.2.6-3
Probabilistic Maximum Sustained Wind Speeds
Source: Federal Emergency Management Agency/HAZUS

Storm surge (storm tide) is perhaps the most dangerous aspect of a hurricane. It is a phenomenon that occurs when the winds and forward motion associated with a hurricane pile water up in front as it moves toward the shore. Storm surge heights and associated waves are dependent upon the configuration of the continental shelf (narrow or wide) and the depth of the ocean bottom.

Hurricane Related Flood History in Alabama
Source: Excerpts from the *Alabama Hazard Mitigation Plan, April 2013*

Since 1960, Alabama has been declared under 15 presidential disaster declarations caused by hurricanes and tropical storms (**Table 5.2.6-3**) out of a total of 62 disaster declarations.

Table 5.2.6-3
Disaster Declarations from Hurricanes in Alabama

Date	Name
November 1969	Camille
September 1979	Frederic
September 1985	Elena
July 1994	Alberto
October 1995	Opal
July 1997	Danny
September 1998	Georges
September 2002	Isidore
September 2004	Ivan
July 2005	Dennis
August 2005	Katrina
September 2008	Gustav
September 2008	Ike
December 2009	Ida
September 2012	Isaac

Source: FEMA, September 2012

Three **hurricanes** impacted Alabama in 1995. **Hurricane Allison** caused a scare to Alabama and Florida residents in June of that year. There was relatively little damage, and Alabama was affected only by the evacuees from the Florida coast. **Hurricane Erin** in August caused extensive crop damage in Escambia County and damages in Baldwin, Washington, Clarke, and other southwestern counties. For Alabama, Hurricane Opal was the most devastating hurricane of the 1995 hurricane season.

In October 1995, **Hurricane Opal** moved quickly across the panhandle of Florida and into Alabama, resulting in a presidential disaster declaration for 38 counties on October 4, 1995. Opal made landfall near Hurlburt Field, just east of Fort Walton Beach, Florida, on Wednesday, October

4, 1995. Damages extended beyond the Alabama borders into Georgia, North Carolina, South Carolina, and further north all the way to the Great Lakes area. In the coastal Alabama counties of Baldwin and Mobile, storm surge severely eroded beaches; damaged piers, docks, boats, and roads; and flooded low-lying areas. Heavy rains accompanying Opal caused inland flooding. Hurricane Opal pushed an 8-foot storm surge onto Alabama's Gulf Coast. This surge leveled much of the primary dune system. The storm surge covered the coast in a mountain of sand that submerged gulf-front roads, crushed the ground floor and foundation of beach homes and condominiums, and filled swimming pools with sand. The overall effect of Hurricane Opal was a displacement of sand, destruction of the primary dune system, and overall narrowing of the beach in many areas.

Hurricane Danny was the only hurricane that made landfall in the United States during the 1997 Atlantic hurricane season. After crossing the southeastern-most portion of Louisiana, Danny stalled over the Mobile Bay dropping a state record of 36.71 inches of rainfall on Dauphin Island. A storm surge of over 6.5 feet occurred off of Highway 182, midway between Gulf Shores and Fort Morgan, Alabama, in addition to the rainfall. Approximately $63 million ($95.5 million in 2012 dollars) of damage was done to property and crops, mostly from flooding. Additionally, the flooding caused significant coastal erosion along the Gulf Coast and rescues had to be performed from many flooded areas. Two fatalities, one direct and one indirect, were a result of the hurricane. Numerous roads were flooded and impassable for several days.

Hurricane Ivan made landfall on September 16, 2004, in Gulf Shores, on the coast of Baldwin County, Alabama, as a strong Category 3 hurricane with 130 mph winds and a storm surge estimated to be between 10 and 13 feet high. Ivan's storm surge easily overwhelmed the dunes that provide protection for coastal areas of Baldwin and Mobile counties. The Gulf of Mexico spilled into the developed areas pushing massive amounts of earth landward undermining buildings and roads and opening breaches through the islands. On top of the surge, waves crashed down onto the already battered roads and infrastructure, substantially worsening the damage. According to the USGS, Ivan washed away as much as 164 feet of beach in places. The erosion caused by Ivan's waves and storm surge undermined five-story oceanfront condominium buildings, which were the largest buildings to fail during a hurricane in United States history to that point. The average shoreline erosion was 42 feet in the area where Ivan came ashore, roughly between Alabama's Mobile Bay and Florida's Pensacola Bay in Florida. Ivan also caused flash flooding in inland counties throughout the state.

Hurricane Dennis made landfall on July 10, 2005, at the Santa Rosa Sound in Florida, approximately 25 miles from the Florida-Alabama state line. At this time, Alabama had already received significant rainfall from **Tropical Storm Arlene** and **Hurricane Cindy**. Because coastal Alabama was on the western side of the eye of Dennis, it was spared the worst of the storm surge; however, as much as 10 inches of rain fell in some areas causing flash flooding in inland counties throughout the state.

Hurricane Katrina made landfall along the Louisiana-Mississippi border on August 29, 2005, approximately 80 miles east of the Mississippi-Alabama border. While Louisiana and Mississippi received the most catastrophic flood damage, because Alabama was on the eastern side of the

system, Mobile County experienced a significant storm surge, higher than in Ivan just the year before. Storm surge throughout coastal Mobile and Baldwin counties ranged from 9 to 14 feet. As Katrina moved inland, it dropped huge amounts of rain throughout the state causing significant flash flooding in inland areas.

Tropical Storm Fay brought heavy rains and caused street flooding and closed several roads near the Bay in Mobile County on August 25, 2008. Radar estimated that 5 to 8 inches of rain fell across the area, with the hardest hit areas being along the Dog River and Bayou Sara. Due to above normal tides, the heavy rains caused the water to rapidly rise and several residences had to be evacuated.

On September 1, 2008**, Hurricane Gustav** caused flooding in the southwest portion of Washington County. Rainfall estimates were between 6 and 8 inches and left standing water in many streets. In Baldwin County, rainfall estimates of 4 to 6 inches also left standing water in the streets. The heaviest rain occurred in Mobile County. Heavy rains along with storm surge caused Bayou Sara to reach the 2nd highest reading in over 10 years. Dauphin Island was flooded and the berm was washed away. Surge heights were estimated at 4 to 7 feet. The water forced several people to evacuate and property damage reached $4.5 billion ($5.0 million in 2012 dollars).

Tropical Storm Lee brought flooding throughout most of Alabama on September 3 through 5, 2011. The storm entered South-Central Alabama from Mississippi, (holding in the areas) for several hours before slowly moving north. The rain was generally welcomed, alleviating drought conditions in the area, but led to significant flash flooding in many areas. At least 30 swift water rescues were made in the Birmingham area. Many areas received over 8 inches of rainfall, including a record 7.11 inches at the Birmingham-Shuttlesworth International Airport (breaking a previous one-day record of 2.1 inches set in 1949). In addition, several streets were closed in the impacted areas due to flooding.

Hurricane Isaac, which made landfall seven years to the day after Hurricane Katrina, was the only hurricane event resulting in a disaster declaration since the 2010 plan update. This Category 1 storm was slow-moving and brought heavy rains and flooding to the state. As Isaac approached, mandatory evacuations were ordered for low lying coastal areas, and a state of emergency was declared by the Governor, thereby activating the state EOP. Nearly 1,000 people used public shelters, Dauphin Island was hit hard with 2,400 residences without power according to the TuscaloosaNews.com.3 Overall, coastal areas were spared major damage and flooding remained the greatest concern. Due to the slow-moving nature of the storm, many inland counties suffered severe damage due to flooding as well. Ultimately, on September 22, 2012, a federal disaster declaration was approved for the counties of Mobile, Baldwin, and Pickens. As of October 4, 2012 Covington, Dallas, Geneva, Monroe, and Perry Counties were also eligible for federal Public Assistance having suffered more than $2.5 million in combined damages.

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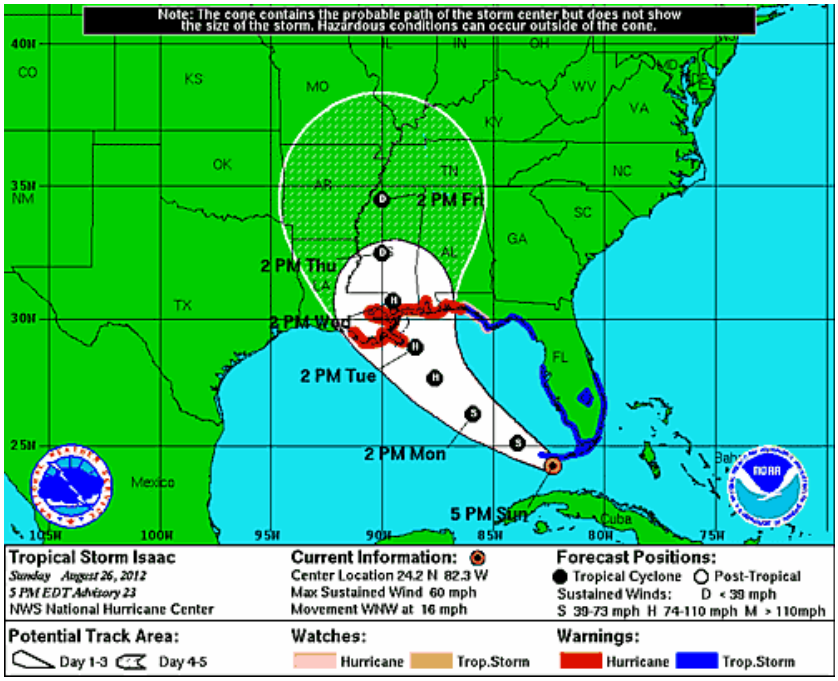
Figure 5.2.6-4 NOAA Tropical Storm Isaac Potential Track Area, August 26, 2010



3 Reeves, J. 'Spared Isaac's Worst, Alabama Coast looks to holiday." *Associated Press. Tuscaloosa News.com*. 29 August 2012. Web. Oct. 2012 < http://www.tuscaloosanews.com/article/20120829/NEWS/120829750>.

3 Reeves, J. 'Spared Isaac's Worst, Alabama Coast looks to holiday." *Associated Press. Tuscaloosa News.com*. 29 August 2012. Web. Oct. 2012 < http://www.tuscaloosanews.com/article/20120829/NEWS/120829750>.

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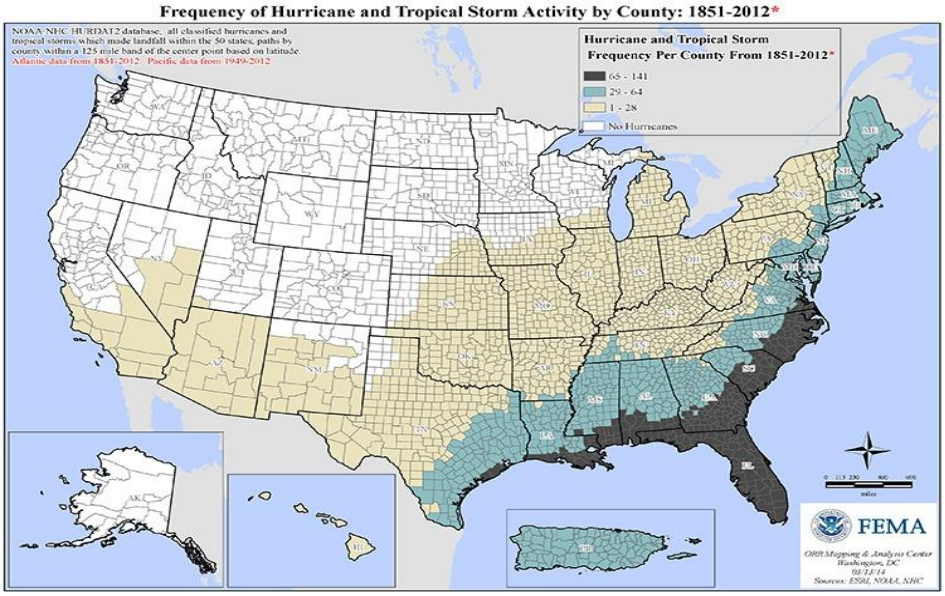
Because Alabama has been significantly affected by flooding caused by tropical storms and hurricanes 15 times (in terms of federally declared disasters) in the last 52 years, this historical average indicates that flooding from hurricanes will cause significant damage in Alabama approximately once every 3.5 years (Note this is a statewide estimate. It is likely that flooding

may occur more frequently based on location such as those areas identified as 1.0-percent annual chance areas through FEMA DFIRMs.) Because the impacts of flooding are severe and events can occur throughout the state and can be widespread, the qualitative ranking for probability for flooding is high.

Note: See **Table 5.2.5-1** Flood Probability Terms.

Figure 5.2.6-5 NOAA NHC HURDATA2



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5.2.7 Extreme Temperatures – Heat and Cold

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Extreme Heat

History: Medium, 10
Frequency of Occurrence: Occasional (2)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 37

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3) – Serious (4)
Infrastructure: Moderate (4)
Environment: Moderate (4)

Jurisdictions	Extent of the Natural Hazard – Extreme Temperatures - Heat
All	Extreme highs above 100 deg. F increase risk of injury from exposure and drought risk. Can place additional burden on electrical power production with greater levels of power consumption.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to extreme heat/temperatures.
Overall Significance Ranking: Medium

Hazard: Extreme Cold (See Also: 5.2.8 Winter Storms)

History: Medium, 10
Frequency of Occurrence: Infrequent (3)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 5

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3)
Infrastructure: Substantial (3)
Environment: Low (5)

Jurisdictions	Extent of the Natural Hazard – Extreme Temperatures - Cold
All	Extreme cold temperatures below 32 deg. F for several days at a t time cause water shortages, frozen/burst pipes, and increase risk of injury from exposure. Can place additional burden on electrical power production with greater levels of power consumption.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to extreme cold temperatures.
Overall Significance Ranking: Low

Extreme summer heat is the combination of very high temperatures and exceptionally humid conditions. If such conditions persist for an extended period of time, it is called a heat wave (FEMA, 1997). Temperatures above 100 are generally considered dangerous. Heat stress can be indexed by combining the effects of temperature and humidity, as shown in **Table 5.2.7-1** and **Figure 5.2.7-1**. The index estimates the relationship between dry bulb temperatures (at different humidity) and the skin's resistance to heat and moisture transfer. The higher the temperature or humidity, the higher the apparent temperature. The major human risks associated with extreme heat are as follows:

· **Heatstroke:** Considered a medical emergency, heatstroke is often fatal. It occurs when the body's responses to heat stress are insufficient to prevent a substantial rise in the body's core temperature. While no standard diagnosis exists, a medical heatstroke condition is usually diagnosed when the body's temperature exceeds 105°F due to environmental temperatures. Rapid cooling is necessary to prevent death, with an average fatality rate of 15 percent even with treatment.
· **Heat Exhaustion:** While much less serious than heatstroke, heat exhaustion victims may complain of dizziness, weakness, or fatigue. Body temperatures may be normal or slightly-to-moderately elevated. The prognosis is usually good with fluid treatment.
· **Heat Syncope:** This refers to sudden loss of consciousness and is typically associated with people exercising who are not acclimated to warm temperatures. Causes little or no harm to the individual.
· **Heat Cramps:** May occur in people unaccustomed to exercising in the heat and generally ceases to be a problem after acclimatization.

Table 5.2.7-1
Heat Index and Disorders

Danger Category		Heat Disorders	Apparent Temperatures (°F)
IV	Extreme Danger	Heatstroke or sunstroke imminent.	>130
III	Danger	Sunstroke, heat cramps, or heat exhaustion likely; heat stroke possible with prolonged exposure and physical activity.	105-130
II	Extreme Caution	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and physical activity.	90-105
I	Caution	Fatigue possible with prolonged exposure and physical activity.	89-90

Source: FEMA, 1997; NWS, 1997

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Figure 5.2.7-1 Heat Index Values Source: NWS Birmingham

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	118	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

In addition to affecting people, severe heat places significant stress on plants and animals. The effects of severe heat on agricultural products, such as cotton, may include reduced yields and even loss of crops (Brown and Zeiher, 1997). Similarly, cows may become overheated, leading to reduced milk production and other problems. (Garcia, September 2002).

Extreme Cold (See: 5.2.8 Winter Storms) consisting of long periods of below freezing temperatures sometimes accompany a winter storm. Prolonged exposure to the cold can cause frostbite or hypothermia and become life threatening. Frostbite occurs when the extremities become excessively cold, and hypothermia is a serious health condition where a person's body temperature falls below 90 degrees. Both conditions are influenced by wind conditions. Various wind chill indices have been developed to predict cold temperature's effect on humans. For instance, a temperature of 5 degrees will have a wind chill of -19 degrees if the wind is blowing 30 mph.

Figure 5.2.7-2 NWS BMX HWO, January 24, 2014

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HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE BIRMINGHAM AL
541 AM CST FRI JAN 24 2014

ALZ011>015-017>050-251145-
AUTAUGA-BARBOUR-BIBB-BLOUNT-BULLOCK-CALHOUN-CHAMBERS-CHEROKEE-
CHILTON-CLAY-CLEBURNE-COOSA-DALLAS-ELMORE-ETOWAH-FAYETTE-GREENE-HALE-
JEFFERSON-LAMAR-LEE-LOWNDES-MACON-MARENGO-MARION-MONTGOMERY-PERRY-
PICKENS-PIKE-RANDOLPH-RUSSELL-SHELBY-ST CLAIR-SUMTER-TALLADEGA-
TALLAPOOSA-TUSCALOOSA-WALKER-WINSTON-
541 AM CST FRI JAN 24 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL WEATHER SERVICE OFFICE
IN BIRMINGHAM.

.DAY ONE...TODAY AND TONIGHT.

VERY COLD TEMPERATURES ARE EXPECTED TO CONTINUE ACROSS CENTRAL ALABAMA DURING THE EARLY MORNING
HOURS WITH A HARD FREEZE WARNING IN EFFECT THROUGH 9 AM.
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VERY DRY AIR WILL BE IN PLACE TODAY...LEADING TO HIGH FIRE DANGER CONDITIONS ACROSS ALL OF
CENTRAL ALABAMA. OUTDOOR BURNING IS DISCOURAGED.

.DAYS TWO THROUGH SEVEN...SATURDAY THROUGH THURSDAY.

ANOTHER SURGE OF COLD AIR WILL AFFECT THE AREA MONDAY NIGHT...
TUESDAY NIGHT...AND AGAIN WEDNESDAY NIGHT. LOWS MAY DROP TO AT OR BELOW 15 DEGREES ACROSS
PORTIONS OF CENTRAL ALABAMA ON ALL THREE NIGHTS.

VERY DRY AIR WILL RETURN AGAIN WITH THE SURGE OF COLD AIR...
LEADING TO HIGH FIRE DANGER CONDITIONS ACROSS ALL OF CENTRAL ALABAMA ON TUESDAY AND WEDNESDAY.
OUTDOOR BURNING IS DISCOURAGED.

.SPOTTER INFORMATION STATEMENT...

ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT IS NOT EXPECTED AT THIS TIME.
$$
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Table 5.2.7-2

Storm Events Database
Search Results for Elmore County, Alabama
Event Types: Heat
Elmore County contains the following zones:
'Elmore'

3 events were reported between 01/01/1950 and 02/28/2014 (23435 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	3
Number of Days with Event and Death:	1
Number of Days with Event and Death or Injury:	1
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								1	14	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/23/1996	08:00	CST	Heat		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	08/08/2007	12:00	CST-6	Heat		1	14	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2012	12:00	CST-6	Heat		0	0	0.00K	0.00K

Totals:								1	14	0.00K	0.00K

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5.2.8 Winter Storms

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Winter Storms

History: Medium, 10
Frequency of Occurrence: Infrequent (3)
Probability: Low, 7; Unlikely/Occasional Probability of Future Event
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 5

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3)
Infrastructure: Substantial (3)
Environment: Low (5)

Jurisdictions	Extent of the Natural Hazard – Winter Storms
All	One (or more) inches of ice and snow, freezing temperatures, freezing rain, sleet, and snow causing damage to utilities, property, road closures, business losses, traffic accidents with injuries/fatalities.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to winter storms that may produce cold temperatures, frost, freezing precipitation, hard freezes, snow, and icing.
Overall Significance Ranking: Medium

Winter storms vary in size and strength and include heavy snowstorms, blizzards, freezing rain, sleet, ice storms and blowing and drifting snow conditions. Extremely cold temperatures accompanied by strong winds can result in wind chills that cause bodily injury such as frostbite and death. Severe winter and ice storms can cause unusually heavy rain or snowfall, high winds, extreme cold, and ice storms throughout the continental United States.

Winter storm occurrences tend to be very disruptive to transportation and commerce. Trees, cars, roads, and other surfaces develop a coating or glaze of ice, making even small accumulations of ice extremely hazardous to motorists and pedestrians. The most prevalent impacts of heavy accumulations of ice are slippery roads and walkways that lead to vehicle and pedestrian accidents; collapsed roofs from fallen trees and limbs and heavy ice and snow loads; and felled trees, telephone poles and lines, electrical wires, and communication towers. As a result of severe ice storms, telecommunications and power can be disrupted for days. Such storms can also cause exceptionally high rainfall that persists for days, resulting in heavy flooding.

Large snow accumulations are rare in Alabama exacerbating the dangerous conditions. When severe snow events do occur, they have the potential to cripple the economy until snow can be removed from roadways.

Ice storms are more common but still result in very dangerous driving conditions. They are defined as storms with significant amounts of freezing rain and are a result of cold air damming (CAD). CAD is a shallow, surface-based layer of relatively cold; stably-stratified air entrenched against the eastern slopes of the Appalachian Mountains. With warmer air above, falling precipitation in the form of snow melts, then becomes either super-cooled (liquid below the melting point of water) or re-freezes. In the former case, super-cooled droplets can freeze on impact (freezing rain), while in the latter case; the re-frozen water particles are ice pellets (or sleet). Sleet is defined as partially frozen raindrops or refrozen snowflakes that form into small ice pellets before reaching the ground. They typically bounce when they hit the ground and do not stick to the surface. However, it does accumulate like snow, posing similar problems and has the potential to accumulate into a layer of ice on surfaces. Freezing rain, conversely, usually sticks to the ground, creating a sheet of ice on the roadways and other surfaces. All of the winter storm elements – snow, low temperatures, sleet, ice, etcetera - have the potential to cause significant hazard to a community. Even small accumulations can down power lines and trees limbs and create hazardous driving conditions. Further, communication and power may be disrupted for days.
Figure 5.2.8-1 below provides a graphic depiction of the differences in freezing precipitation.

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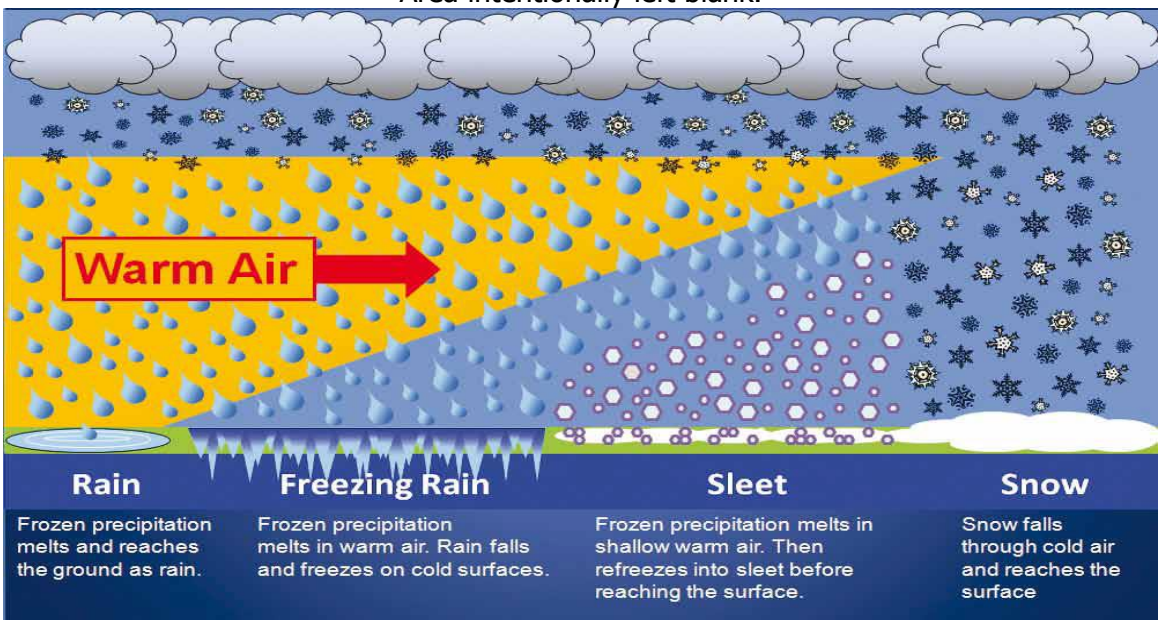

Figure 5.2.8-1 What's the Difference Between Snow, Sleet, and Freezing Rain?
Source: National Weather Service Weather Forecast Office Birmingham,
Alabama All Hazards Awareness Book

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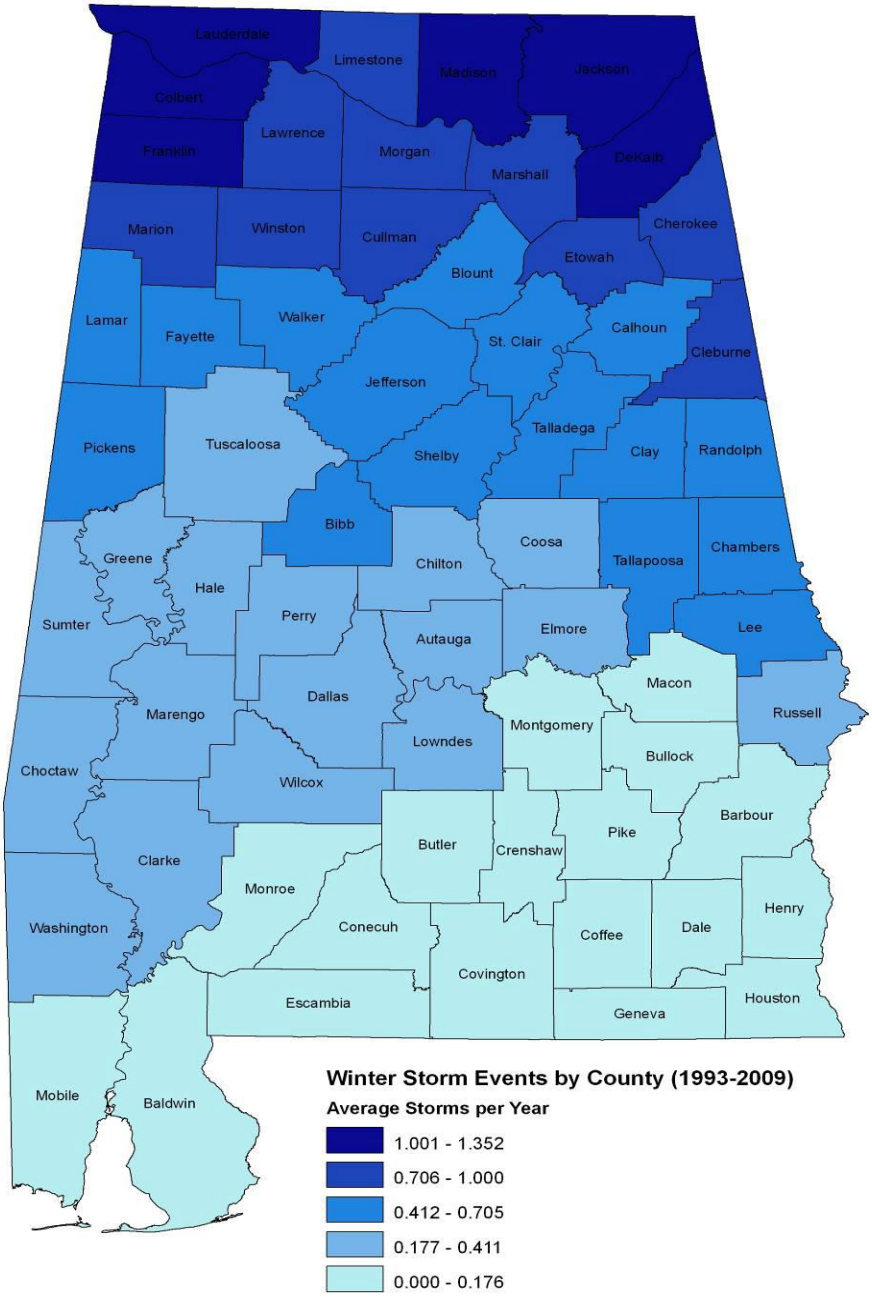

Figure 5.2.8-2
Alabama Winter Storm Return Interval by County
Source: National Climatic Data Center

Winter Weather Hazards (General)

- Increased coverage and use of NOAA Weather Radio.
- Producing and distributing family emergency preparedness information relating to severe winter weather hazards.
- Including safety strategies for severe weather events in driver education classes and materials.
- Tree trimming and maintenance to prevent limb breakage and safeguard nearby utility lines. (Ideal: Establishment of a community forestry program with a main goal of creating and maintaining a disaster-resistant landscape in public rights-of-way.)
- Buried/protected power and utility lines.
- Establishing heating centers/shelters for vulnerable populations.
- Organizing outreach to isolated, vulnerable, or special-needs populations.
- Encourage residents to develop a Family Disaster Plan which includes the preparation of a Disaster Supplies Kit.

Table 5.2.8-1

Storm Events Database

Search Results for Elmore County, Alabama

Event Types: Cold/Wind Chill

Elmore county contains the following zones:

'Elmore'

3 events were reported between 01/01/1950 and 03/31/2014 (23466 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	3
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	1
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	0.00K	1.000M
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/03/1996	18:00	CST	Cold/wind Chill		0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	03/07/1996	08:00	CST	Cold/wind Chill		0	0	0.00K	1.000M
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/06/2014	23:00	CST-6	Cold/wind Chill		0	0	0.00K	0.00K
Totals:								0	0	0.00K	1.000M

Table 5.2.8-2
Storm Events Database
Search Results for Elmore County, Alabama
Event Types: Extreme Cold/Wind Chill
Elmore county contains the following zones:
'Elmore'
1 events were reported between 01/01/1950 and 03/31/2014 (23466 days)
Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	1
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:
'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/24/2003	00:00	CST	Extreme Cold/wind Chill		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Table 5.2.8-3
Storm Events Database
Search Results for Elmore County, Alabama
Event Types: Frost/Freeze
Elmore county contains the following zones:
'Elmore'
2 events were reported between 01/01/1950 and 03/31/2014 (23466 days)
Summary Info:

Number of County/Zone areas affected:	1

Number of Days with Event:	2
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:
'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/07/2007	00:00	CST-6	Frost/freeze		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/08/2007	00:00	CST-6	Frost/freeze		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Table 5.2.8-4
Storm Events Database
Search Results for Elmore County, Alabama
Event Types: Heavy Snow
Elmore County contains the following zones:
'Elmore'
3 events were reported between 01/01/1950 and 03/31/2014 (23466 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	3
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:
'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/02/2002	07:30	CST	Heavy Snow		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2009	03:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/12/2010	10:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Table 5.2.8-5

Storm Events Database

Search Results for Elmore County, Alabama

Event Types: Winter Weather

Elmore county contains the following zones:

'Elmore'

3 events were reported between 01/01/1950 and 03/31/2014 (23466 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	3
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/19/2008	06:00	CST-6	Winter Weather		0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	12/15/2010	08:00	CST-6	Winter Weather		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/09/2011	21:30	CST-6	Winter Weather		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

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5.2.9 Drought

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Drought

History: Medium, 10
Frequency of Occurrence: Occasional (2)
Probability: Medium, 35; Occasional/Likely
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Medium, 25
Total Points: 105

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3)
Infrastructure: High (2)
Environment: High (2)

Jurisdictions	Extent of the Natural Hazard – Drought
All	D4; Exceptional Drought. Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to the effects of drought that produce heat and extreme heat conditions.
Overall Significance Ranking: Medium

Drought is a normal part of virtually every climate on the planet, including areas of both high and low normal rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity (FEMA, 1997). Drought is a complex natural hazard which is reflected in the following four definitions commonly used to describe it:

- Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Agricultural drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.
- Socio-economic drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. They may also be called a water management drought.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multidimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments. Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline and the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment.

The Palmer Drought Severity Index (PDSI) is often used to describe drought conditions over time. **Table 5.2.9-1** below shows the PDSI drought classifications used. Negative numbers indicate drought conditions.

Table 5.2.9-1
Palmer Drought Severity Index (PDSI) Classifications

Palmer Classifications	
4.0 or more	extremely wet
3.0 to 3.99	very wet
2.0 to 2.99	moderately wet
1.0 to 1.99	slightly wet
0.5 to 0.99	incipient wet spell
0.49 to -0.49	near normal
-0.5 to -0.99	incipient dry spell
-1.0 to -1.99	mild drought
-2.0 to -2.99	moderate drought
-3.0 to -3.99	severe drought
-4.0 or less	extreme drought

The U.S. Drought Monitor also records information on historical drought occurrence. The U.S. Drought Monitor categorizes drought on a D0-D4 scale as shown below in **Table 5.2.9-2**:

Table 5.2.9-2
U.S. Drought Monitor Classifications

D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed
D3	**D3** Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

Figure 5.2.9-1 below is a map showing the various Drought Management Regions and Monitoring locations throughout the state. This map is courtesy of the Alabama Department of Economic and Community Affairs, Office of Water Resources and is extracted from the latest edition of the NWS *Alabama All Hazards Awareness* Book.

Area intentionally left blank.

Figure 5.2.9-1 Drought Management Regions and Monitoring Locations in Alabama

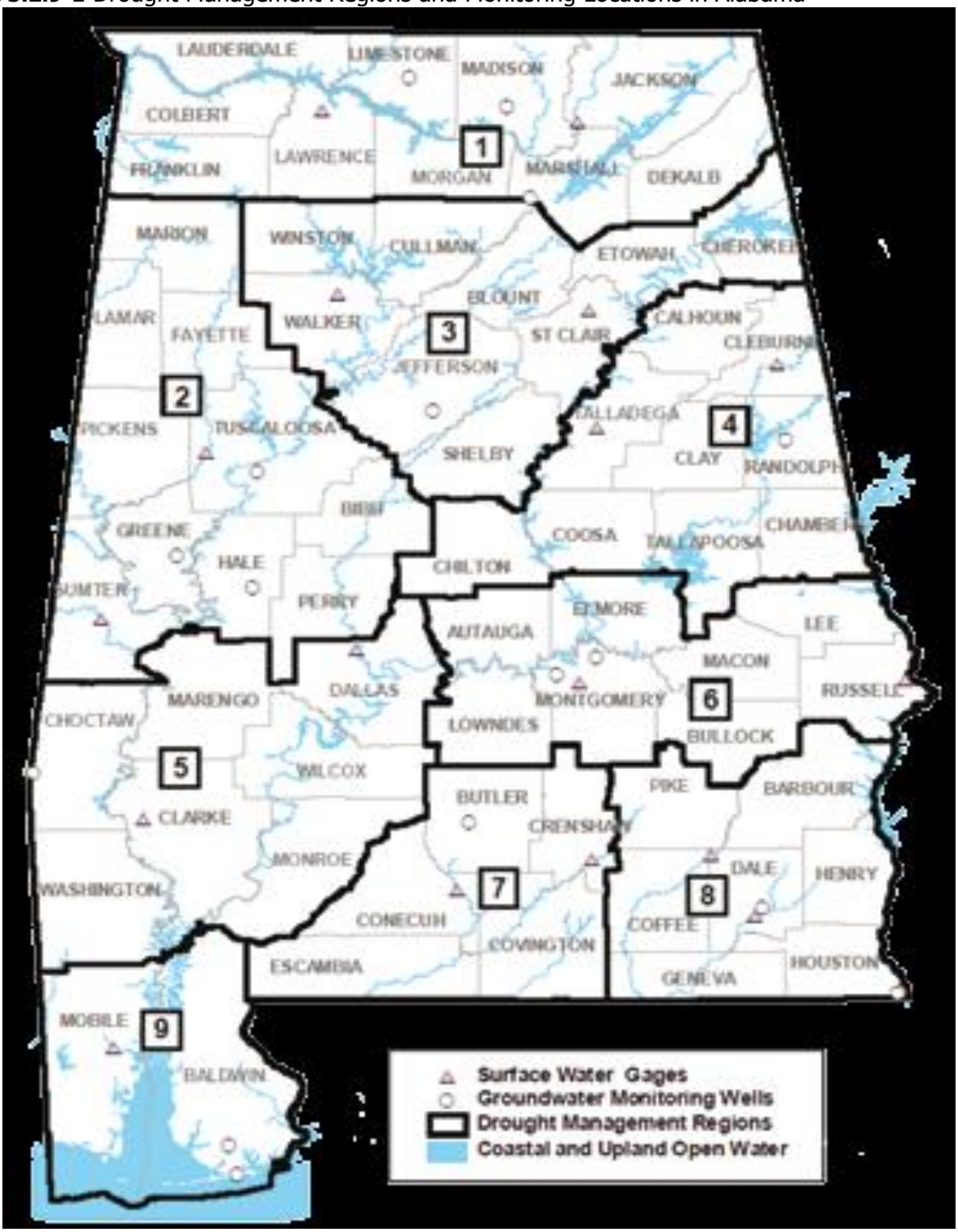

Figure 5.2.9-2

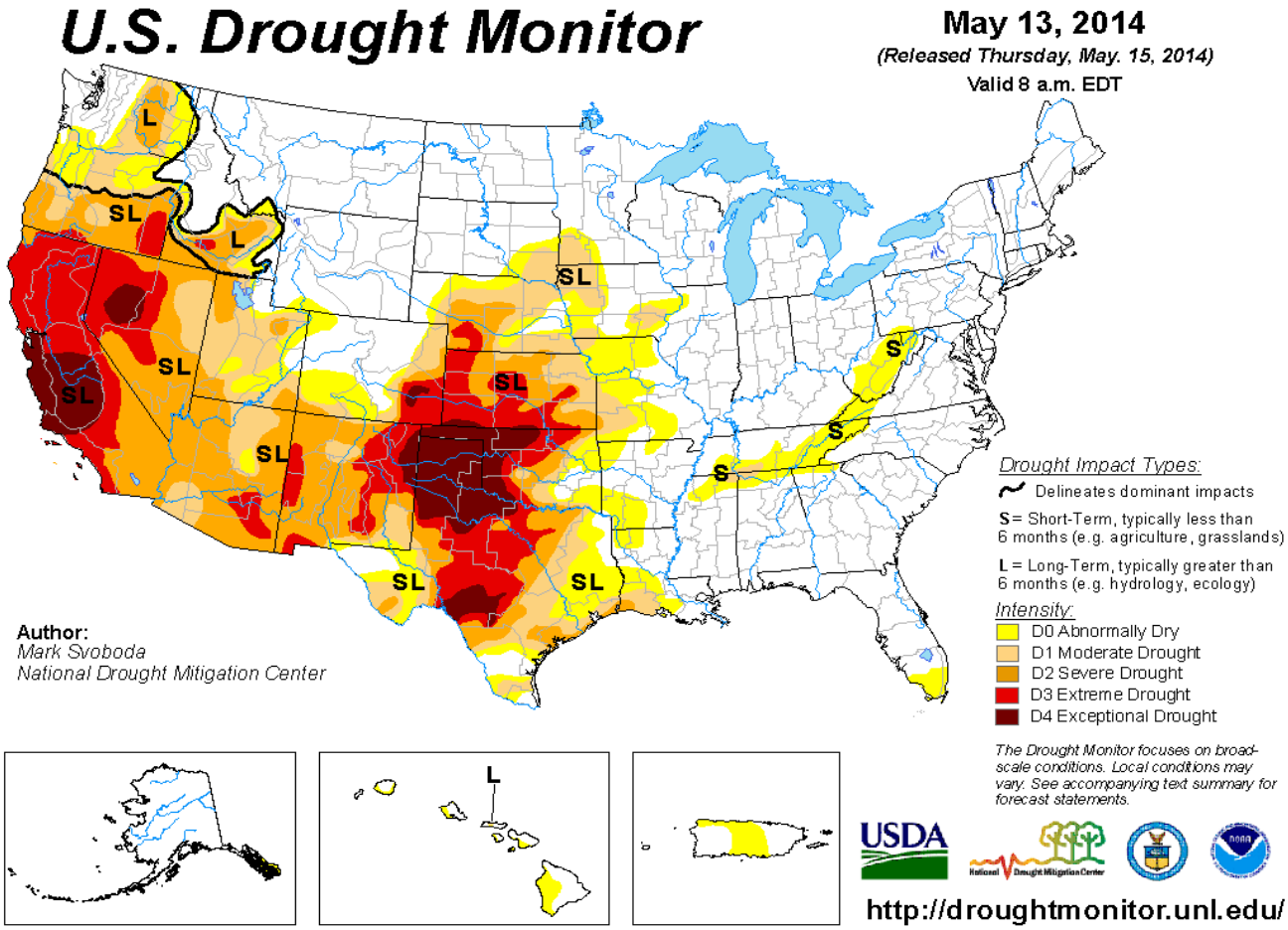

Table 5.2.9-3

Storm Events Database

Search Results for Elmore County, Alabama
Event Types: Drought
Elmore county contains the following zones:
'Elmore'
55 events were reported between 01/01/1950 and 02/28/2014 (23435 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	50
Number of Days with Event and Death:	0

Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:
'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	07/18/2006	07:00	CST	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	08/01/2006	00:00	CST	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	09/01/2006	00:00	CST	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	05/22/2007	06:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	06/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	07/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	08/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	09/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	10/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	11/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	12/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	01/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	02/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	03/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	04/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	05/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	06/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	07/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	08/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	09/14/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	09/21/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	10/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K

ELMORE (ZONE)	*ELMORE (ZONE)*	AL	11/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	12/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	12/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	01/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	01/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	02/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	02/04/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	03/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	03/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	04/05/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	04/05/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	05/10/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	06/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	07/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	07/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	08/02/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	09/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	10/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	11/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	12/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	01/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	02/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	03/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	04/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	05/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	06/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	07/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	08/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	09/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	10/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	11/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	01/01/2013	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	*ELMORE (ZONE)*	AL	02/01/2013	00:00	CST-6	Drought		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

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Photo: National Park Service Wildland Fire Program – Unplanned Fire

5.2.10 Wildfire

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Wildfire

History: Medium, 10
Frequency of Occurrence: Occasional (2)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 37

Maximum Probable Extent (Magnitude/Strength):
Public: Serious (4)
Infrastructure: Very Low (6)
Environment: High (2)

Jurisdictions	Extent of the Natural Hazard – Wildfire
All	Property and timber damage over areas up to and including very small acreage (5+), moderate acreage (50+) to very large acreage (100+) throughout Elmore County; water shortages and insufficient water pressure can increase magnitude; life safety, human health, loss of vegetation and wildlife habitat are serious concerns.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to wildfires/grassfires.
Overall Significance Ranking: Medium

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed, spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. Wildfires can be human-caused through acts such as arson or campfires, or can be caused by natural events such as lightning. Wildfires can be categorized into 3 types:

1. **Wildland fires** occur in very rural areas and are fueled primarily by natural vegetation. In Alabama, the vast majority of these fires occur on privately owned land. (94 percent of Alabama's forestlands are privately owned.) Wildland fire suppression is the responsibility of the State of Alabama, through the Alabama Forestry Commission.
2. **Interface fires** occur in areas where homes or other structures are endangered by the wildfires. The fires are fueled by both natural vegetation and man-made structures. These are often referred to as Wildland Urban Interface fires and form the majority of wildfires in Alabama. Interface fire suppression is the responsibility of the Alabama Forestry Commission, working closely with local volunteer fire departments.
3. **Firestorms** occur during extreme weather (e.g., high temperatures, low humidity, and high winds) with such intensity that fire suppression is virtually impossible. These events typically burn until the conditions change or the fuel is exhausted.

The following two factors contribute significantly to wildfire behavior in Alabama:

1. **Fuel:** The type of fuel and the fuel loading (measured in tons of vegetative matter per acre) have a direct impact on fire behavior. Fuel types vary from light fuels (grass) to moderate fuels (Southern Rough) to heavy fuels (slash). The type of fuel and the fuel load determines the potential intensity of the wildfire and how much effort must be expended to contain and control it.
2. **Weather:** The most variable factor affecting wildfire behavior is weather. Important weather variables are precipitation, humidity, and wind. Weather events ranging in scale from localized thunderstorms to large cold fronts can have major effects on wildfire occurrence and behavior.

Extreme weather, such as extended drought and low humidity can lead to extreme wildfire activity.

The frequency and severity of wildfires is dependent on weather and on human activity. Nearly all wildfires in Alabama are human caused (only 3 percent are caused by lightning), with arson and careless debris burning being the major causes of wildfires. If not promptly controlled, wildfires may grow into an emergency or disaster. During a severe fire situation in 1999-2000, 8 wildfires in Alabama were declared Fire Disaster Emergencies by FEMA. Even small fires can threaten lives, damage forest resources and destroy structures. Each year, wildfires threaten an average of 1,600 homes and structures, destroying around 115 and damaging about 44.

In addition to affecting people, wildfires may severely impact livestock. Wildfire also destroys livestock feed, such as hay bales and crops, inflicting a severe economic impact on farmers. The forest resources of Alabama feed one of the main industries of the state. Timber loss to fire creates an economic loss to both the private landowner and the state's economy. Wildfires in Alabama generally are moderate in intensity, resulting in destruction of undergrowth and some timber. With Alabama's long growing season, the soil surface layer of the forest recovers quickly, minimizing erosion and water quality impacts.

According to the Alabama State HMP, the Alabama Forestry Commission's Annual Reports provide a wide variety of statistics related to wildfire occurrence and prevention. Looking at the Annual Reports for FY2007 through FY2011, wildfires have destroyed or damaged 292 homes, 1,041 other structures, and 1,197 vehicles. However, about 10,720 homes were saved as a direct result of Forestry Commission. The Forestry Commission is also heavily involved in mitigation activities.

Between 2007 and 2011, The Forestry Commission completed 164,800 acres in prescribed burns. In addition, nearly 600 new burners were certified through prescribed burn manager courses. Instructional guides on homeowner wildfire mitigation have been completed. The Forestry Commission has had two dedicated wildland/urban interface associates on staff since 2008 that are funded through by a U.S. Forest Service grant. These associates work to provide education including Fire Wise Communities USA participation, homeowner hazard assessments, and community wildfire protection plans. The FY2011 Annual Report noted 166 Homeowner Hazard Assessments and Wildfire Mitigation Plans were completed through the program.

Table 5.2-6 of the State HMP shows the number of fires and acres burned during the period 1997 to 2012 as recorded by the Alabama Forestry Commission. Alabama had a total of 47,537 fires during this 15-year period, affecting a total of 579,037 acres.[1]

Ref: Alabama State Hazard Mitigation Plan Update, Dated April 2013

Table 5.2-6

Wildfires in Alabama 1997-2012

Sources: Alabama Forestry Commission

County: Elmore Total # of Fires: 1,009 Average # of Fires: 67 Total Acres Burned: 5,405
Average Acres Burned: 360 Average Fire Size: 5.4

[1] Data collected and included between January 2010 and August 5, 2012 includes reported acres burned over zero.

Wildfires are an ongoing threat to both rural Alabama and wildland urban interface communities that are known to be at risk. Based on the 15 years of data shown in **Table 5.2-6**, it can be deduced that the state experiences an average of 3,169 fires annually that can affect up to 38,603 acres every year. As with most natural hazards, wildfires are strongly influenced by weather phenomena, although their risk and impacts are also related to other factors such as the number of structures that are near forested areas, etc. Wildfire probability can be expected to remain relatively constant over the long run, assuming that weather patterns do not change significantly. The qualitative probability rating for this hazard in **Section 5.3** is medium (for the state) and low for Elmore County. In addition, **Figures 5.2-1** and **5.2-25** show the total number of acres burned by wildfire in the 15year period by county and the annual number of fires per square mile by county, respectively

Figure 5.2.10-1 Total Acres Burned (1997-2012)

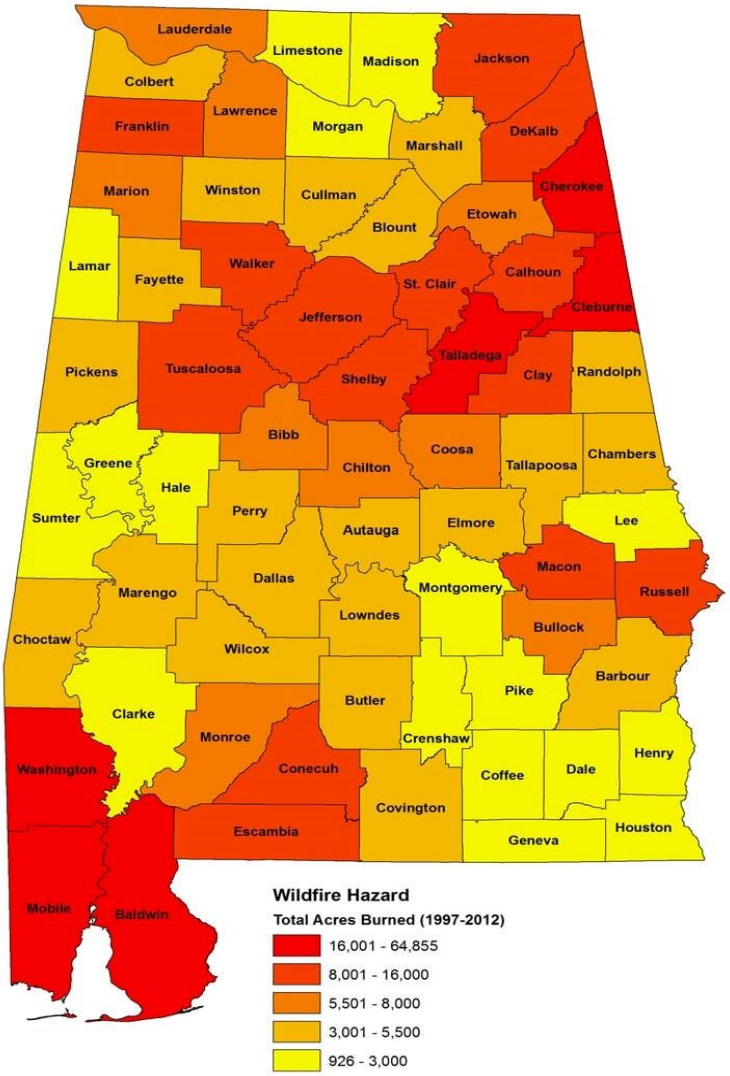
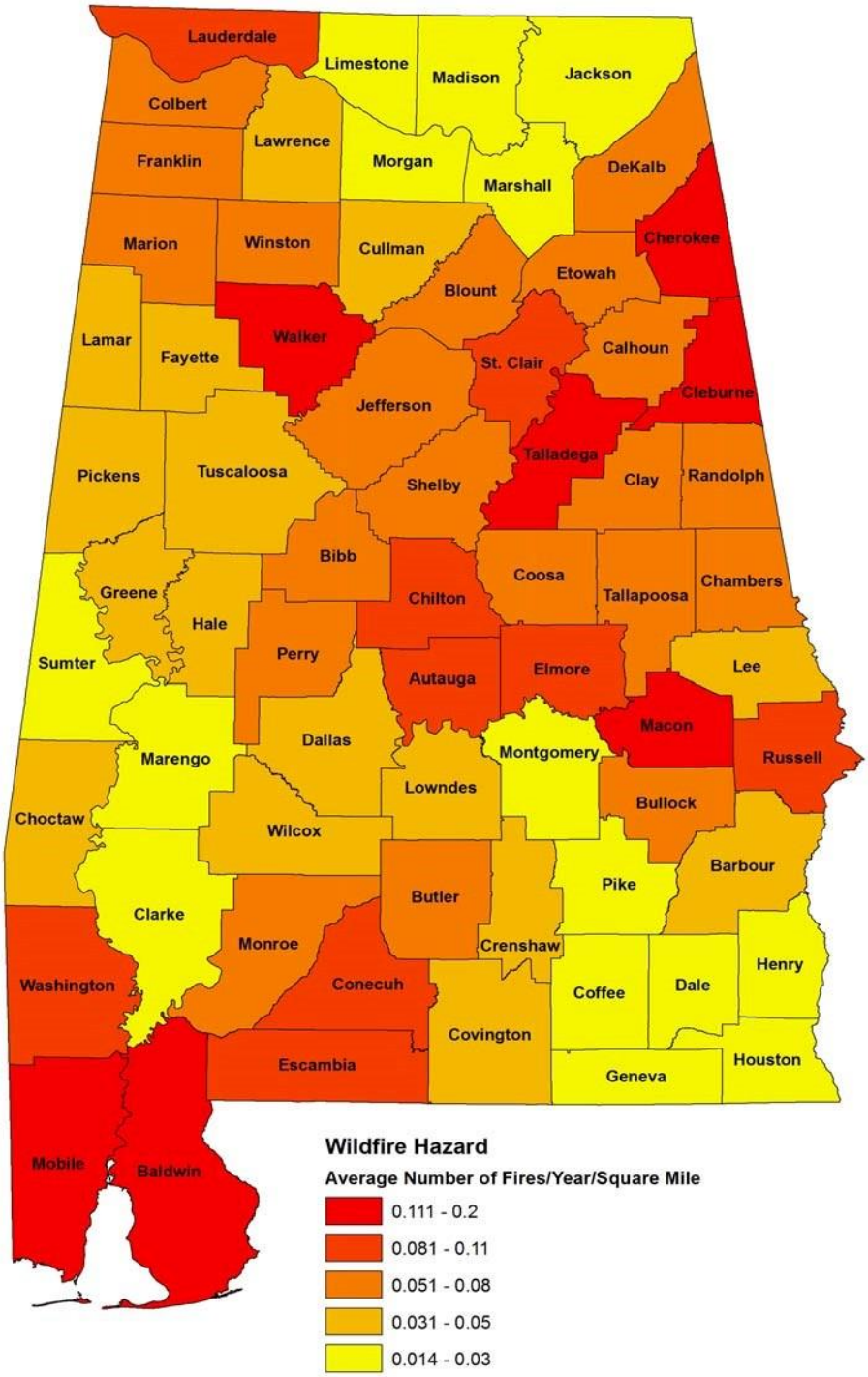


Figure 5.2.10-2 Average Number of Fires/Years/Square Mile



Source: U.S. Forest Service

With Communities

Wildfire does not stop at property boundaries. Communities must prepare for it. Responding to wildfire near homes and neighborhoods is risky and complex. About 70,000 communities in the United States are at risk from wildfire. In the last ten years, wildfires have burned nearly 28,000 buildings, including homes and businesses. Wildfires lower property tax receipts that fund schools and hospitals. They threaten power grids, railroads, and highways, and interrupt people's jobs. Extreme fires can devastate watersheds that tens of millions of people depend on for water. **More than ever, communities are part of the challenges and solutions in the wildland fire environment.**

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Figure 5.2.10-3 NWS BMX HWO, March 21, 2014

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FLUS44 KBMX 212004
HWOBMX

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE BIRMINGHAM AL
304 PM CDT FRI MAR 21 2014
ALZ011>015-017>050-222015-
AUTAUGA-BARBOUR-BIBB-BLOUNT-BULLOCK-CALHOUN-CHAMBERS-CHEROKEE-
CHILTON-CLAY-CLEBURNE-COOSA-DALLAS-ELMORE-ETOWAH-FAYETTE-GREENE-HALE-
JEFFERSON-LAMAR-LEE-LOWNDES-MACON-MARENGO-MARION-MONTGOMERY-PERRY-
PICKENS-PIKE-RANDOLPH-RUSSELL-SHELBY-ST CLAIR-SUMTER-TALLADEGA-
TALLAPOOSA-TUSCALOOSA-WALKER-WINSTON-
304 PM CDT FRI MAR 21 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL WEATHER SERVICE OFFICE
IN BIRMINGHAM.

.DAY ONE...THIS AFTERNOON AND TONIGHT.
DRY CONDITIONS WILL CONTINUE TO POSE A HIGH FIRE DANGER ACROSS ALL OF CENTRAL ALABAMA THROUGH 7
PM THIS EVENING. OUTDOOR BURNING IS DISCOURAGED.
.DAYS TWO THROUGH SEVEN...SATURDAY THROUGH THURSDAY.
A STRONG COLD FRONT WILL MOVE THROUGH CENTRAL ALABAMA ON TUESDAY...
BRINGING WINDY CONDITIONS WITH IT TUESDAY AFTERNOON. TEMPERATURES WILL LIKELY FALL BELOW FREEZING
ACROSS ALL OF CENTRAL ALABAMA LATE TUESDAY NIGHT INTO EARLY WEDNESDAY MORNING...AND POSSIBLY
AGAIN EARLY THURSDAY MORNING FOR SOME AREAS. SINCE WE ARE NOW IN THE GROWING SEASON...WE WILL
CONTINUE TO MONITOR TRENDS CLOSELY FOR SPECIFIC TEMPERATURES AND DURATION. STAY TUNED.
.SPOTTER INFORMATION STATEMENT...
ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT IS NOT EXPECTED
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5.2.11 Landslides

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Landslide

History: Low, 2
Frequency of Occurrence: Very Rare (5)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 41

Maximum Probable Extent (Magnitude/Strength):
Public: Noticeable (6)
Infrastructure: Low (5)
Environment: Very Low (6)

Jurisdictions	Extent of the Natural Hazard – Landslides
All	Negligible/Low Incident. No potential damage with less than 1.5% of the planning area susceptible to this hazard.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Negligible: The entire planning area is identified as a "Low Incident (less than 1.5% area involved)" area per **Figure 5.2.11-1** Landslide Overview Map in the United States Source: USGS
Overall Significance Ranking: Low

Landslides are the downward and outward movement of slopes. The term refers to various kinds of events, including mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and earth flows. Landslides may include any combination of natural rock, soil, or artificial fill, and are classified by the type of movement and the type of material. The types of movement are slides, flows, lateral spreads, and falls and topples (FEMA, 1997).

Below is a brief discussion of the various types of landslide movements. A combination of two or more landslide movements is referred to as a complex movement.

- Slides are downward displacements along one or more failure surfaces of soil or rock. The material may be a single intact mass or a number of pieces. The sliding may be rotational (turning about a point) or translational (movement roughly parallel to the failure surface).
- Flows are a form of rapid mass movement by loose soils, rocks, and organic matter, together with air and water that form a slurry flowing rapidly downhill. Flows are distinguished from slides by high water content and velocities that resemble those of viscous liquids.
- Lateral spreads are large movements of rock, fine-grained soils (i.e., quick clays), or granular soils, distributed laterally. Liquefaction may occur in loose, granular soils, and can occur spontaneously due to changes in pore-water pressure or due to earthquake vibrations.
- Falls and topples are masses of rocks or material that detach from a steep slope or cliff that free-fall, roll, or bounce. Movements typically are rapid to extremely rapid. Earthquakes commonly trigger rock falls.

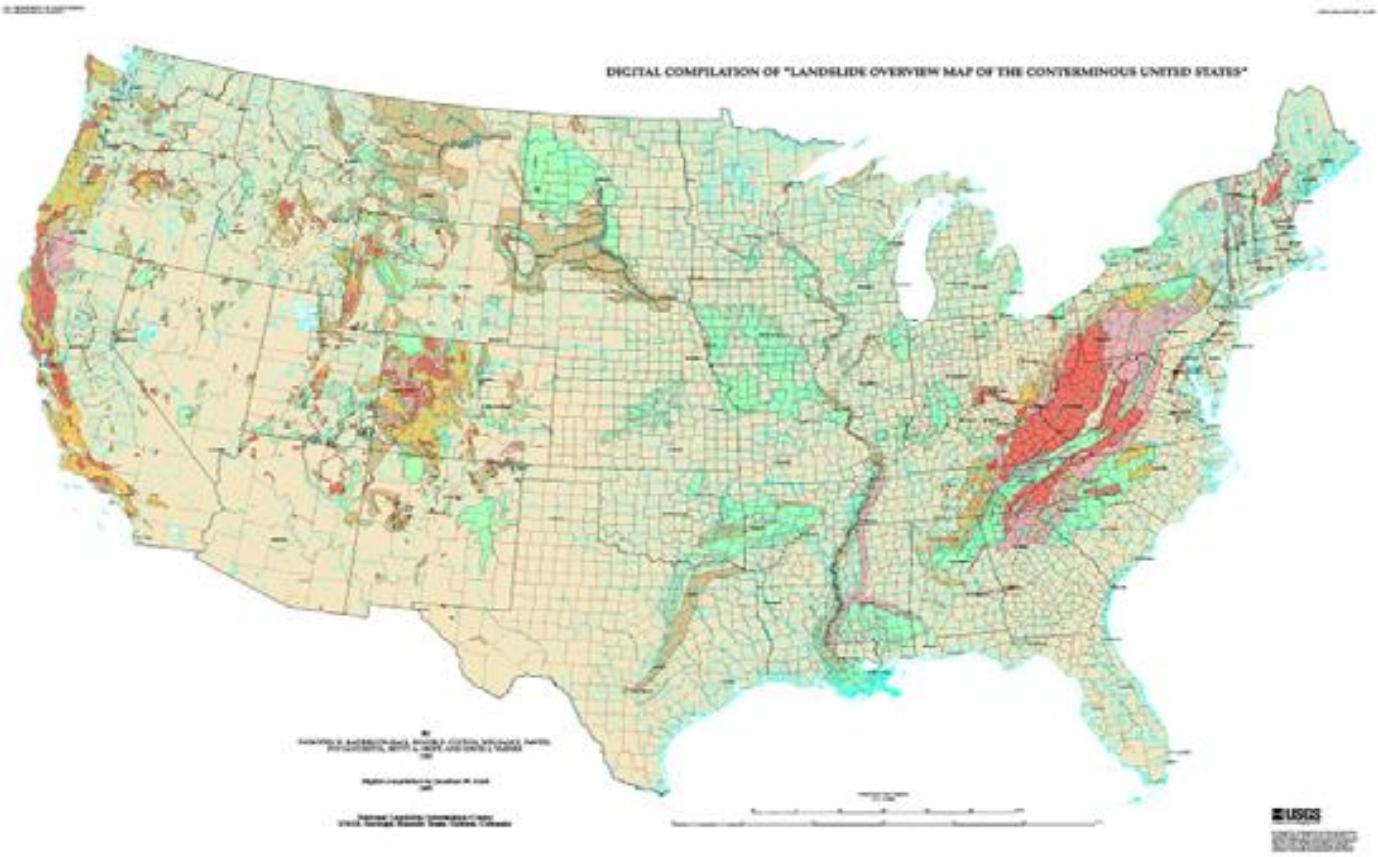
Almost any steep or rugged terrain is susceptible to landslides under the right conditions. The most hazardous areas are steep slopes on ridges, hill, and mountains; incised stream channels; and slopes excavated for buildings and roads. Slide potentials are enhanced where slopes are destabilized by construction or river erosion. Road cuts and other altered or excavated areas are particularly susceptible to landslides and debris flows. Rainfall and seismic shaking by earthquakes or blasting can trigger landslides.

Debris flows (also referred to as mudslides) generally occur during intense rainfall on water saturated soil. They usually start on steep hillsides as soil slumps or slides that liquefy and accelerate to speeds as great as 35 miles per hour. Multiple debris flows may merge, gain volume, and travel long distances from their source, making areas downslope particularly hazardous. Surface runoff channels along roadways and below culverts are common sites of debris flows and other landslides (USGS, 2000).

Landslides often occur together with other major natural disasters, such as the following, thereby exacerbating relief and reconstruction efforts:

- Floods and landslides are closely related and both involve precipitation, runoff, and ground saturation that may be the result of severe thunderstorms or tropical storms.
- Earthquakes may cause landslides ranging from rock falls and topples, to massive slides and flows.
- Landslides into a reservoir may indirectly compromise dam safety or a landslide may even affect the dam itself.
- Wildfires may remove vegetation from hillsides, significantly increasing runoff and landslide potential.

Figure 5.2.11-1 shows the landslide susceptibility throughout the United States.



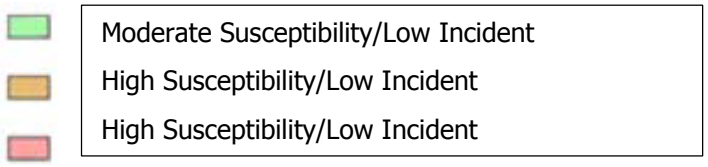


Figure 5.2.11-1
Landslide Overview Map in the United States
Source: USGS

Nature of the Hazard in Alabama

Source: Alabama State Hazard Mitigation Plan

Throughout the state, almost any steep or rugged terrain is susceptible to landslides under the right conditions. The most hazardous areas are steep slopes on ridges, hills, and mountains; incised stream channels; and slopes excavated for buildings and roads. In Alabama, most landslides generally are confined to specific geologic formations in areas of moderate topographic relief in the northern part of the state. Areas underlain by swelling clays or by interbedded sands and clays of the Cretaceous Tuscaloosa Group are also particularly susceptible to landslides in excavated areas, especially along highways. Undercutting of steep slopes by wave action in Mobile Bay is also a significant problem in south Alabama.

Probability of Landslides in Alabama

Source: Alabama State Hazard Mitigation Plan

Figure 5.2.11-2 is a landslide incidence/susceptibility map obtained from the Geological Survey of Alabama in April 2007. This map was prepared by classifying geographic areas as having high, medium, and low susceptibility and/or incidence to landsliding. Landslide incidence is defined as the number of landslides that have occurred in a given geographic area; whereas susceptibility to landsliding is defined as the probable degree of response of geologic formations to natural or artificial cutting, to loading of slopes, or to unusually high precipitation. Generally, it can be assumed that unusually high precipitation or changes in existing conditions can initiate landslide movement in areas where rocks and soils have experienced numerous landslides in the past.

The map units are split into three incidence categories according to the percentage of the area affected by landslide. High incidence means greater than 15 percent of a given area has been involved in landsliding; medium incidence means that 1.5 to 15 percent of an area has been involved; and low incidence means that less than 1.5 percent of an area has been involved. High, medium, and low susceptibility are delimited by the same percentages used for classifying the incidence of landsliding. Susceptibility is not indicated where it is the same as or lower than incidence. Because **Figure 5.2.11-2** was prepared at a small scale using limited landslide and climate information, it is not intended for local planning or actual site election.

Landslide probability is highly site-specific, and cannot be accurately characterized on a statewide basis, except in the most general sense. As described above, landslides are also influenced by the weather and other physical phenomena such as seismic activity. Given that landslides are a

fairly widespread and common occurrence in the state, it is reasonable to assume that there will be numerous landslides in the state every year. The qualitative probability for this hazard is rated low in **Section 5.2** because the overall area of the state that is likely to be affected by landslides is relatively small (not the area that is considered "high incidence" in **Figure 5.2.11-2**). The rating is intended only for general comparison to other hazards that are being considered in this stage of the planning process.

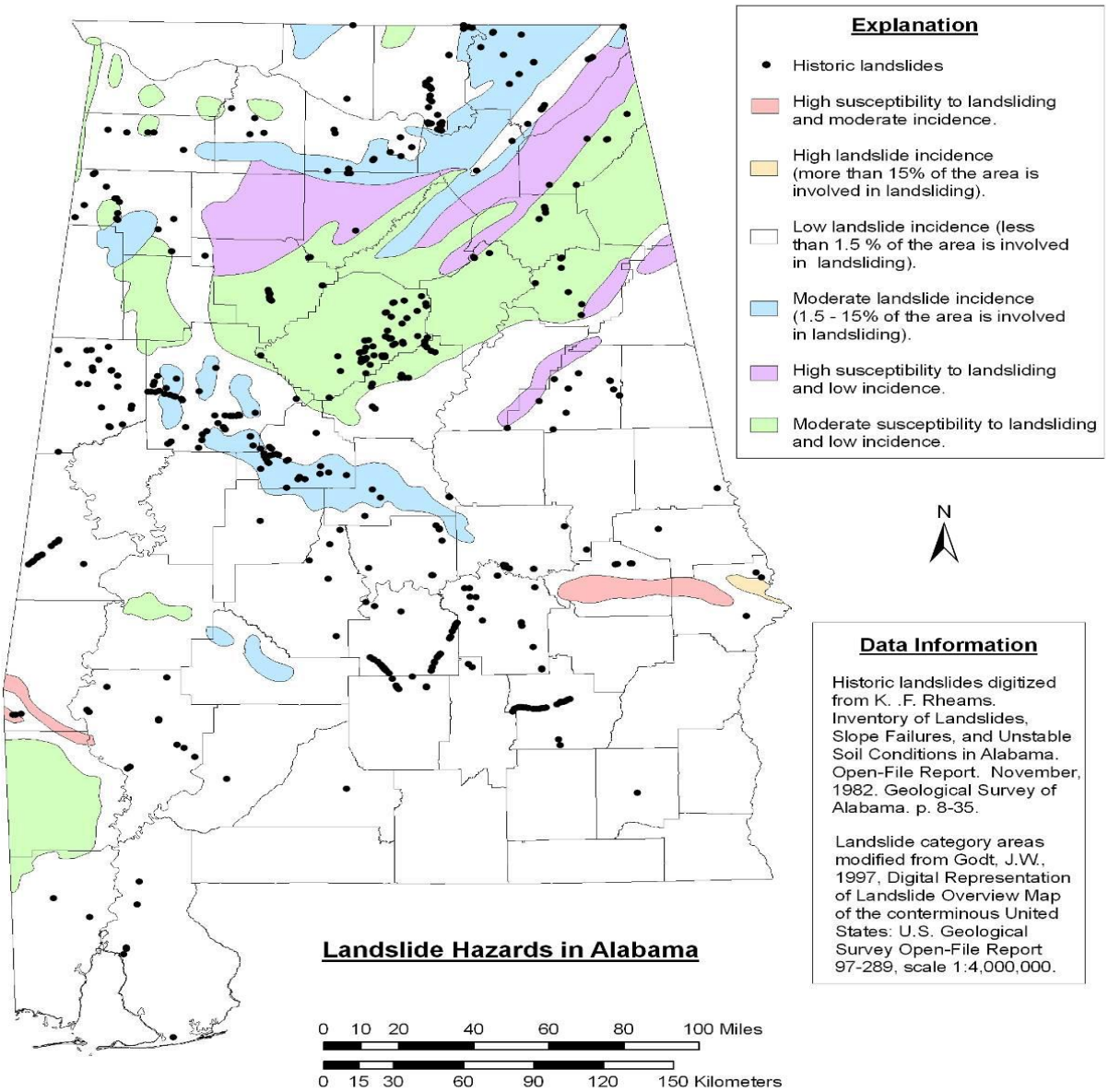


Figure 5.2.11-2
Statewide Landslide Incidence and Susceptibility
Sources: Geological Survey of Alabama

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5.2.12 Sinkholes and Land Subsidence

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Sinkholes and Land Subsidence

History: Low, 2
Frequency of Occurrence: Very Rare (5)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 41

Maximum Probable Extent (Magnitude/Strength):
Public: Noticeable (6)
Infrastructure: Low (5)
Environment: Very Low (6)

Jurisdictions	Extent of the Natural Hazard – Sinkholes and Land Subsidence
All	Negligible impact, movement of land beneath less than one acre affecting multiple homes, businesses, roadways.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Negligible: The entire planning area is identified as a "No Karst" area per **Figure 5.2.12-2**, Karst Areas in State Most Likely to Experience Sinkholes and Subsidence.
Overall Significance Ranking: Low

Nature of the Hazard in Alabama

Source In-part: Alabama State Hazard Mitigation Plan

There are three types of potential problems associated with the existence or formation of sinkholes: subsidence, flooding, and pollution. Subsidence is the lowering or collapse of a land surface, due to loss of subsurface support. It can be caused by a variety of natural or human-induced activities. Natural subsidence occurs when the ground collapses into underground cavities produced by the solution of limestone or other soluble materials by groundwater. Human-induced subsidence is caused principally by groundwater withdrawal, drainage of organic soils, and underground mining. In the United States, these activities have caused more than 17,000 square miles of surface subsidence, with groundwater withdrawal (10,000 square miles of subsidence) being the primary culprit. In addition, approximately 18% of the United States land surface is underlain by cavernous limestone, gypsum, salt, or marble, making the surface of these areas susceptible to collapse into sinkholes. Subsidence commonly involves a gradual sinking, but it also refers to an instantaneous or catastrophic collapse. In Alabama, sinkholes are common where the rock below the land surface is limestone, dolomite, or salt that can naturally be dissolved by ground water. As the rock dissolves, cavities and caverns develop underground. Sinkholes may be dramatic if the land stays intact for some time until the underground spaces just get too big and a sudden collapse of the land surface occurs.

Sinkholes and subsidence are also common in those areas of the state underlain by old abandoned coal and iron mines. Pillars left for roof support in the mines generally deteriorate over time and eventually collapse, removing roof support. This is particularly a problem where mines underlie more recently developed residential areas and roads.

Areas in Alabama characterized by the presence of subsurface cavities, sinkholes, and underground drainage are called "karst terrains." It is these karst areas that are most susceptible to sinkhole development and subsidence. Periods of drought, excessive rainfall, well pumpage, and construction activities increase the potential for sinkhole formation in these areas. **Figure 5.2.12-2**, at the end of this section, illustrates the areas with outcrops of carbonate rocks susceptible to subsidence and the areas of active sinkholes and subsidence.

The change in the local environment affecting the soil mass causing subsidence and sinkholes collapse is called "triggering mechanism". Water is the main factor affecting the local environment that causes subsidence. The main triggering mechanisms for subsidence are:

- Water level decline (**Figure 5.2.12-1**),
- Changes in groundwater flow,
- Increased loading, and
- Deterioration (abandoned coalmines).

Water level decline can happen naturally or be human induced. Main factors in water decline are:

- Pumping of water from wells,
- Localized drainage from construction,
- Dewatering, and
- Drought

Figure 5.2.12-1 shows declining and resulting ground collapse.

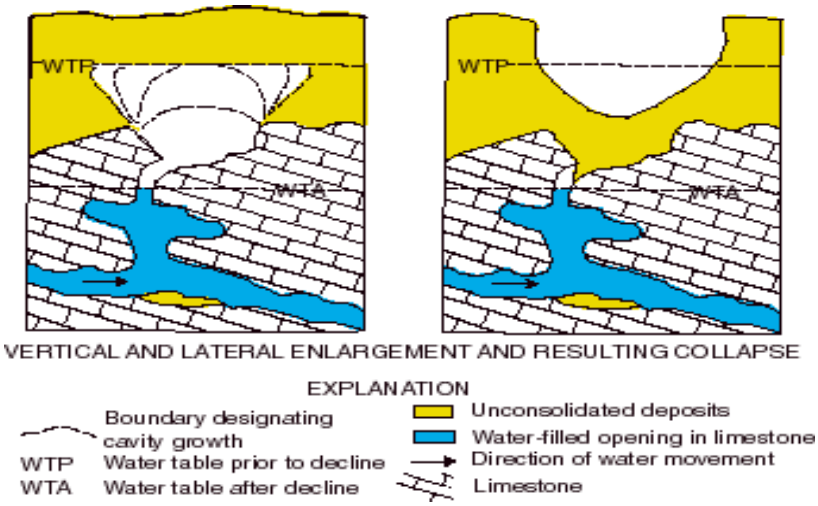

Figure 5.2.12-1
Water Level Decline
Source: Alabama Highway Department

Changes in the groundwater flow include an increase in the velocity of groundwater movement, increase in the frequency of water table fluctuations, and increased or reduced recharge.

Increased loading causes pressure in the soil leading to failure of underground cavities and spaces. Vibrations caused by an earthquake, vibrating machinery and blasting, can cause structural collapse followed by surface settlement.

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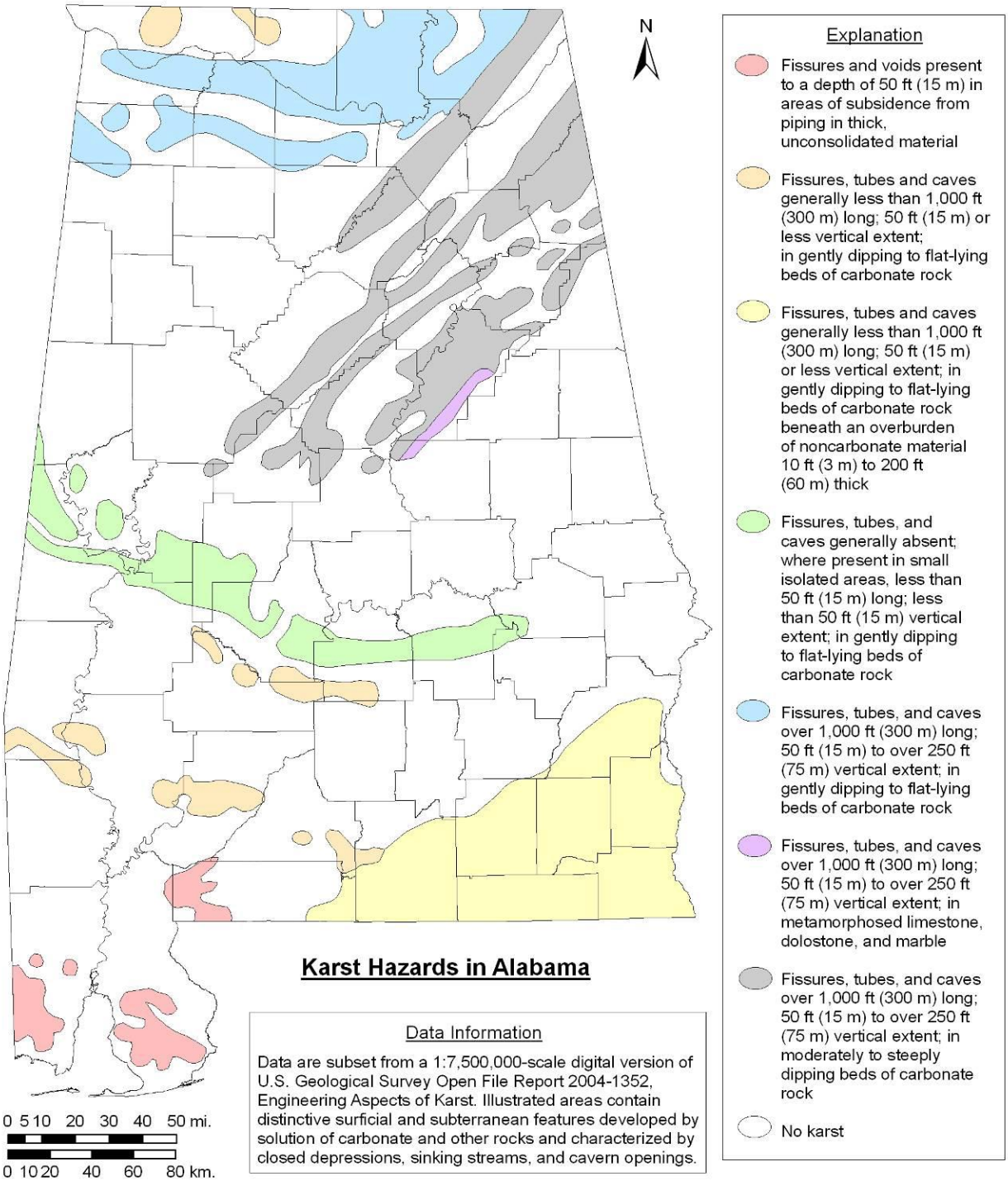

Figure 5.2.12-2
Karst Areas in State Most Likely to Experience Sinkholes and Subsidence
Source: Geological Survey of Alabama

Sinkhole and Land Subsidence History in Alabama
Source In-part: Alabama State Hazard Mitigation Plan

Sinkholes are becoming an increasing problem in Alabama as the population encroaches on scenic rural valleys underlain by limestone in the Alabama Valley and Ridge province, and as large metropolitan areas in the Appalachian Plateaus of north Alabama continue to expand. Within recent years, there have been many sinkholes reported throughout the state. Recent periods of drought have aggravated the problem. Some of the more recent sinkholes affecting buildings and infrastructure have occurred in or near Sylacauga, Opelika, Valley Head, Huntsville, Auburn, Phoenix City, Montevallo, Alabaster, Gadsden, Birmingham, Tuskegee, and Trussville.

Because subsidence tends to be a more sporadic hazard, and because it poses a greater hazard to property than to life, it does not receive much attention from government agencies or the public. Other natural hazards, such as tornadoes, floods and severe storms receive much more attention because of their more widespread and severe impacts. However, subsidence will continue to be a hazard that a segment of the Elmore County (and Alabama) population will have to deal with in the future.

Probably the most effective way to mitigate subsidence hazards is through community education and awareness. Local officials in subsidence-prone areas need to be aware of their community's potential vulnerability to subsidence, and that awareness needs to be communicated to the public. Local officials should conduct thorough investigations of potential subsidence sites as part of their community's hazard analysis process and can then use that information to make informed community development decisions so as to avoid, to the extent possible, areas potentially vulnerable to subsidence.

Figure 5.2.12-3 Downtown Wetumpka Sinkhole
Elmore County, Alabama:
Wetumpka, AL March 29, 2009

Source: Elmore County EMA

Source: WSFA Online News

Figure 5.2.12-4 Statewide Damages and Incidents as reported via EMITS, 03/29/2009

President Declares Major Disaster For Alabama
Tue, 28 Apr 2009 14:21:53 -0500

WASHINGTON, D.C. -- The head of the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) today announced that federal disaster aid has been made available for the State of Alabama. The assistance will supplement state and local recovery efforts in the area struck by severe storms, flooding, tornadoes, and straight-line winds during the period of March 25 to April 3, 2009.

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5.2.13 Earthquakes

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

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Elmore County Vulnerability Analysis & Threat/Hazard Profile

Hazard: Earthquakes

History: Low, 2
Frequency of Occurrence: Infrequently (3)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Noticeable (6)
Infrastructure: Low (5)
Environment: Very Low (6)

Jurisdictions	Extent of the Natural Hazard – Earthquakes
All	Magnitude 3.0 - 5.0 on Richter Scale. Potentially negligible/slight damage to property and structures.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to earthquakes.
Overall Significance Ranking: Low

An earthquake is "…a sudden motion or trembling caused by an abrupt release of accumulated strain in the tectonic plates that comprise the earth's crust." These rigid plates, known as tectonic plates, are some 50 to 60 miles in thickness and move slowly and continuously over the earth's interior. The plates meet along their edges, where they move away, past or under each other at rates varying from less than a fraction of an inch up to five inches per year. While this sounds small, at a rate of two inches per year, a distance of 30 miles would be covered in approximately one million years (FEMA, 1997).

The tectonic plates continually bump, slide, catch, and hold as they move past each other which causes stress to accumulate along faults. When this stress exceeds the elastic limit of the rock, an earthquake occurs, immediately causing sudden ground motion and seismic activity. Secondary hazards may also occur, such as surface faulting, sinkholes, and landslides. While the majority of earthquakes occur near the edges of the tectonic plates, earthquakes may also occur at the interior of plates.

The vibration or shaking of the ground during an earthquake is described by ground motion. The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth's interior, also known as seismic waves, and along the earth's surface, known as surface waves. The following are the two kinds of seismic waves:

- P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back-and-forth oscillation along the direction of travel (vertical motion), with particle motion in the same direction as wave travel. They move through the earth at approximately 15,000 mph.
- S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side-to-side (horizontal motion) due to particle motion at right angles to the direction of wave travel. Unreinforced buildings are more easily damaged by S waves.

There are also two kinds of surface waves, Raleigh waves and Love waves. These waves travel more slowly and typically are significantly less damaging than seismic waves.

Seismic activity is commonly described in terms of magnitude and intensity. Magnitude (M) describes the total energy released and intensity (I) subjectively describes the effects at a particular location. Although an earthquake has only one magnitude, its intensity varies by location. Magnitude is the measure of the amplitude of the seismic wave and is expressed by the Richter scale. The Richter scale is a logarithmic measurement, where an increase in the scale by one whole number represents a tenfold increase in measured amplitude of the earthquake. Intensity is a measure of the strength of the shock at a particular location and is expressed by the Modified Mercalli Intensity (MMI) scale.

Another way of expressing an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. If an object is dropped while standing on the surface of the earth (ignoring wind resistance), it will fall towards earth and accelerate faster and faster until reaching terminal velocity. The acceleration due to gravity is often called "g" and is equal to 9.8 meters per second squared (980 cm/sec/sec). This means that every second something falls towards earth, its velocity increases by 9.8 meters per second. Peak ground acceleration (PGA) measures the rate of change of motion relative to the rate of acceleration due to gravity. For example, acceleration of the ground surface of 244 cm/sec/sec equals a PGA of 25.0 percent.

It is possible to approximate the relationship between PGA, the Richter scale, and the MMI, as shown in **Table 5.2.13-1**. The relationships are, at best, approximate, and also depend upon such specifics as the distance from the epicenter and depth of the epicenter. An earthquake with 10.0 percent PGA would roughly correspond to an MMI intensity of V or VI, described as being felt by everyone, overturning unstable objects, or moving heavy furniture.

Table 5.2.13-1
Earthquake PGA, Magnitude and Intensity Comparison

PGA (%g)	Magnitude (Richter)	Intensity (MMI)	Description (MMI)
<0.17	1.0 - 3.0	I	I. Not felt except by a very few under especially favorable conditions.
0.17 - 1.4	3.0 - 3.9	II - III	II. Felt only by a few persons at rest, especially on upper floors of buildings. III. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
1.4 - 9.2	4.0 - 4.9	IV - V	IV. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes,

			windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rock noticeably. V. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
9.2 - 34	5.0 - 5.9	VI - VII	VI. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. VII. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
34 - 124	6.0 - 6.9	VII - IX	VIII. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory

			stacks, columns, monuments, walls. Heavy furniture overturned. IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
>124	7.0 and higher	VIII or higher	X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. XI. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly. XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Source: Wald, Quitoriano, Heaton, and Kanamori, 1999

Earthquake-related ground failure, due to liquefaction, is a common potential hazard from strong earthquakes in the central and eastern United States. Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of the empty spaces between granules to collapse. Pore-water pressure may also increase sufficiently to cause the soil to behave like a fluid (rather than a soil) for a brief period and causing deformations. Liquefaction causes lateral spreads (horizontal movement commonly 10-15 feet, but up to 100 feet), flow failures (massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (soil deformations causing structures to settle or tip). Sands blows were common following major New Madrid earthquakes in the central United States.

Seismic Hazard

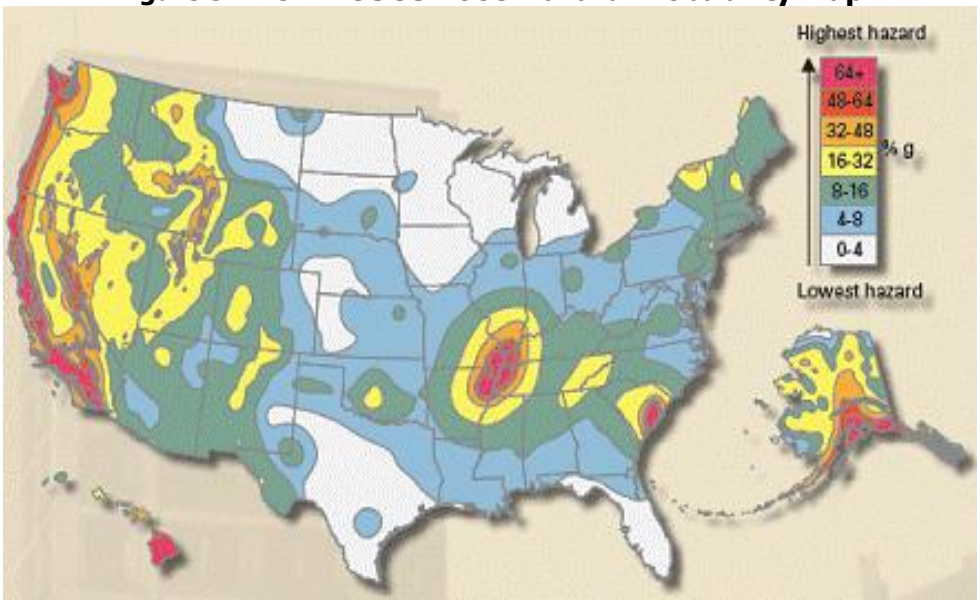
Source: Geological Survey of Alabama

It is generally accepted that earthquakes can be expected in the future as frequently as in the recent past.

Given this assumption, and interpretations of research collected over the past 15 years, USGS estimates that for the next 50-year period:

- The probability of a repeat of the 1811-1812 earthquakes is 7-10%
- The probability of a magnitude 6.0 or greater is 25-40%

Figure 5.2.13-1 USGS 2008 Hazard Probability Map



The map above is a 2008 USGS hazard probability map. Colors show levels of horizontal shaking that have a 2-in-100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of g (gravitational force).

Source: Geological Survey of Alabama

Nature of the Hazard in Alabama

Source: Alabama State Hazard Mitigation Plan

Earthquakes are fairly common in the eastern half of the United States and are not uncommon in Alabama. Three zones of frequent earthquake activity affecting Alabama are the New Madrid Seismic Zone (NMSZ), the Southern Appalachian Seismic Zone (SASZ) (also called the Eastern Tennessee Seismic Zone), and the South Carolina Seismic Zone (SCSZ). The NMSZ lies within the central Mississippi Valley, extending from northeast Arkansas through southeast Missouri, western Tennessee, and western Kentucky, to southern Illinois. The SASZ extends from near Roanoke in southwestern Virginia southwestward to central Alabama. Considered a zone of moderate risk, the SASZ includes the Appalachian Mountains. Most of the earthquakes felt in Alabama are

centered in the SASZ. The hypocenters of earthquakes in this zone are on deeply buried faults. The SCSZ is centered near Charleston, South Carolina, and encompasses nearly the entire state. These three zones can be easily seen in **Figure 5.2.13-2**.

To help understand the hazard and risk associated with earthquakes in Alabama, GSA, in conjunction with AEMA, has developed basement fault and liquefaction susceptibility maps for the state. The basement fault mapping project was an effort to approximate locations of buried faults, some of which are interpreted as active based on earthquake epicenters in the vicinity of these faults (**Figure 5.2.13-4**). The liquefaction mapping project was conducted to help identify areas that are most at risk to liquefaction during a moderate to strong magnitude earthquake. Liquefaction is a phenomenon that can occur during an earthquake when seismic waves pass through saturated unconsolidated material causing sediment particles to move in relation to each other. This can be particularly damaging to structures built on thick sediments, especially in areas where the sediments are saturated with water such as in floodplains (**Figure 5.2.13-5**).

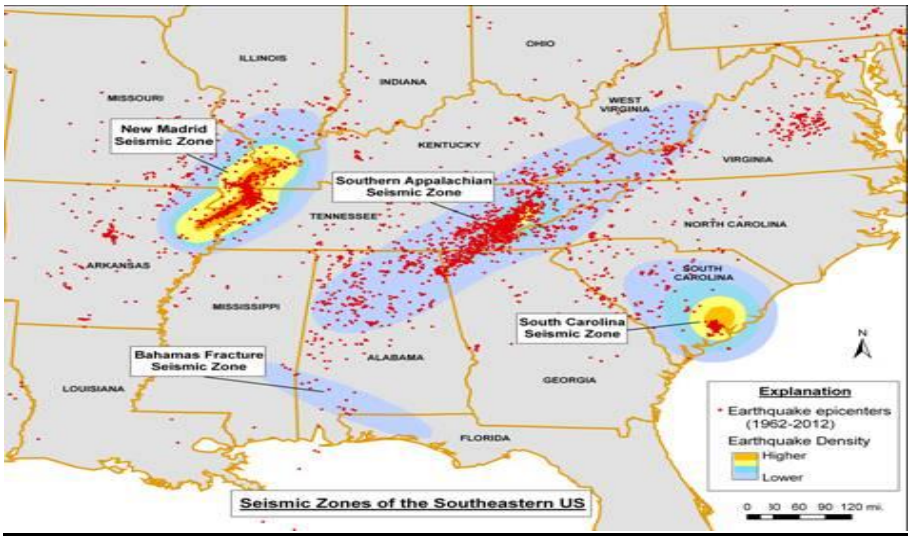


Figure 5.2.13-2
Seismic Zones of the Southeastern United States
Source: Geological Survey of Alabama, 2010

The New Madrid Seismic Zone

Historical Large Magnitude Events
Source: Geological Survey of Alabama

The New Madrid Seismic Zone (NMSZ) lies within the central Mississippi Valley and extends through northeast Arkansas, southeast Missouri, and western Tennessee. Historically, this area has been the site of some of the largest earthquakes in North America.

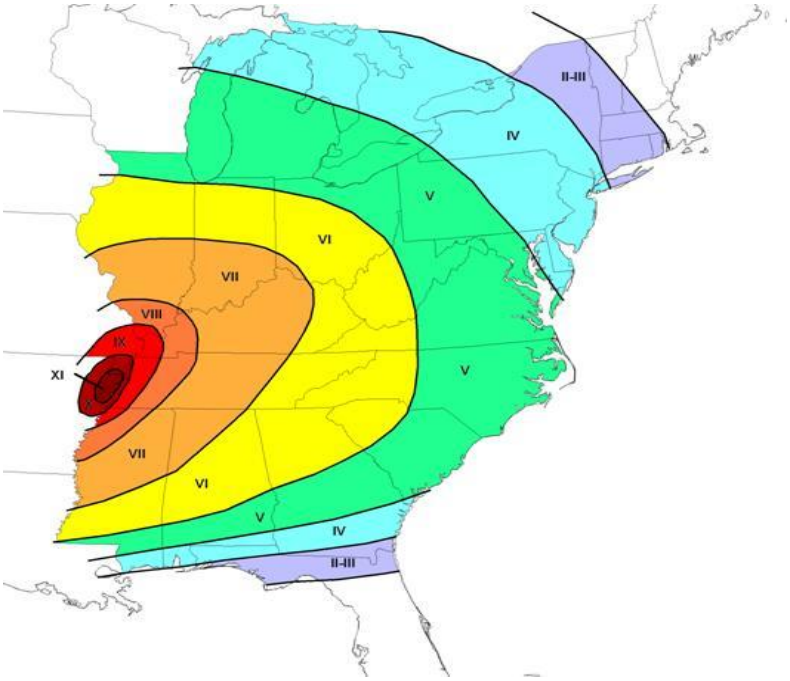
In the winter of 1811-1812, there was a series of strong magnitude earthquakes in the central U.S. The last major earthquake in this area was on February 7, 1812, and had an estimated

magnitude of ~8.0. Shaking during the 1812 event was felt over thousands of square miles (right), ringing bells in Charleston, rattling furniture in the White House, and causing the Mississippi River to run backwards.

An isoseismic map (following) shows shaking intensities of the 1812 earthquake in the NMSZ. The roman numerals represent shaking intensities on the Modified Mercalli Intensity scale. From historical records such as journal entries and newspaper articles, geologists can estimate the strength of the shaking based on descriptions of observations during the shaking.

Shaking was strong enough to force sand to erupt at the surface, trigger landslides, cause large areas to be uplifted or dropped down in elevation creating sunk lands such as Reelfoot Lake that later filled with water.

Figure 5.2.13-3 Modified Mercalli Intensity Scale



Alabama Earthquake History
Source: United States Geological Service, Earthquake Hazards Program, Alabama

The known seismic history of Alabama spans about 100 years for local earthquakes. For shocks outside the State borders that caused damaged to cities in Alabama, the history can be traced to 1811 - 1812, when three great (estimated magnitude 8 or greater on the Richter scale) earthquakes centered in Missouri may have reached intensity VII in the northern and/or central

sections. These gigantic earthquakes were comparable to the San Francisco shock in 1906 and were felt over 2 million square miles, more than half of the total area of the United States.

Historical records indicate the first earthquake of consequence in Alabama shook residents of Sumter and Marengo Counties, located in the western part of the State, on February 4, 1886. A similar shock occurred nine days later, on February 13. Both were reported felt at communities along the Tombigee River, but caused no damage. Only six months later, the destructive Charleston, South Carolina, shock that was felt in cities all over the Eastern United States occurred. This shock, located about 400 miles east of Alabama's border, caused minor damage in the northeastern part of the State.

In 1916 on October 18, a strong earthquake occurred on an unnamed fault east of Birmingham. It was apparently most strong at Easonville. Near the epicenter, chimneys were knocked down, windows broken, and frame buildings "badly shaken." It was noted by residents in seven States and covered 100,000 square miles. Another tremor that damaged the Birmingham area occurred on April 23, 1957. Centered near the Tennessee River below Guntersville Dam, the earthquake shook residents in southern Tennessee, western Georgia, and most of northern and central Alabama. Earthquake records for that year state: "Felt by, awakened, and alarmed many. Minor damage to several chimneys; one report of cement steps cracked in two; and several small cracks in walls. Table-top items tumbled to the floor."

A shock centered in the Huntsville area on August 12, 1959. Though felt over a small area of southern Tennessee and northern Alabama, it shook bricks from chimneys at Hazel Green; damaged one chimney and a newly constructed concrete block building at Meridianville; shook violently the buildings at New Sharon, knocking canned goods from shelves and sending frightened residents fleeing from their homes; and cracked plaster and knocked groceries from shelves at Huntsville.

Additional earthquakes (intensity V category) listed for this State that were minor and caused no damage centered near Rosemary, western Alabama, in June 1917; in the Scottsboro area northeast of Huntsville in June 1927; at Cullman, northern Alabama, in May 1931; and in the Anniston area in May 1939.

A strong earthquake in southern Illinois in November 1968 caused intensity V effects in several localities in northern Alabama. The shock was the strongest in Illinois since 1895, and was felt over a half-million square miles in 23 States.

[The above history was abridged from *Earthquake Information Bulletin, Volume 2, Number 1, January-February 1970*.]

1975 Aug 29 04:22 4.4M Intensity VI
Palmerdale, Alabama (33.659N 86.5880W)
The earthquake cracked a sheetrock ceiling and shifted lamps on tables at Palmerdale, north of Birmingham. It caused slight damage at Watson, where furniture was displaced slightly. Also felt in southern Tennessee.

1989 Aug 20 00:03 3.9M Intensity VI
Near Littleville, Alabama (34.736N 87.6450W)
A Colbert County official reported that, south of Florence between Littleville and Russellville, a basement wall collapsed beneath a house. Only slight damage was reported north of the epicenter at Florence, where windows were cracked and hairline cracks formed in plaster. Also felt in Lauderdale, Lawrence, and Morgan Counties in northwest Alabama and Lawrence County in south-central Tennessee.

1997 Oct 24 08:35 4.9M Intensity VI
Near Brewton, Alabama (31.118N 87.3390W)
Felt (VI) at Brewton, Canoe and Lambeth; (V) at Atmore, Flomaton, Frisco City and Huxford; (IV) at Perdido and Robinsonville; (III) at Butler, Demopolis, Goodway, Mobile and Uriah. Felt (V) at Century; (IV) at McDavid, Pensacola and Walnut Hill; (III) at Milton, Florida. Felt (IV) at Leakesville, Mississippi. Also felt at Megargel; Elgin AFB, Florida; Biloxi and Gulfport, Mississippi.

1999 Jan 18 07:00 4.0M
Alabama (33.405N 87.2550W)
Mine collapse.

[The above summaries were abridged from Seismicity of the United States, 1568-1989 (Revised), by Carl W. Stover and Jerry L. Coffman, U.S. Geological Survey Professional Paper 1527, United States Government Printing Office, Washington: 1993 and from *Preliminary Determinations of Epicenters Monthly Listing.]*
Source: Geological Survey of Alabama

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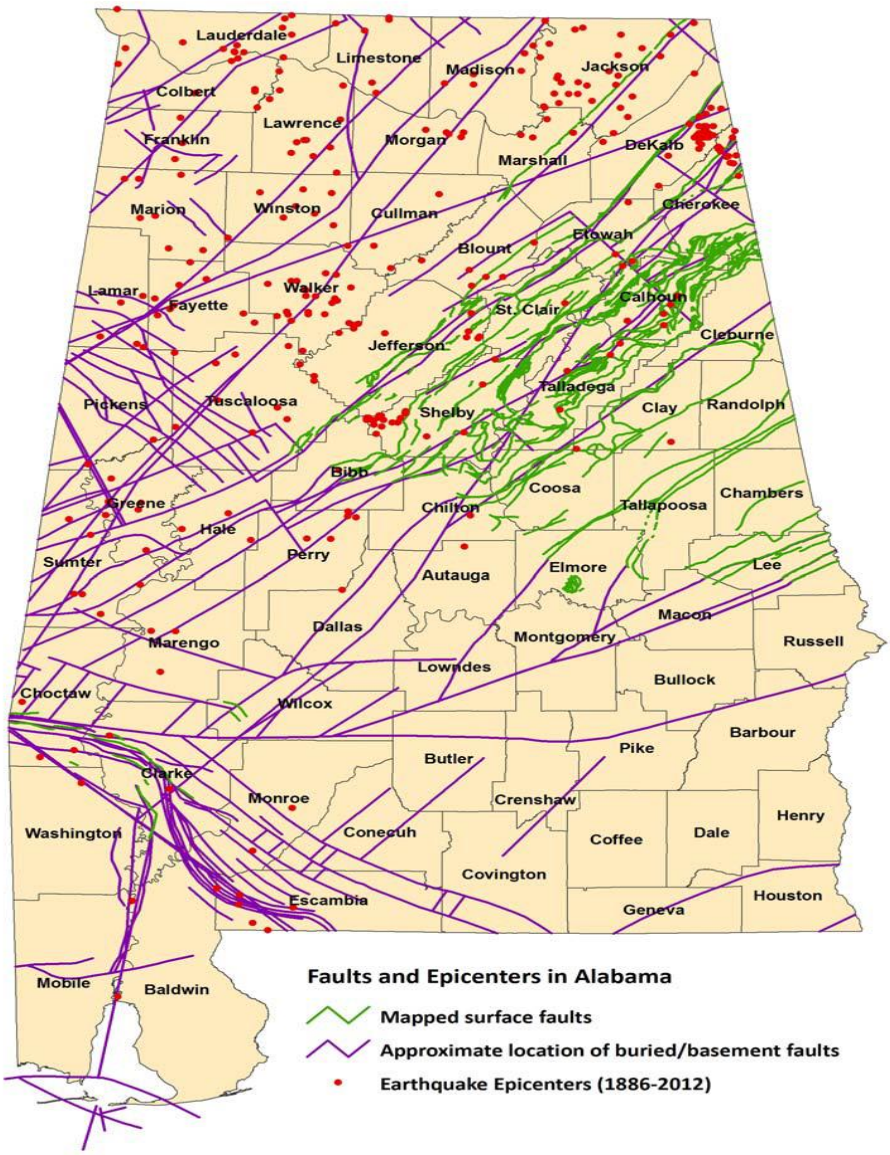


Figure 5.2.13-4
Historical Earthquake Epicenters, Mapped Surface Faults, and Approximate Locations of Buried Faults in the State

Surface maps are based on the 1:250,000-scale digital geologic map of Alabama (GSA, 2006). Buried faults are based on the faults approximated in the basement fault mapping project (GSA, 2008). Epicenters are based on historical data from seismic records (2012).

Source: Geological Survey of Alabama, 2010 and Alabama State Hazard Mitigation Plan

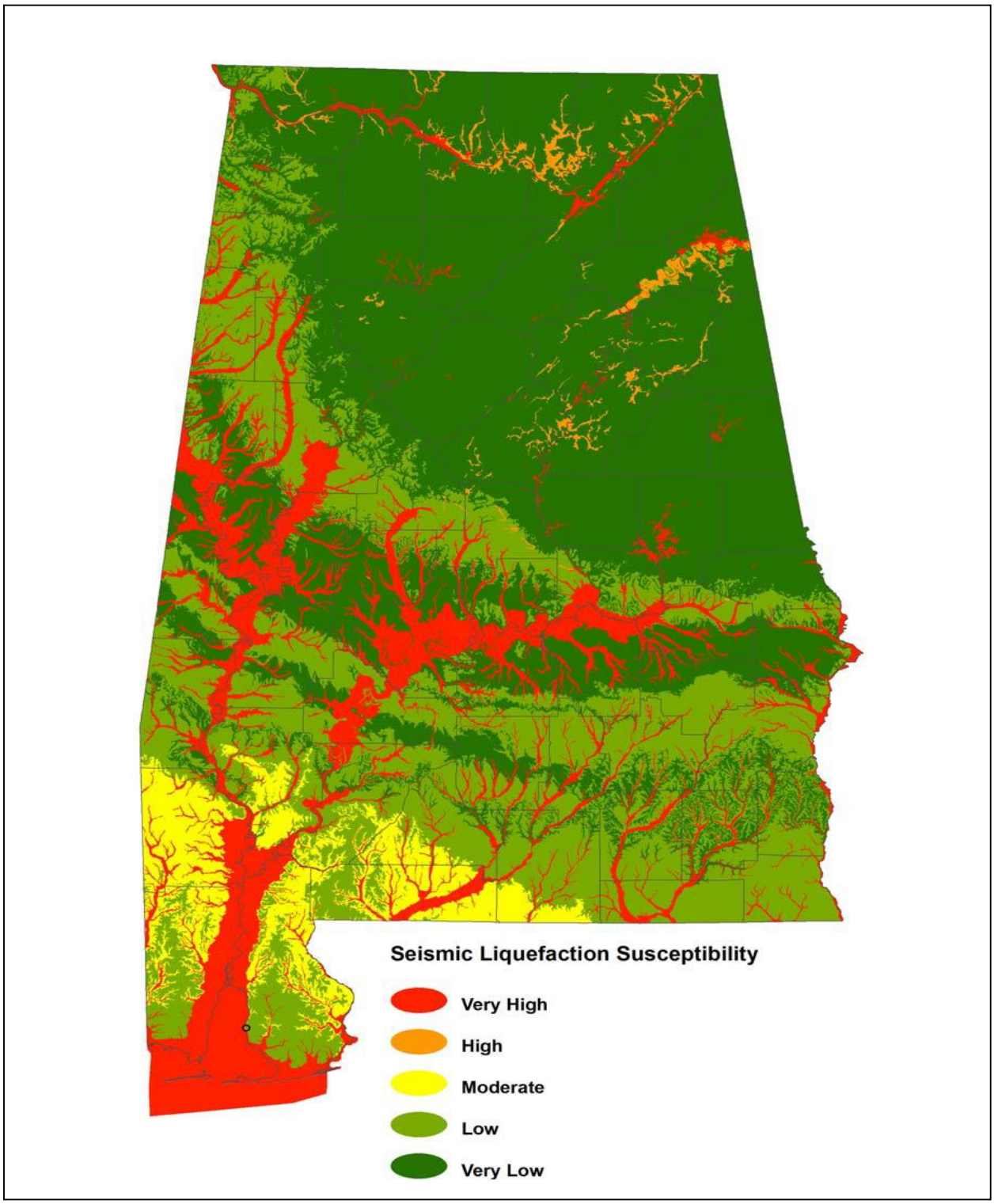


Figure 5.2.13-5 Susceptibility to Liquefaction During a Moderate to Strong Magnitude Earthquake Source: Geological Survey of Alabama, 2006

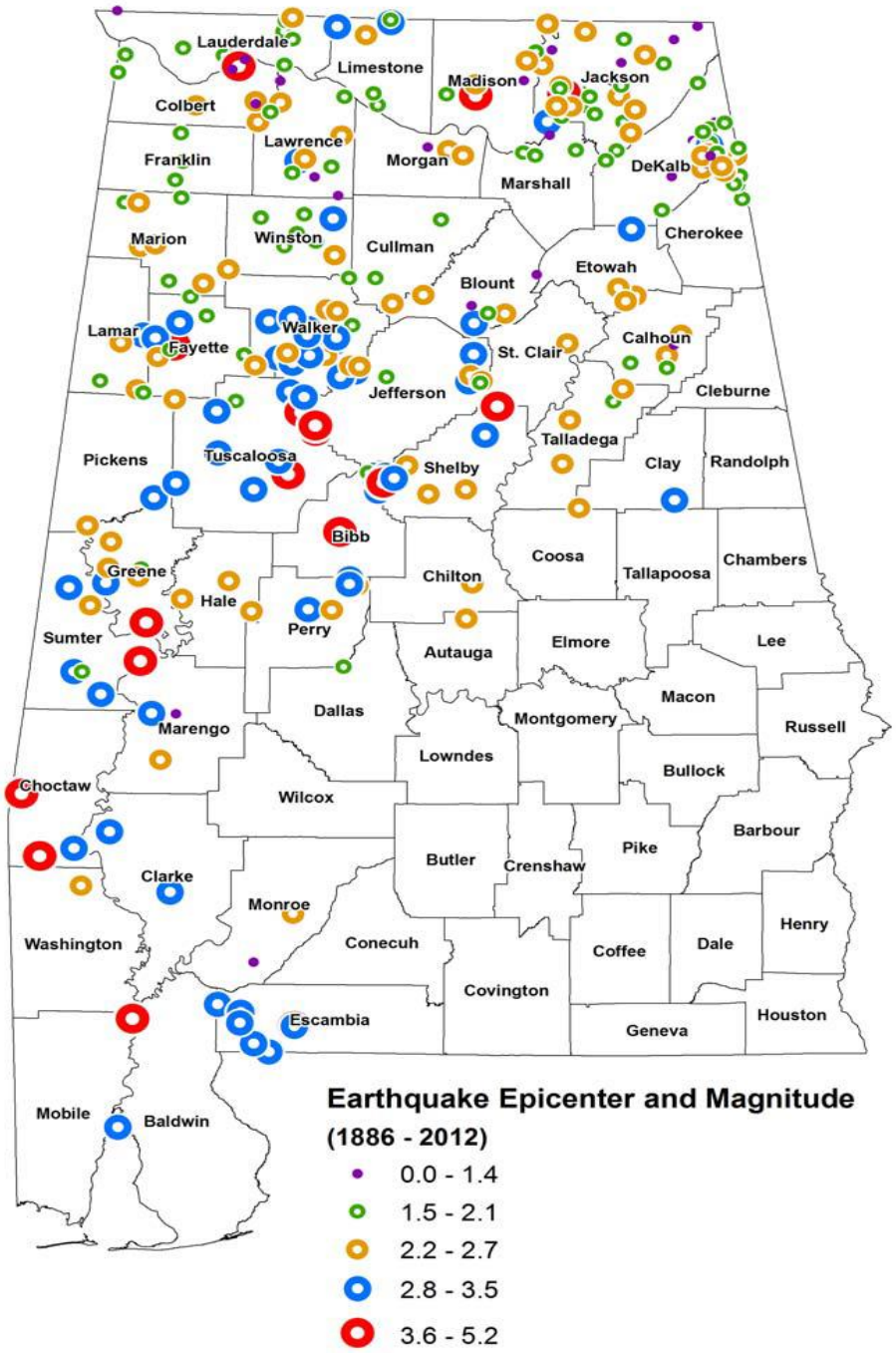
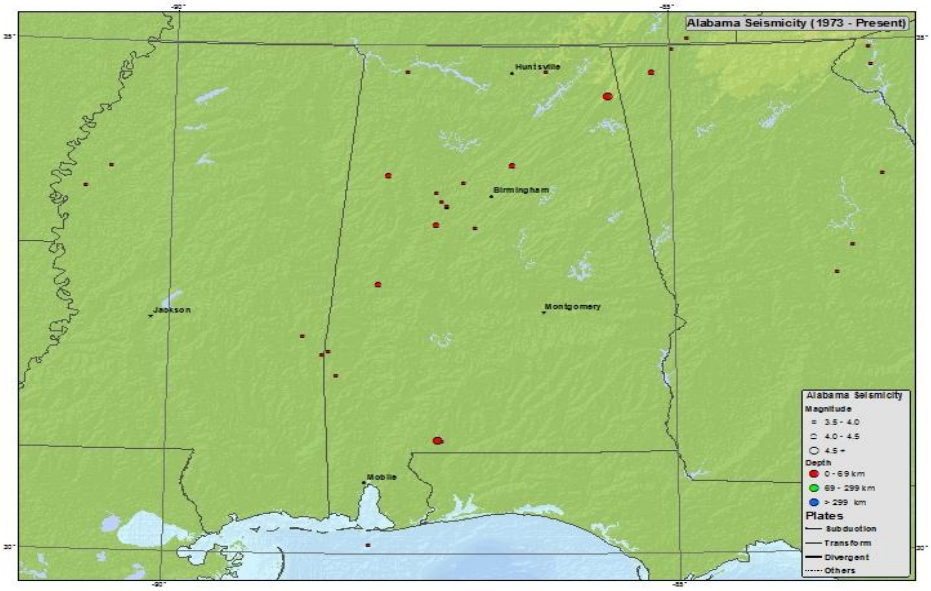


Figure 5.2.13-6
Historical Earthquakes of Alabama (1886-2012)
Source: Geological Survey of Alabama, 2012
Source: USGS Earthquake Hazards Program

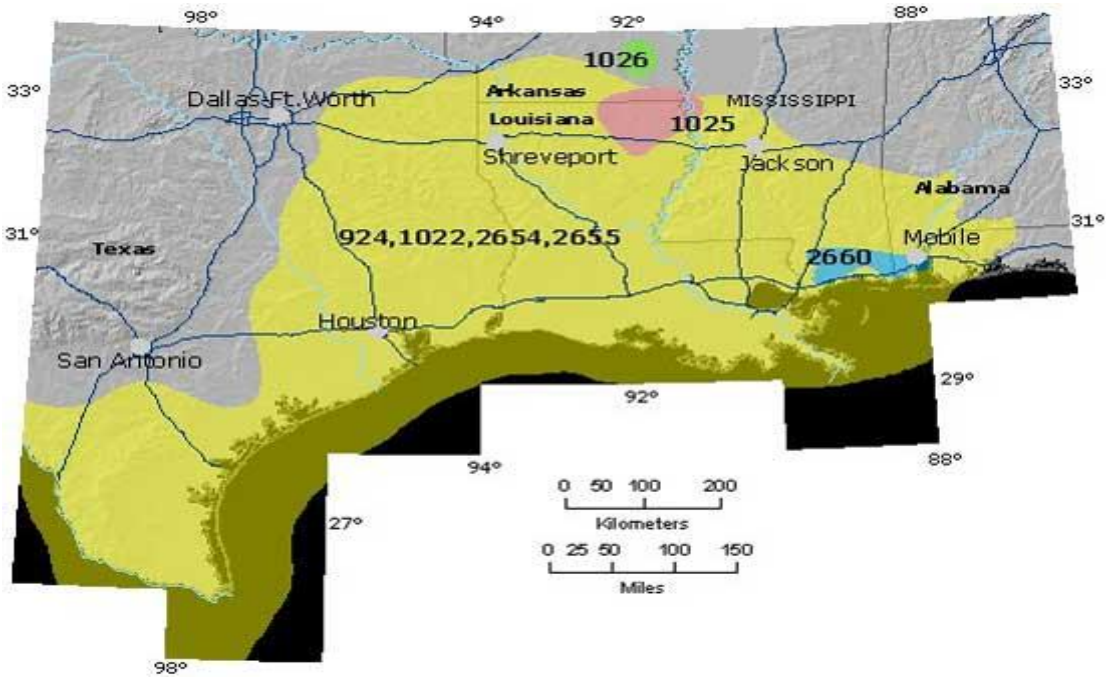
Alabama
Figure 5.2.13-7 Seismicity Map - 1973 to March 2012



Source: USGS Earthquake Hazards Program

Figure 5.2.13-8 Gulf of Mexico Coastal Region
Areas of Quaternary deformation and faulting

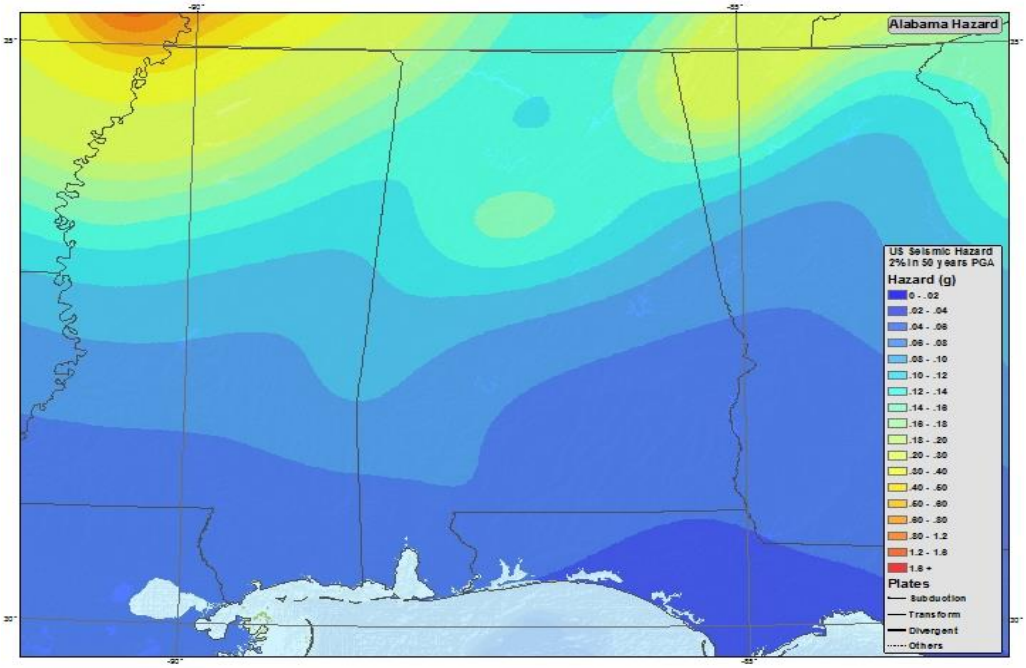
Source: USGS



Source: USGS Earthquake Hazards Program

Alabama Hazard

Figure 5.2.13-9 U.S. Seismic Hazard Map 2% in 50 Years PGA



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Source: USGS Earthquake Hazards Program

Historic Earthquakes

Irondale, Jefferson County, Alabama
1916 10 18 22:04 UTC
Magnitude 5.10
Intensity VII
Largest Earthquake in Alabama

On the basis of the number of chimneys destroyed, this earthquake was more severe in Irondale than in any other town between Easonville and Birmingham. At Irondale, about 5 kilometers north of Birmingham, 14 chimneys in a two-block area were partly destroyed, and six chimneys on a brick store were leveled almost to the roof. Many other chimneys either were leveled to the roofs or were cracked so badly that they had to be rebuilt. At Pell City, a few bricks were dislocated from one of the courthouse chimneys, and near Easonville, a few chimneys were damaged lightly. Poorly built chimneys on the eastern edge of Birmingham were damaged heavily.

Figure 5.2.13-10

Alabama

A careful study of the Red Gap fault, which extends from near Gate City to beyond Irondale, did not reveal direct evidence of recent earth movement. The most significant geologic result was the effect of the earthquake on underground water, particularly in Irondale. Five wells in a one-block area of Irondale went dry immediately after the shock, and the water level in many others was lowered. At Pell City, the shock lowered the water level in one well about 50 centimeters. Several small aftershocks occurred through October 28. Also felt in Georgia, Indiana, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

Abridged from Seismicity of the United States, 1568-1989 (Revised), by Carl W. Stover and Jerry L. Coffman, U.S. Geological Survey Professional Paper 1527, United States Government Printing Office, Washington: 1993.

Figure 5.2.13-11

Isoseismal Map, Irondale, Jefferson County, Alabama
Isoseismals are based on intensity estimates from data.

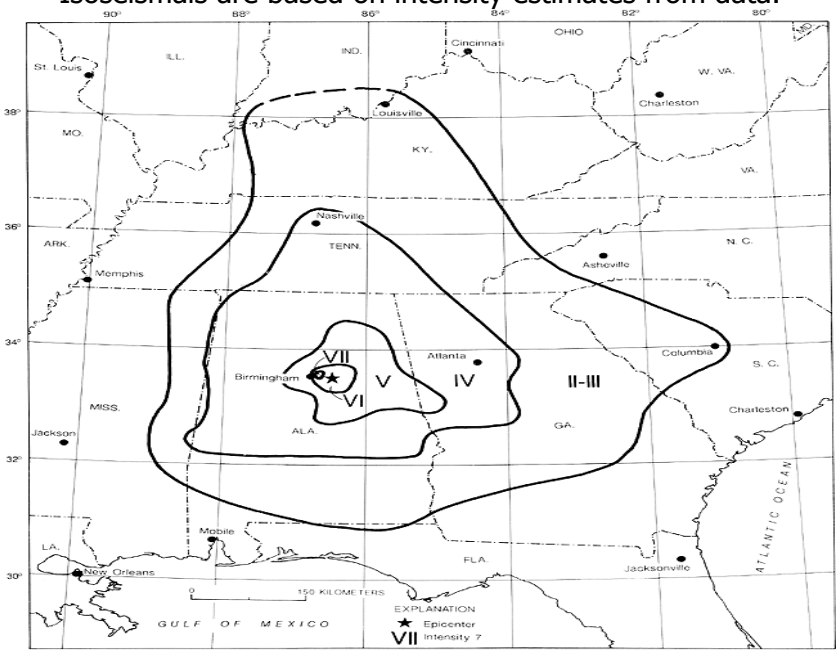
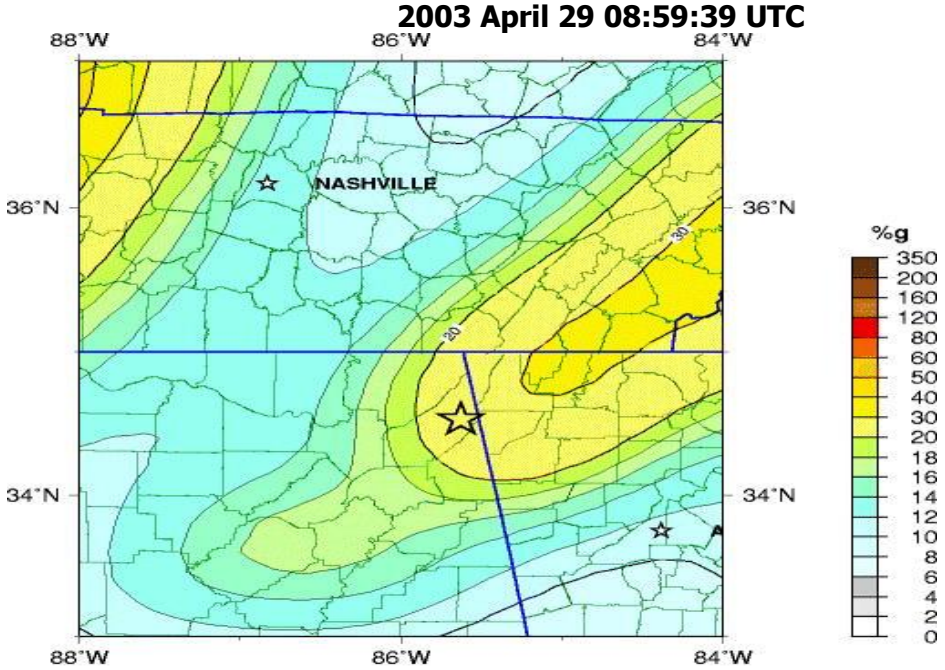


Figure 5.2.13-12 Magnitude 4.6 ALABAMA
2003 April 29 08:59:39 UTC



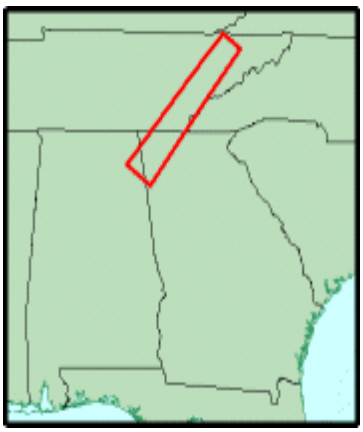
Peak Acceleration (%g) with 2% Probability of Exceedance in 50 Years
site: NEHRP B-C boundary
National Seismic Hazard Mapping Project

Historic Earthquakes: Tectonic Summary

Magnitude 4.6 ALABAMA
2003 April 29 08:59:39 UTC

TECTONIC SETTING AND SEISMICITY CONTEXT: EASTERN TENNESSEE SEISMIC ZONE

Figure 5.2.13-13



EARTHQUAKES

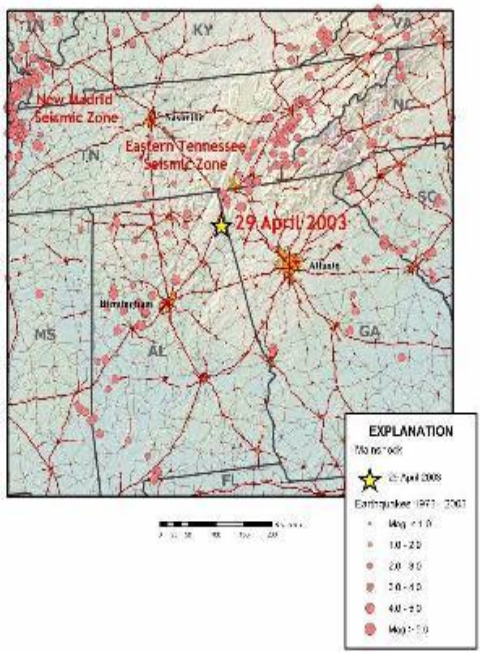
The Eastern Tennessee seismic zone, which extends from southwest Virginia to northeast Alabama, is one of the most active earthquake areas in the Southeast. Although the zone has not had a large earthquake in historic times, a few earthquakes have caused slight damage. The largest recorded earthquake in this seismic zone was a magnitude 4.6 that occurred in 1973 near Knoxville. Sensitive seismographs have recorded hundreds of earthquakes too small to be felt in this seismic zone. Small, non-damaging, felt earthquakes occur about once a year.

Earthquakes in the central and eastern U.S., although less frequent, are typically felt over a much broader region than the western U.S. East of the Rockies, an earthquake can be felt in an area as much as ten times greater than a similar magnitude earthquake on the west coast. For example, a magnitude 4.0 eastern U.S. earthquake typically can be felt at many locations as far as 100 km (60 mi) from where it occurred, and it might or might not cause damage near its source. A magnitude 5.5 eastern US earthquake usually can be felt as far as 500 km (300 mi) in most directions and can cause damage out to 40 km (25 mi).

FAULTS

At plate boundaries, earthquakes can commonly be related to specific faults or fault systems. In contrast, in the eastern Tennessee seismic zone the relation between faults and earthquakes is more enigmatic. The Eastern U.S. is far from the plate boundaries, the nearest of which are in the center of the Atlantic Ocean and in the Caribbean Sea. No active faults are known to reach the surface in the region, although the area is laced with ancient faults that developed as the Appalachian Mountains formed several hundred million years ago. The larger faults, particularly those that have been exposed at the Earth's surface by erosion, are likely to have been mapped by geologists. Unknown but probably numerous smaller or more deeply buried faults remain undetected. Even those faults that are mapped at the surface are poorly located at earthquake depths. Accordingly, few, if any, earthquakes in the eastern Tennessee seismic zone can be linked to known faults, and it is difficult to determine if a specific fault could still slip and cause an earthquake. As in most other areas east of the Rockies, the best guide to earthquake hazards in the seismic zone is the earthquakes themselves.

Figure 5.2.13-14



PAST EARTHQUAKES IN ALABAMA

The documented history of small earthquakes in Alabama spans about 100 years and includes about half-a-dozen small –to moderate –sized damaging events. The largest recent earthquake recorded in the State was a magnitude 4.9, which occurred south of the Eastern Tennessee seismic zone near Atmore, Alabama, on October 24, 1997. For an in-depth summary of historical earthquake activity in the State, see the Earthquake History of Alabama.

SEISMIC MONITORING IN ALABAMA

The U.S. Geological Survey works in cooperation with the Center for Earthquake Research and Information (CERI) at the University of Memphis to monitor seismicity in the Alabama region. In response to the 1997 magnitude 4.9 Atmore, Alabama earthquake, the U.S. Geological Survey in cooperation with the State Survey of Alabama installed a seismic monitoring station near Birmingham, Alabama in 2001. This station is a key part of an upgraded seismic monitoring network being implemented by the USGS as part of its Advanced National Seismic System (ANSS). Additional stations are planned for the southeastern U.S., pending the allocation of Federal funds.

IMPACT OF THE QUAKE

Today's earthquake produced very limited damage. Cracked foundations and bricks fallen from chimneys were reported at Fort Payne. The water system at Valley Head also reported muddy water. Some schools in the region are closed as a precaution.

PUBLIC RESPONSE TO THE TREMOR

Thousands of web surfers have recorded their observations of today's earthquake on a USGS internet site designed to compile public observations into an integrated shaking map for the epicentral region. This "Did You Feel It" web site not only provides a concise summary of the distribution of perceived shaking, but it also provides researchers with data they need to supplement limited seismic recordings. The public is encouraged to visit the "Did You Feel It" site and record their own observations.

Recommended Earthquake Safety Actions

Source: Recommended Earthquake Safety Actions © 9/15/12 Earthquake Country Alliance

Federal, State, and local emergency management experts and other official preparedness organizations all agree that "**Drop, Cover,** and **Hold On**" is the appropriate action to reduce injury and death during earthquakes. Great ShakeOut earthquake drills (www.shakeout.org) are opportunities to practice how to protect ourselves during earthquakes.

You cannot tell from the initial shaking if an earthquake will suddenly become intense…so always Drop, Cover, and Hold On immediately!

- **DROP** to the ground (before the earthquake drops you!),
- Take **COVER** by getting under a sturdy desk or table, and
- **HOLD ON** to your shelter and be prepared to move with it until the shaking stops.

If there is no table or desk near you, drop to the ground and then if possible move to an inside corner of the room. Be in a crawling position to protect your vital organs and be ready to move if necessary, and cover your head and neck with your hands and arms.

Do not move to another location or outside. Earthquakes occur without any warning and may be so violent that you cannot run or crawl. You are more likely to be injured if you try to move around during strong shaking. Also, you will never know if the initial jolt will turn out to be start of the big one…and that's why you should always Drop, Cover, and Hold On immediately!

These are guidelines for most situations. Read below to learn how to protect yourself in other situations and locations, or visit www.dropcoverholdon.org.

Figure 5.2.13-15

If you are unable to Drop, Cover, and Hold On: If you have difficulty getting safely to the floor on your own, get as low as possible, protect our head and neck, and move away from windows or other items that can fall on you.

In a wheelchair: Lock your wheels and remain seated until the shaking stops. Always protect your head and neck with your arms, a pillow, a book, or whatever is available.

In bed: If you are in bed, hold on and stay there, protecting your head with a pillow. You are less likely to be injured staying where you are. Broken glass on the floor has caused injury to those who have rolled to the floor or tried to get to doorways.

In a high-rise: Drop, Cover, and Hold On. Avoid windows and other hazards. Do not use elevators. Do not be surprised if sprinkler systems or fire alarms activate.

In a store: When shaking starts, Drop, Cover and Hold On. A shopping cart or getting inside clothing racks can provide some protection. If you must move to get away from heavy items on high shelves, drop to the ground first and crawl only the shortest distance necessary. Whenever you enter any retail store, take a moment to look around: What is above and around you that could move or fall during an earthquake? Then use your best judgment to stay safe.

Outdoors: Move to a clear area if you can safely do so; avoid power lines, trees, signs, buildings, vehicles, and other hazards.

Driving: Pull over to the side of the road, stop, and set the parking brake. Avoid overpasses, bridges, power lines, signs and other hazards. Stay inside the vehicle until the shaking is over. If a power line falls on the car, stay inside until a trained person removes the wire.

In a stadium or theater: Stay at your seat or drop to the floor between rows and protect your head and neck with your arms. Don't try to leave until the shaking is over. Then walk out slowly watching for anything that could fall in the aftershocks.

Near the shore: Drop, Cover, and Hold On until the shaking stops. If severe shaking lasts twenty seconds or more, immediately evacuate to high ground as a Tsunami might have been generated by the earthquake. Move inland two miles or to land that is at least 100 feet above sea level immediately. Don't wait for officials to issue a warning. Walk quickly, rather than drive, to avoid traffic, debris and other hazards.

Below a dam: Dams can fail during a major earthquake. Catastrophic failure is unlikely, but if you live downstream from a dam, you should know floodzone information and have prepared an evacuation plan.

MYTH – Head for the Doorway:
An enduring earthquake image of California is a collapsed adobe home with the doorframe as the only standing part. From this came our belief that a doorway is the safest place to be during an earthquake. True – if you live in an old, unreinforced adobe house. In modern houses, doorways are no stronger than any other part of the house. You are safer under a table.

More information:
www.shakeout.org/dropcoverholdon
www.dropcoverholdon.org
www.earthquakecountry.org/dropcoverholdon

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5.2.14 Dam Failure

Source: FEMA P-956 Living With Dams Know Your Risk, Feb 2013
Source: Alabama State Hazard Mitigation Plan
Source: Cullman County Natural Hazards Mitigation Plan, Mar 2010

"Although dam failures are infrequent, the impacts can be catastrophic, often far exceeding typical stream or river flood events."

Fig: 5.2.14-1 Source: FEMA P-956 Living With Dams Know Your Risk, Feb 2013

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Dam Failure

History: Low, 2
Frequency of Occurrence: Very Rare (5)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Medium, 30
Property: Medium, 20
Economic Impact: High, 50
Total Points: 134

Maximum Probable Extent (Magnitude/Strength):
Public: Disaster (2)
Infrastructure: Very High (1)
Environment: Very High (1)

Jurisdictions	Extent of the Natural Hazard – Dam Failure
All, except for the Town of Eclectic; Eclectic Water Works & Sewer	The Town of Eclectic, Eclectic Water Works & Sewer would experience no potential damage. Remaining portions of the planning area would experience flooding to depths of several feet affecting agriculture and structures along the riverfronts and lakefronts.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Limited: A limited portion of the planning area would experience flood inundation as a result of dam breach or failure. The areas impacted are dependent upon the magnitude of the breach/failure but are generally the same areas impacted under riverine flooding as covered in **Section 5.2.5-2**.
Overall Significance Ranking: High

Nature of the Hazard

Dams provide vital benefits, including flood protection, water supply, hydropower, irrigation and recreation. They are owned and operated by different types of owners and serve a range of purposes ranging from a neighborhood association built around a lake to a water supply utility. The failure of even a small dam is capable of causing significant property and environmental damage as well as loss of life. If dams are not maintained and operated correctly, dams can pose risks to those living downstream. When dams age, deteriorate or malfunction, they can release sudden, dangerous flood flows, posing safety risks to an often unaware public. Dam failure floods are almost always more sudden and violent than normal stream, river, or costal floods. In many cases, large populations, vital elements of our infrastructure, jobs, and businesses are located downstream of dams. Dams are assets, providing vital benefits, but can also be hidden liabilities.

A dam is a barrier constructed across a watercourse in order to store, control, or divert water. Dams can be constructed from a variety of materials, including soil, rock, tailings from mining or milling, concrete, masonry, steel, timber, miscellaneous materials (such as plastic or rubber), and

combinations of these materials. Embankment dams are the most common type of dam in use today, materials consisting of natural soil or rock or waste materials from mining or milling operations. The strength of an embankment dam is primarily a result of the type of material from which the dam is made.

The water impounded behind a dam is referred to as the reservoir and is measured in acre-feet, with one acre-foot being the volume of water that covers one acre of land to a depth of one foot. Due to topography, even a small dam may have a reservoir containing many acre-feet of water.

Release of Water - Intentional releases of water from dams are confined to spillways and outlet works. A dam typically has a principal or mechanical spillway and a drawdown facility. Additionally, some dams are equipped with auxiliary spillways to safely pass extreme floods. Even when operated as designed, many dams will pass huge volumes of flood water into downstream areas.

What are the Risks Associated with Dams?

Dam failures are low probability but high consequence events. Even so, they typically occur somewhere in the United States every year.

Dam failures or partial failures are not usually caused by storm events. Most failures fall into one or more of the following categories:

- Structural failures: Foundation defects, including settlement and slope instability, or damage caused by earthquakes, have caused about 30 percent of all dam failures in the United States.
- Mechanical failures: Malfunctioning gates, conduits, or valves can cause dam failure or flooding both upstream and downstream and account for about 36 percent of all dam failures in the United States.
- Hydraulic failures: Overtopping of a dam is often a precursor to dam failure. National statistics show that overtopping due to inadequate spillway design, debris blockage of spillways, or settlement of the dam crest accounts for approximately 34 percent of all dam failures in the country.

These problems can lead to dam failure:

- Inadequate design criteria
- Malfunction of dam components
- Spillway damage or malfunction
- Seepage problems
- Embankment stability problems
- Damage from vandalism
- Improper operation

Thousands of dams nationwide are considered deficient and susceptible to failure because of these problems.

A dam failure is the collapse, breach, or other failure of a dam that causes downstream flooding. Dam failures may result from natural events, human-caused events, or a combination thereof. Due to the lack of advance warning, failures resulting from natural events, such as hurricanes, earthquakes, or landslides, may be particularly severe. Prolonged rainfall that produces flooding is the most common cause of dam failure (FEMA, 1997).

Dam failures usually occur when the spillway capacity is inadequate and water overtops the dam or when internal erosion through the dam foundation occurs (also known as piping). If internal erosion or overtopping cause a full structural breach, a high-velocity, debris-laden all of water is released and rushes downstream, damaging or destroying whatever is in its path.

Dam failures may result from one or more the following:

- Prolonged periods of rainfall and flooding (the cause of most failures);
- Inadequate spillway capacity which causes excess overtopping flows;
- Internal erosion due to embankment or foundation leakage or piping;
- Improper maintenance;
- Improper design;
- Negligent operation;
- Failure of upstream dams;
- Landslides into reservoirs;
- High winds; and
- Earthquakes.

Figure 5.2.14-2 Source: FEMA P-956 Dam Breach Inundation Zones

Many people who live in dam breach inundation zones are completely unaware of the potential hazard lurking upstream.

The "inundation zone" is the area downstream of the dam that would be flooded in the event of a failure (breach) or uncontrolled release of water, and is generally much larger than the area for the normal river or stream flood event.
The "dam breach inundation zone" is larger than the 1-percent-annual-chance flood used on FEMA's Flood Insurance Rate Maps (FIRMs).

Dam safety, especially for small dams that are privately owned and poorly maintained, has been an ongoing hazard mitigation issue in the State of Alabama for the past decade. No state law currently exists to regulate any private dams or the construction of new private dams, nor do private dams require federal licenses or inspections. To date, there have been four attempts in the State of Alabama to pass legislation that would require inspection of dams on bodies of water over 50 acre-feet or dams higher than 25 feet. Enactment has been hampered by the opposition of agricultural interest groups and insurance companies. Approximately 1,700 privately owned dams would fit into the category proposed by the law.

There are an estimated 2,228 dams in the state of Alabama listed in the National Inventory of Dams (NID) maintained by the USACE (as of March 2010). Of these, approximately 32 hydroelectric, navigation, and flood control project dams are federally regulated and fall under the jurisdiction of the Tennessee Valley Authority, USACE, Alabama Power Company, and Alabama Electric Cooperative, Inc. A number of existing dams have inadequate spillways and embankments and many are poorly maintained. As of March 2010, 201 dams were classified by the USACE as high-hazard dams in the state of Alabama, posing a significant safety hazard. Of these, only 63 have an Emergency Action Plan (EAP) in place or claim that an EAP is not required. **Figure 5.2.14-3** shows the number of high-hazard dams by county.

Dam Failure History in Alabama

Source: Alabama State Hazard Mitigation Plan

Three earthen dams in Alabama sustained damages during the flood of February 3 to 17, 1990. The Holly Brooke Lake Dam in Shelby County was saturated to the point that the face of the dam slumped. If the water pressure had not been reduced, total failure of the dam might have occurred. As a result of the dam's condition, six families were evacuated while the water level on the 55-acre pond impounded by the dam was lowered.

During the March 23, 1990, flooding disaster, a dam was overtopped at Magnolia Shores Lake in Crenshaw County, causing damage to the downstream slope. To prevent a break in the dam, a channel was dug around the dam to lower the water and the lake was then drained by a controlled breach of the dam.

The C. D. Clark Dam in Dozier, Crenshaw County, failed and washed out 50 yards of northbound U.S. Highway 29. Lake Tholocco, a 600-acre lake on the Fort Rucker reservation near Ozark, was also drained because of excessive flow through its emergency spillway. There were reports of 160 dam breakages during the July 1994 floods; however, because there is no state law or

regulation concerning dam safety that requires reporting of breaks or other problems, not all breaks are reported. Information on dam breakages is submitted by local officials.

In Etowah County on January 6, 2009, floodwaters washed away a culvert and a private dam near the Gallant Community broke, producing up to 12 feet of flooding in the area causing residences to be evacuated. A dozen roads were also closed due to the floodwaters and property damage was reported to be $100,000 ($103,000 in 2010 dollars).

Probability of Dam Failure in Alabama

Source: Alabama State Hazard Mitigation Plan

The generally accepted safety standard for the design of dams is the Inflow Design Flood (IDF) which is "… the flood flow above which the incremental increase in water surface elevation downstream due to failure of a dam or other water retaining structure is no longer considered to present an unacceptable additional downstream threat" (Interagency Committee on Dam Safety, October 1998). The inflow design flood is the upper limit of the Probable Maximum Flood (PMF), which is the estimated flood flow from the Probable Maximum Precipitation (PMP). The PMP is "… the greatest depth of precipitation for a given duration that is physically possible over a given size storm area at a particular geographical location at a certain time of the year" (U.S. Department of Commerce and USACE, June 1988). However, it must be noted that there are numerous dams in existence whose discharge capabilities were designed and built using methods that are now considered potentially unsafe.

The areas impacted by a dam failure are analyzed on the basis of "sunny day" failures and failures under flood condition. Typically, the dam-break floodplain is more extensive than the floodplain used for land use development purposes, and few communities consider upstream dams when permitting development. The potential severity of a full or partial dam failure is influenced by two factors: the amount of water impounded, and the density, type, and value of development and infrastructure downstream.

Alabama has no dam safety program and legislation. Individuals from Natural Resources, the Catfish Farmers Federation, Alabama Power Company, and several other agencies have formed a committee to promote state dam safety legislation. A draft legislative instrument was written, and the Dam Safety initiative has been transferred to the Alabama Department of Economic and Community Affairs (ADECA). The Alabama Office of Water Resources is supporting the establishment of an Alabama Dam Security and Safety Program. The legislation to establish this program has been under development for several years, but was reemphasized in 2002 when OWR assumed overall management of dam safety and National Flood Insurance Program initiatives from the AEMA.

The ADECA is currently in the process of completing an inventory of dams, in order to provide a better idea of dam locations and risks associated with the dams. The expected completion date for the inventory is late 2010 or 2011. There is also an ongoing effort by the ADECA to map inundation efforts for several NRCS dams in the state. This full inventory of dams will help to benefit public safety and emergency response operations in the event of a natural or other

disaster. It will also provide for the inspection and permitting (certification) of certain dams in order to protect the citizens of Alabama by reducing the risk of failure of such dams.

The probability of future occurrences cannot be characterized on a statewide basis because of the lack of information available. The qualitative probability is rated low in Section 5.2 because the overall area affected is low and impacts are localized. This rating is intended only for general comparison to other hazards that are being considered.

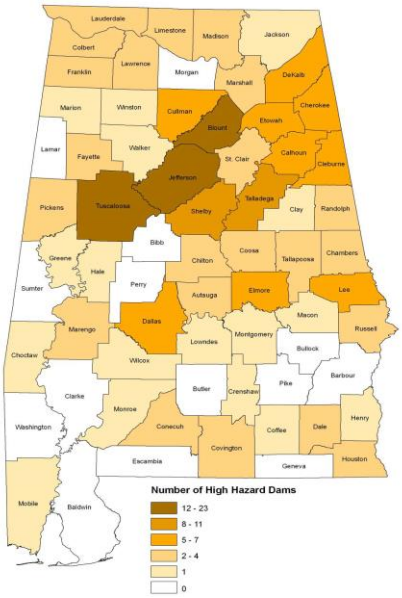

Figure 5.2.14-3
Alabama High Hazard Dams by County
Source: U.S. Army Corps of Engineers, 2010

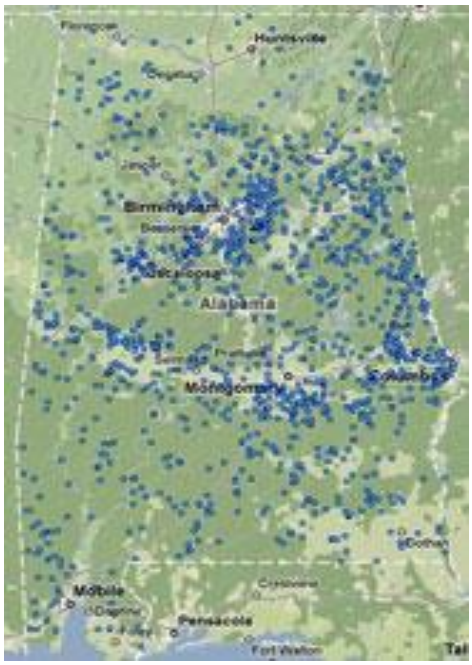

Figure 5.2.14-4 Source: DamSafety.org

Nature of the Hazard in Elmore County

<u>Dams Impacting Elmore County</u>

Source: Alabama Power

Walter **Bouldin** Dam (Elmore County): The last dam built as part of an Alabama Power project that developed the Coosa River. Bouldin Dam has the largest generating capacity of Alabama Power's 14 hydro facilities. It is unusual in design because it was built on a canal. Some people refer to it as the "plant built in a cornfield."

The Bouldin Dam **earth embankment was breached**, adjacent to the intake on the east side of the dam, on **February 10, 1975**. This caused total evacuation of the forebay reservoir and rendered the power plant inoperable. The water escaping from the lake caused erosion along the upstream toes of the north and west embankments, washing away much of the forebay's natural clay blanket. Undercutting of the embankment toes precipitated slides in the upstream slopes of

the powerhouse dike. The maximum depth of scour was 165 ft below the top of the earthen embankment, which is actually below the depth of original excavation (FERC, 1978). Reconstruction to relatively stringent design specifications was completed in 1980. Construction of an earthfill bolster at the north embankment was completed in late 1984 (Hendron, 1996).

Figure 5.2.14-5 Source: Alabama Power – Bouldin

R.L. **Harris** (Randolph County): In service: 04/20/83: Capacity: Two units rating 67,500 kW each. R.L. Harris Dam, the newest of the 14 Alabama Power Company hydroelectric developments, was built at one of the last major hydro sites in Alabama. The dam's design was created by the Southern Company Services, Inc.

Figure 5.2.14-6 Source: Alabama Power – Harris

Jordan Dam (Elmore County): In service: 1985. The wildest stretch of the Coosa River began about 14 miles north of Wetumpka and ended at the bridge that linked the two sides of town. So great were the falls and standing waves that you could hear the water roar a mile from the stream. "Devils Staircase," as it was known, is where Jordan Dam would be completed in 1928. Forty years later, a second dam was constructed on Jordan Lake, Walter Bouldin Dam. Bouldin Dam has the largest generating capacity of Alabama Power's hydro facilities and is unusual in design because it was built on a canal.

Figure 5.2.14-7 Source: Alabama Power – Jordan

Lay Dam (Chilton/Coosa Counties): Captain William Patrick Lay organized Alabama Power on December 4, 1906. Soon thereafter he got authorization from Congress to construct the company's first dam and electric generating plant on the Coosa River — the Lock 12 Dam.

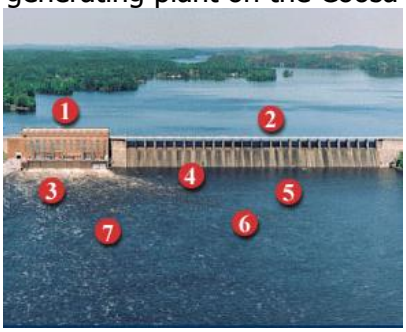

Figure 5.2.14-8 Source: Alabama Power – Lay

Martin Dam (Elmore County): Cherokee Bluffs was one of Tallapoosa County's most famous landmarks. It was also a perfect place to construct the first of four dams on the Tallapoosa River. When it was built, the dam created the world's largest artificial body of water.

Figure 5.2.14-9 Source: Alabama Power – Martin

Mitchell Dam (Chilton/Coosa Counties): In service: 1985. In 1921 the Federal Power Commission granted Alabama Power Company a license to construct a dam across the Coosa River near Clanton, downstream from Lay Lake, at a location called Duncan's Riffle. Construction of Mitchell Dam, Alabama Power Company's second hydroelectric plant, was completed in 1923 and it has been busy producing hydro power ever since.

Figure 5.2.14-10 Source: Alabama Power - Mitchell

Thurlow Dam (Elmore County): Built as the site of an early 19th century textile mill that was used during the Civil War as a uniform and ammunition plant. The dam was named in honor of Oscar. G. Thurlow, a chief engineer, vice president and director of Alabama Power Company.

Figure 5.2.14-11 Source: Alabama Power – Thurlow

Yates (Elmore County): Yates Dam is modest in size and capacity when compared with other Alabama Power plants, its location gives it special significance. The dam stands on the site of Alabama's first hydroelectric plant which began delivering electricity over a 25-mile transmission line to Montgomery in 1912.

Figure 5.2.14-12 Source: Alabama Power – Yates

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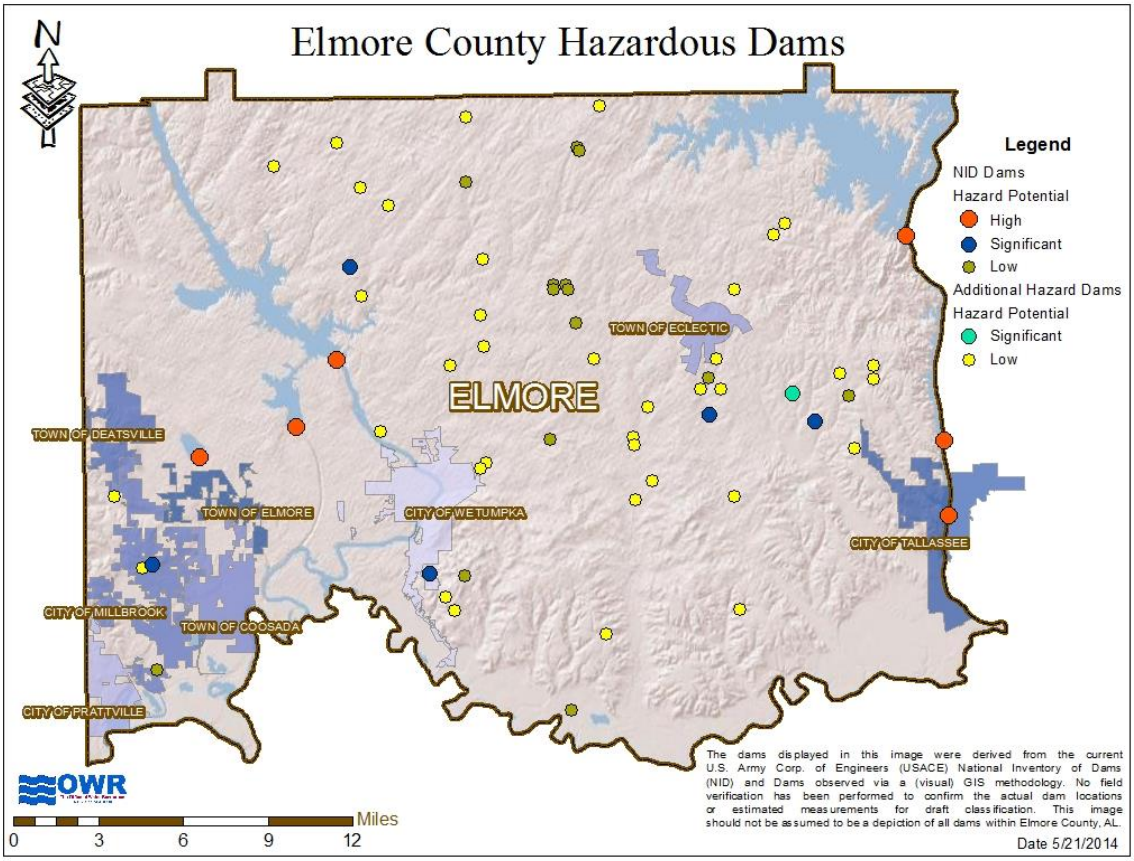
Figure 5.2.14-13 (Also: 5.4.1-13) Elmore County Hazardous Dams



Source: U.S. Army Corp. of Engineers (USACE) National Inventory of Dams and the Alabama Department of Economic and Community Affairs

Office of Water Resources Division
Alabama Department of Economic and Community Affairs (ADECA):

The dams displayed in the image above were derived from the current U.S. Army Corp. of Engineers (USACE) National Inventory of Dams (NID) and Dams observed via a (visual) GIS methodology. No field verification has been performed to confirm the actual dam locations or estimated measurements for draft classifications. This image should not be assumed to be a depiction of all dams within Elmore County, AL.

Source: Association of State Dam Safety Officials
What is Security and Risk Mitigation for Dams and Levees? Understanding the Threat

I. Natural Threats

In addition to natural hazards that can affect the facility itself, addressed elsewhere on this website, it is also important to be aware of threats affecting facility employees. For example, a pandemic influenza incident has the potential to cause serious disruption to operations in the Dams Sector. It is estimated that, in an influenza pandemic, up to 20 percent of the workforce could become ill, and 40 percent might be absent from work due to illness or fear of infection. Because such absentee rates would cause great difficulty in performing normal functions, continuity plans should account for this possibility by detailing how an organization will provide for staffing needs during a potential outbreak.

II. Manmade Threats

Any individual or group that possesses the capability and intent to do harm can pose a threat. Potential aggressors include:

- Domestic and international adversaries.
- Adversary nations.
- Disaffected individuals or groups.
- Disgruntled employees.
- Organized adversarial groups.

In targeting critical infrastructure, adversaries could employ a wide range of weapons, tools, and tactics. Many adversaries have access to expensive technological equipment. Adversaries use surveillance to identify and plan their attacks. In the past, targeting surveillance has been conducted over an extended period of time in order to identify vulnerabilities and plan the best means to attack the target.

Due to their generally remote location, dams present a more difficult surveillance challenge than facilities in a more urban setting. This gives owners and operators, as well as law enforcement officials, an opportunity to detect such surveillance before facilities could be targeted.

In targeting dams, adversaries may seek to commit:

- Damage or destruction of a facility.
- Theft of equipment or information.
- Disruption of a facility's mission.

Understanding the signature behaviors associated with adversarial operational planning helps effectively report incidents, which may ultimately lead to the disruption of potential attack planning.

III. Cyber Threats

(See: 21. Cyber Attack for additional information)

Cyber systems in the United States are the most aggressively targeted information systems in the world, with attacks increasing in severity, frequency, and sophistication each year.

In the modern automated workplace, disruption of the information technology (IT) system could bring any organization to a standstill or lead to a dangerous lack of control over sensitive records or over physical processes (e.g., operational control over dam releases or power generation).

An aggressor could attempt to disable such systems or even hijack them to intentionally operate the dam improperly, in order to cause damage. Adversaries could infiltrate cyber systems to:

- Cause economic and operational damage.
- Alter, corrupt, or steal information.
- Overload the equipment.
- Mount attacks on other systems.
- Operate control mechanical equipment in such a way as to cause damage and inflict onsite and offsite casualties.
- Gain information about the facility or personnel, including information on operating schedules, contractors, and security.
- Conduct surveillance via webcam or private brand exchange systems.
- Cause additional consequences when used in coordination with a physical attack.

May 31st each year is National Dam Safety Awareness Day, an event that remembers the tragic failure of the South Fork Dam in Johnstown, Pennsylvania. On May 31, 1889, the dam failure resulted in the loss of more than 2,200 lives and was the worst dam failure in the history of the United States.

For over 30 years, the FEMA-led National Dam Safety Program has been working to reduce the impact of dam failures. National Dam Safety Awareness Day encourages and promotes individual and community responsibility as well as best practices for dam safety. It also highlights the steps people can take to prevent future catastrophic dam failures or lessen the impact of a potential failure. FEMA encourages all communities to promote the benefits that dams can offer during this time of the year.

Dam safety failures can pose safety risks to an often unaware public. Reducing the risk of failure and ensuring that the public and property owners downstream of dams are informed of the risk of dam failure are the driving forces of the National Dam Safety Program. On this upcoming National Dam Safety Awareness Day, think about how your community recognizes the importance of dam safety: it's a shared responsibility.

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5.2.15 Dense Fog

Source: NOAA
Source: Michigan Hazard Mitigation Plan, March 2011

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Dense Fog

History: Low, 2
Probability: Medium, 35; Occasional/Likely Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 41

Maximum Probable Extent (Magnitude/Strength):
Public: Important (5)
Infrastructure: Very Low (6)
Environment: Very Low (6)

Jurisdictions	Extent of the Natural Hazard – Fog
All	Fog itself does not impact the environment. Dense fog can reduced visibility to near one quarter mile causing very hazardous traveling/driving conditions.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area, especially low-lying areas and the river basins are susceptible to fog/dense fog.
Overall Significance Ranking: Low

NOAA's National Weather Service Glossary of Terms:
Fog

> (abbrev. F) Fog is water droplets suspended in the air at the Earth's surface. Fog is often hazardous when the visibility is reduced to ¼ mile or less.

Hazard Description

Fog forms near the ground when water vapor condenses into tiny liquid water droplets that remain suspended in the air. Many different processes can lead to the formation of fog, but the main factor is saturated air. Two ways that air can become saturated are by cooling it to its dew point temperature or by evaporating moisture into it to increase its water vapor content. Although most fog, by itself, is not a hazard because it does not actually apply destructive forces, the interaction between humans and fog can be a dangerous situation, sometimes resulting in disastrous consequences. It must be noted, however, that **freezing fog** (a hazard for which the National Weather Service does issue special statements) can cause direct harm by causing slickness on roadways and thus leading to serious transportation accidents (examples are provided later in this chapter).

Haze and Smog
Haze occurs when dust, smoke and other pollutant particles obscure the normal clarity of the sky. It occurs when dust and smoke particles accumulate in relatively dry air. When weather conditions block the dispersal of smoke and other pollutants, they concentrate and form a usually low-hanging shroud that impairs visibility and may become a respiratory health threat, as well as make safe driving more difficult. Dense haze caused by industrial pollution is also known as smog. This hazard may cause public health problems, so it is mentioned in this subsection but is not given particular emphasis since this plan has more of an emergency management focus. It is noted here as an area of potential overlap and future coordination with other agencies. The Alabama Department of Public Health and the Alabama Department of Natural Resources may do more with this issue in the future, if the effects become severe enough. In general, however, air quality has generally improved since the effects of the Clean Air Act, other legislation, regulatory measures, and shifts away from heavy industry in Alabama's economy.

Hazard Analysis

In considering severe and high-impact meteorological events, attention can easily become focused on the more dramatic storms. Tornadoes and hurricanes for example, are readily recognized by the general public and the meteorological community alike for their devastating consequences. Fog, on the other hand, does not lend itself as readily to this categorization. Yet, both in cost and casualties, fog has consistently impacted society, and in particular the transportation sector - sometimes with deadly consequences. Fog has played a contributing role in several multi-vehicle accidents over the past several years. While statistics suggest that

highway accidents and fatalities, in general, have fallen, that trend is not evident with respect to accidents and fatalities caused by fog. Fog can be very dangerous because it reduces visibility. Although some forms of transport can penetrate fog using radar, road vehicles have to travel slowly and use more lights. Localized fog is especially dangerous, as drivers can be caught by surprise. Fog is particularly hazardous at airports, where some attempts have been made to develop methods (such as using heating or spraying salt particles) to aid fog dispersal. These methods have seen some success at temperatures below freezing. Property damage can be significant for vehicles, although real property and structures are usually unaffected. Fog has never been identified as one of the County's most significant hazards.

Impact on the Public

The primary risks from fog involve the dangers of traveling under conditions of limited visibility. Although some modes of transportation, such as aircraft, are well-regulated, other modes, including simple pedestrian travel, may involve risks that have not been properly accounted for by those who are focused merely on reaching their destination as quickly as possible. The most substantial impacts have recently involved drivers whose bad habits (primarily that of not maintaining safe speeds and following distances) proved to be simply unsustainable under conditions of reduced visibility, resulting in severe crashes and subsequent roadway obstruction. In some circumstances, these conditions of reduced visibility can arise very quickly, although careless drivers, in their desire for fast travel conditions, may erroneously try to ignore the risks

Table 5.2.15-1 Alabama Accident Summary, Total for All State Accidents 2008
Source: Alabama Department of Public Safety

REPORT NO 4
PAGE 1 OF 1

TOTAL FOR ALL STATE ACCIDENTS — FOR THE PERIOD OF 01 01 2008 - 12 31 2008

WEATHER CONDITIONS	NUMBER OF ACCIDENTS				NUMBER OF PERSONS		NUMBER OF PERSONS INJURED BY SEVERITY		
	TOTAL	FATAL	NON-FATAL INJURY	PROPERTY DAMAGE ONLY	KILLED	INJURED	INCAPA-CITATING INJURY	EVIDENT INJURY	POSSIBLE INJURY
1. CLEAR	80138	610	16827	62701	670	23507	13492	2596	7419
2. CLOUDY	25691	183	5257	20251	193	7295	4104	748	2443
3. RAIN	16358	70	3137	13151	75	4301	2377	416	1508
4. SNOW	374	4	78	292	4	106	67	15	24
5. SLEET/HAIL	93	0	16	77	0	18	7	3	8
6. CROSSWIND	43	1	13	29	1	21	15	2	4
7. FOG	677	17	172	488	18	229	161	18	50
8. OTHER	569	2	109	458	3	138	68	18	52
TOTALS	123943	887	25609	97447	964	35615	20291	3816	11508

Table 5.2.15-1.1 Alabama Accident Summary, Total for All State Rural Accidents 2008
Source: Alabama Department of Public Safety

REPORT NO 4
PAGE 1 OF 1

TOTAL FOR STATE RURAL ACCIDENTS FOR THE PERIOD OF 01 01 2008 - 12 31 2008

WEATHER CONDITIONS	NUMBER OF ACCIDENTS				NUMBER OF PERSONS		NUMBER OF PERSONS INJURED BY SEVERITY		
	TOTAL	FATAL	NON-FATAL INJURY	PROPERTY DAMAGE ONLY	KILLED	INJURED	INCAPA-CITATING INJURY	EVIDENT INJURY	POSSIBLE INJURY
1. CLEAR	22641	425	6704	15512	474	9760	7447	789	1524
2. CLOUDY	6445	106	1825	4514	109	2664	2031	203	430
3. RAIN	4691	41	1151	3499	45	1609	1199	129	281
4. SNOW	159	2	39	118	2	55	42	9	4
5. SLEET/HAIL	45	0	6	39	0	7	3	1	3
6. CROSSWIND	24	1	7	16	1	11	8	1	2
7. FOG	423	13	119	291	14	156	132	7	17
8. OTHER	83	1	30	52	2	36	26	3	7
TOTALS	34511	589	9881	24041	647	14298	10888	1142	2268

from reduced visibilities, in the hope that the condition will suddenly correct itself before any harm is caused.

Impact on Responders

In certain circumstances that require an emergency response, heavy fog may cause impediments and risks that would not normally be present. This is especially true in cases involving high-speed mechanized transportation that requires good visibility to maintain adequate and safe control and maneuvering ability, and for situations that involve search and rescue operations, for which visibility may be very important in locating and assisting victims. Response activities involving aircraft, for example, may be impaired or harmfully delayed by fog.

Impact on the Environment

Fog on its own does not directly impact the environment. However, fog may reduce visibility and can create dangerous traveling conditions. Accidents involving a chemical release, depending on

the type and severity, may cause great harm to the environment by releasing toxins into the soil, groundwater or air. (Please refer to the section on hazardous materials in the plan.)

Programs and Initiatives

National Weather Service Detection Systems

The National Weather Service has completed a major modernization program designed to improve the quality and reliability of weather forecasting. The keystone of this improvement is Doppler Weather Surveillance Radar, which can more easily detect severe weather events that threaten life and property. Although the NWS Doppler Radar does not directly detect fog, the point of greatest importance is that the lead-time and specificity of warnings for severe weather have improved significantly, and a dense fog advisory is reported when widespread or localized fog reduces visibility to a quarter mile or less. Weather satellites are useful tools in monitoring and detecting the formation of low stratus clouds and fog. Satellite images are obtained using two Geostational Operational Environmental Satellites (GOES) and NOAA polar satellites. Remote sensing with GOES and NOAA polar satellites allow for the continuous monitoring of weather across the Earth. Channels on these satellites allow the use of infrared images at night. During the daytime hours, visible satellite data can be used to locate areas of stratus clouds and fog, and water vapor imagery has also been found to be helpful.

Automated Surface Observation System (ASOS)

In the 1980s the National Weather Service (NWS), the Federal Aviation Administration (FAA), and the Department of Defense (DOD) were faced with the need to find cost-effective ways to provide pilots with critical weather information. With NWS in the lead role, these federal agencies began development of automated sensors that were intended to eventually replace human weather observers. This automated sensor development culminated in the fielding of two systems: The Automated Weather Observation System (AWOS) and the Automated Surface Observation System (ASOS). AWOS and ASOS sensors provide continuous measurements of ceiling, visibility, temperature, dew point, wind speed and direction, and precipitation. All ASOS sites and some AWOS sites also have lightning detection and reporting, courtesy of the Automated Lightning Detection and Reporting System (ALDARS). Beginning in 1992, ASOS sites started to replace manual surface aviation observations. There are currently 882 federally sponsored ASOS sites around the country, and 14 of them are in Alabama, with the KMGM site in Montgomery being located closest to Elmore County. Fog is considered to be an obstruction to visibility when the temperature and dew points are within 5°F of each other. When the difference is more than five degrees, haze is reported.

Automated Weather Observing System (AWOS)

The Automated Weather Observing System (AWOS) is a suite of sensors, which measure, collect and disseminate weather data to help meteorologists, pilots and flight dispatchers prepare and monitor weather forecasts, plan flight routes, and provide necessary information for correct takeoffs and landings. An AWOS provides minute-to-minute updates that are usually provided to pilots by a VHF radio on a frequency between 118 and 136 MHz. An AWOS is categorized as either federal or non-federal. A federal AWOS was purchased and are currently maintained by the

FAA. A non-federal AWOS is purchased and maintained by state, local, and private organizations. The sensors measure weather parameters such as wind speed and direction, temperature and dew point, visibility, cloud heights and types, precipitation, and barometric pressure. The AWOS does not predict weather, but may send current information to weather offices where forecasts are produced using this information along with computer model outputs, satellite photos and radar images. There are currently fifteen Automated Weather Observing Systems in Alabama, with a site in Tallapoosa County being located closest to Elmore County.

Advanced Weather Interactive Processing System (AWIPS)

The Advanced Interactive Processing System (AWIPS) is an interactive computer software system with a full suite of satellite imagery used to analyze meteorological and hydrological data. This system is used by the National Weather Service (NWS) to predict weather patterns, prepare forecasts, and issue weather-related warnings. AWIPS has been the foundation of the NWS operations for the past decade and was scheduled for update to AWIPS II in 2011. The updated software, which was developed by the NWS and a private entity, allows data to be processed more efficiently, resulting in greater accuracy of weather forecasting.

Source: NOAA

A Costly Phenomenon

Fog… it rolls, it creeps, it pools. It's part of every good horror movie. But while you won't find ghosts or monsters in real fog, it can pose some scary hazards for air, land, and water transportation.

A simple cloud in contact with the ground, fog makes it difficult for ships, trains, cars and planes to see each other. Notable accidents due to fog include the 1945 crash of a B-25 Mitchell into the Empire State Building; the 1956 collision of the ocean liners the *SS Andrea Doria* and *MS Stockholm*; the 1977 collision of Pam Am and KLM planes at the Tenerife Airport (the worst in aviation history); and the 2008 Interstate 4 70-vehicle pileup.

Beyond the loss of life and property, fog makes our nation's commerce and transportation systems less efficient. Weather-related crashes cost an average of **$42 billion** annually in the United States from personal injury, loss of life, and property damage (Lombardo, 2000). The estimated cost of weather-related delay to trucking companies ranges from $2.2 to $3.5 billion annually (DOT, 2007). And each year, $6 billion is lost due to air traffic delays, of which $4.2 billion (70 percent) is attributed to weather (Air Transport Association, 2002). However, research shows that improved environmental data via an enhanced NOAA GOES satellite imager and sounder would

improve the way NOAA sees short-term ice and fog formation and issues dense fog advisories, which would benefit the transportation industry by millions of dollars.

Impact on Elmore County

Locally, the EMA Office began specifically tracking Fog/Dense Fog Hazardous Weather Outlooks (HWO) and Dense Fog Advisories in January, 2012. Though files may not include 100% of the forecasted/actual fog/dense fog incidents involving Elmore County, local historic files do reflect at least 16 days in which this hazard impacted the county. Two such incidents are reflected in the following NWS Birmingham HWO's:

Figure 5.2.15-1 NWS BMX HWO, November 16, 2013

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FLUS44 KBMX 161326
HWOBMX

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE BIRMINGHAM AL
726 AM CST SAT NOV 16 2013

ALZ011>015-017>050-171330-
MARION-LAMAR-FAYETTE-WINSTON-WALKER-BLOUNT-ETOWAH-CALHOUN-CHEROKEE-
CLEBURNE-PICKENS-TUSCALOOSA-JEFFERSON-SHELBY-ST. CLAIR-TALLADEGA-
CLAY-RANDOLPH-SUMTER-GREENE-HALE-PERRY-BIBB-CHILTON-COOSA-TALLAPOOSA-
CHAMBERS-MARENGO-DALLAS-AUTAUGA-LOWNDES-ELMORE-MONTGOMERY-MACON-
BULLOCK-LEE-RUSSELL-PIKE-BARBOUR-
726 AM CST SAT NOV 16 2013

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL WEATHER SERVICE OFFICE
IN BIRMINGHAM.

.DAY ONE...TODAY AND TODAY AND TONIGHT.

AREAS OF DENSE FOG ARE EXPECTED TO PERSIST THROUGH 9 AM ACROSS ALL OF CENTRAL ALABAMA. MOST AREAS
COULD SEE VISIBILITIES DROP TO LESS THAN ONE MILE AT TIMES...HOWEVER VISIBILITIES BELOW ONE HALF
MILE ARE POSSIBLE FROM MONTGOMERY TO CLANTON TO LAFAYETTE TO EUFAULA. DRIVERS SHOULD EXERCISE
CAUTION AND USE LOW BEAM HEADLIGHTS.

.DAYS TWO THROUGH SEVEN...SUNDAY THROUGH FRIDAY.

NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME.

.SPOTTER INFORMATION STATEMENT...

ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT IS NOT EXPECTED AT THIS TIME.

$$
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Figure 5.2.15-2 NWS BMX HWO, February 2, 2013

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FLUS44 KBMX 021135
HWOBMX

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE BIRMINGHAM AL
535 AM CST SUN FEB 2 2014

ALZ011>015-017>050-031145-
MARION-LAMAR-FAYETTE-WINSTON-WALKER-BLOUNT-ETOWAH-CALHOUN-CHEROKEE-
CLEBURNE-PICKENS-TUSCALOOSA-JEFFERSON-SHELBY-ST. CLAIR-TALLADEGA-
CLAY-RANDOLPH-SUMTER-GREENE-HALE-PERRY-BIBB-CHILTON-COOSA-TALLAPOOSA-
CHAMBERS-MARENGO-DALLAS-AUTAUGA-LOWNDES-ELMORE-MONTGOMERY-MACON-
BULLOCK-LEE-RUSSELL-PIKE-BARBOUR-
```

```
535 AM CST SUN FEB 2 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL WEATHER SERVICE OFFICE
IN BIRMINGHAM.

.DAY ONE...TODAY AND TONIGHT.

AREAS OF DENSE FOG AND LOW CLOUDS WILL REDUCE VISIBILITIES TO NEAR ONE QUARTER OF A MILE AT TIMES
THROUGH 9 AM. VISIBILITIES SHOULD IMPROVE BY 9 AM. USE EXTREME CAUTION WHEN TRAVELING THIS
MORNING.

OTHERWISE...NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME.

.DAYS TWO THROUGH SEVEN...MONDAY THROUGH SATURDAY.

NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME.

.SPOTTER INFORMATION STATEMENT...

ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT IS NOT EXPECTED AT THIS TIME.
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Source: NWS Jackson KY

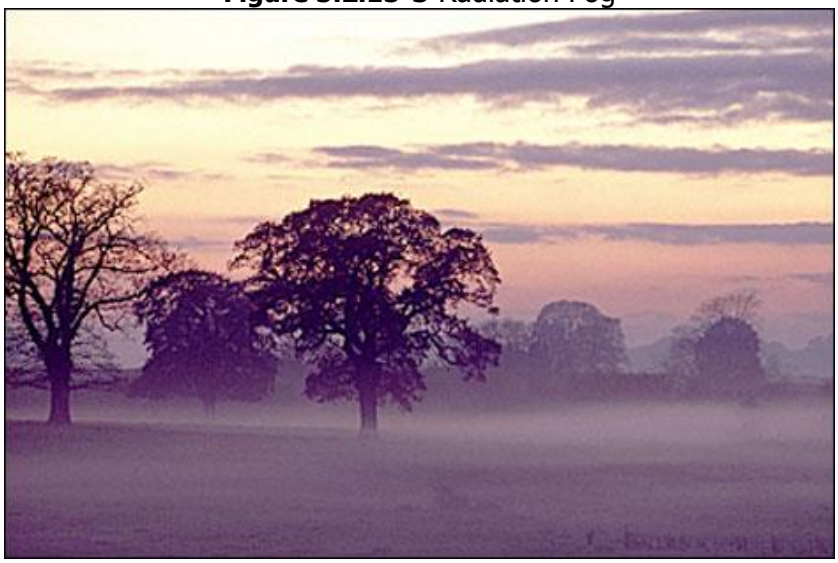
Types of Fog

Radiation Fog

This type of fog forms at night under clear skies with calm winds when heat absorbed by the earth's surface during the day is radiated into space. As the earth's surface continues to cool, provided a deep enough layer of moist air is present near the ground, the humidity will reach 100% and fog will form. Radiation fog varies in depth from 3 feet to about 1,000 feet and is always found at ground level and usually remains stationary. This type of fog can reduce visibility to near zero at times and make driving very hazardous.

Valley fog is a type of radiation fog that is very common in the mountains of eastern Kentucky. When air along ridgetops and the upper slopes of mountains begins to cool after sunset, the air becomes dense and heavy and begins to drain down into the valley floors below. As the air in the valley floor continues to cool due to radiational cooling, the air becomes saturated and fog forms. Valley fog can be very dense at times and make driving very hazardous due to reduced visibility. This type of fog tends to dissipate very quickly once the sun comes up and starts to evaporate the fog layer.

Figure 5.2.15-3 Radiation Fog



Advection Fog

Advection fog often looks like radiation fog and is also the result of condensation. However, the condensation in this case is caused not by a reduction in surface temperature, but rather by the horizontal movement of warm moist air over a cold surface. This means that advection fog can sometimes be distinguished from radiation fog by its horizontal motion along the ground.

Sea fogs are always advection fogs, because the oceans don't radiate heat in the same way as land and so never cool sufficiently to produce radiation fog. Fog forms at sea when warm air associated with a warm current drifts over a cold current and condensation takes place. Sometimes such fogs are drawn inland by low pressure, as often occurs on the Pacific coast of North America.

Advection fog may also form when moist maritime, or ocean, air drifts over a cold inland area. This usually happens at night when the temperature of the land drops due to radiational cooling.

Figure 5.2.15-4 Advection Fog

Upslope Fog

Upslope fog forms when light winds push moist air up a hillside or mountainside to a level where the air becomes saturated and condensation occurs. This type of fog usually forms a good distance from the peak of the hill or mountain and covers a large area. Upslope fog occurs in all mountain ranges in North America. This usually occurs during the winter months, when cold air behind a cold front drifts westward and encounters the eastward facing slopes of the Rocky Mountains. As the cold, moist air rises up the slopes of the mountains, condensation occurs and extensive areas of fog form on the lower slopes of the mountains.

Figure 5.2.15-5 Upslope Fog

Ice Fog

This type of fog forms when the air temperature is well below freezing and is composed entirely of tiny ice crystals that are suspended in the air. Ice fog will only be witnessed in cold Arctic / Polar air. Generally the temperature will be 14 F or colder in order for ice fog to occur.

Figure 5.2.15-6 Ice Fog

Freezing Fog

Freezing fog occurs when the water droplets that the fog is composed of are "supercooled". Supercooled water droplets remain in the liquid state until they come into contact with a surface upon which they can freeze. As a result, any object the freezing fog comes into contact with will become coated with ice. The same thing happens with freezing rain or drizzle.

Figure 5.2.15-7 Freezing Fog

Evaporation or Mixing Fog

This type of fog forms when sufficient water vapor is added to the air by evaporation and the moist air mixes with cooler, relatively drier air. The two common types are steam fog and frontal fog. Steam fog forms when cold air moves over warm water. When the cool air mixes with the warm moist air over the water, the moist air cools until its humidity reaches 100% and fog forms. This type of fog takes on the appearance of wisps of smoke rising off the surface of the water.

Figure 5.2.15-8 Evaporation or Mixing Fog

The other type of evaporation fog is known as frontal fog. This type of fog forms when warm raindrops evaporate into a cooler drier layer of air near the ground. Once enough rain has evaporated into the layer of cool surface, the humidity of this air reaches 100% and fog forms.
Figure 5.2.15-9 Evaporation or Frontal Fog

Remember, whenever you drive into dense fog ALWAYS slow down. This will allow you to increase the distance between your car and any cars in front of you that you may not be able to see due to the thickness of the fog. It is also important to switch your headlights to low beams. When you drive through fog with your headlights on high beams, a large amount of the light from your cars' headlights will be scattered off the fog droplets and back into your eyes, which will reduce visibility even more and make it that much more difficult to see the objects in the road in front of your car and along the side of the road!!

Area intentionally left blank.

Table 5.2.15-2 Source: NWS Milwaukee/Sullivan, WI

The "Dense Fog/Smoke Hazard Map" depicts the local threat of dense fog or smoke for specified areas. It is largely based on coverage and visibility.

Dense Fog/Smoke Threat Level	Threat Level Descriptions
Extreme	**"An Extreme Threat to Life and Property from Dense Fog or Smoke."** An extreme likelihood (36% or greater probability) of dense fog or smoke that reduces visibilities to 1/4 mile or less in a defined area for 3 hours or more.
High	**"A High Threat to Life and Property from Dense Fog or Smoke."** A high likelihood (26% to 35% probability) of dense fog or smoke that reduces visibilities to 1/4 mile or less in a defined area for 3 hours or more.
Moderate	**"A Moderate Threat to Life and Property from Dense Fog or Smoke."** A moderate likelihood (16% to 25% probability) of dense fog or smoke that reduces visibilities to 1/4 mile or less in a defined area for 3 hours or more.
Low	**"A Low Threat to Life and Property from Dense Fog or Smoke."** A low likelihood (6% to 15% probability) of dense fog or smoke that reduces visibilities to 1/4 mile or less in a defined area for 3 hours or more.
Very Low	>**"A Very Low Threat to Life and Property from Dense Fog or Smoke."** A very low likelihood (2% to 5% probability) of dense fog or smoke that reduces visibilities to 1/4 mile or less in a defined area for 3 hours or more.
Non-Threatening	**" No Discernable Threat to Life and Property from Dense Fog or Smoke."** Visibility greater than 1/4 mile and non-threatening. Fog/smoke may still be present, but not dense.
Note: Fog or smoke becomes hazardous when it is considered "dense" and obscures visibility to 1/4 mile or less. This results in decreased response time for operators of motor vehicles, especially at higher speeds. Motorists should adjust driving speed accordingly, while using low-beam headlights.	

Figure 5.2.15-10 Source: NWS Wichita, Kansas
(1/20/2010 Content in part, not all inclusive)

Extracted from: "**How Unusual is All This Fog?"**

Dense fog is not tracked as closely as temperatures or precipitation, but we can shed a bit of light through the dense fog with a few facts.

What's Normal?

The following map shows the average number of days with dense fog across the United States. According to this map, the average number of days with dense fog across *Elmore County in Central Alabama* falls into the *20.5 to 25.4 range.* The average number of days with dense fog generally increases to the south, while decreasing in areas to the North, Northwest of Elmore County. Dense fog is defined as fog that reduces visibility to 1/4 statute mile or less.

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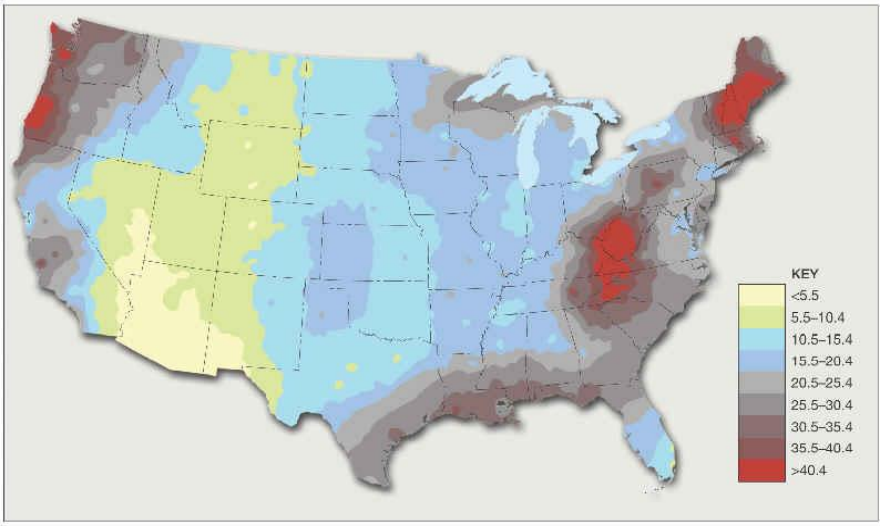
Figure 5.2.15-11 Average Number of Days With Dense Fog



This image was found at http://www.geography.hunter.cuny.edu

Source: NWS Miami-South Florida

Dense Fog or Smoke Safety Rules

Driving Rules

- Drive with lights on low beam.
- Reduce speed. Allow for plenty of room between you and other cars.
- Avoid crossing traffic unless absolutely necessary.
- Listen for traffic you cannot see.
- Use wipers and defroster as necessary for maximum vision.
- Be patient! Don't pass lines of traffic.
- Unless absolutely necessary, don't stop on any freeway or other heavily traveled road.
- If your car is disabled or you can't continue, pull well onto the shoulder and turn off lights. Move away from your vehicle.
- Consider postponing your trip until the fog clears.
- Be especially cautious in and near school zones. Watch for flashing yellow or red signals on school buses. Watch for children waiting for buses in the fog.
- Also, be aware that smoke from grass and forest fires along roadways can combine with fog to rapidly drop visibilities to zero.

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Recommendations for boaters in dense fog

1. Sound signals to let other boaters know where you are located :
    - For powerboats - one prolonged blast of the horn at intervals of not more than two minutes when underway.
    - For anchored vessels, vessels conducting fishing, or sailboats under sail alone - one prolonged blast of the horn plus two short blasts at intervals of not more than two minutes.
2. Maintain good situational awareness. Keep close track of your position relative to shoals, points of land, and other vessels.

Consider postponing your trip until the fog clears. If already underway, consider finding a safe, out of the way anchorage.

Figure 5.2.15-12 Radar Images of Dense Fog in Alabama Counties

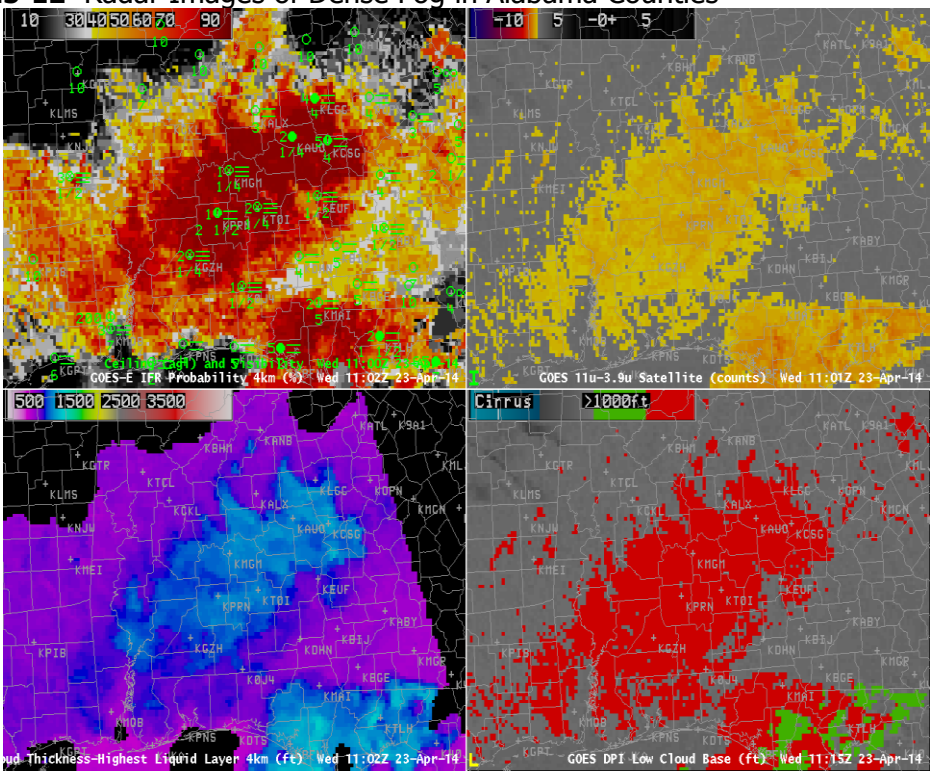

Figure 5.2.15-13 NWS BMX HWO Dated Oct 27, 2014

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FLUS44 KBMX 271034
HWOBMX

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE BIRMINGHAM AL
534 AM CDT MON OCT 27 2014

ALZ011>015-017>050-281045-
MARION-LAMAR-FAYETTE-WINSTON-WALKER-BLOUNT-ETOWAH-CALHOUN-CHEROKEE-
CLEBURNE-PICKENS-TUSCALOOSA-JEFFERSON-SHELBY-ST. CLAIR-TALLADEGA-
CLAY-RANDOLPH-SUMTER-GREENE-HALE-PERRY-BIBB-CHILTON-COOSA-TALLAPOOSA-
CHAMBERS-MARENGO-DALLAS-AUTAUGA-LOWNDES-ELMORE-MONTGOMERY-MACON-
BULLOCK-LEE-RUSSELL-PIKE-BARBOUR-
534 AM CDT MON OCT 27 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL
WEATHER SERVICE OFFICE IN BIRMINGHAM.

.DAY ONE...TODAY AND TONIGHT.

AREAS OF FOG LIKELY ACROSS CENTRAL ALABAMA THROUGH 9 AM. SOME
LOCATIONS...ESPECIALLY NEAR BODIES OF WATER AND IN LOW-LYING AREAS...COULD
EXPERIENCE VISIBILITIES LESS THAN ONE MILE

.DAYS TWO THROUGH SEVEN...TUESDAY THROUGH SUNDAY.

NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME.

.SPOTTER INFORMATION STATEMENT...

ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT IS NOT EXPECTED AT THIS
TIME.
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Figure 5.2.15-13.1 Fog on Oct 27, 2014 Wetumpka's Bibb Graves Bridge over Coosa River

Figure 5.2.15-13.2 Fog 27 Oct 2014, Wallsboro at Williams Rd and US Hwy 231 looking South

Figure 5.2.15-14 NWS BMX HWO Dated Oct 28, 2014

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FLUS44 KBMX 281909
HWOBMX

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE BIRMINGHAM AL
209 PM CDT TUE OCT 28 2014

ALZ011>015-017>050-291915-
MARION-LAMAR-FAYETTE-WINSTON-WALKER-BLOUNT-ETOWAH-CALHOUN-CHEROKEE-
CLEBURNE-PICKENS-TUSCALOOSA-JEFFERSON-SHELBY-ST. CLAIR-TALLADEGA-
CLAY-RANDOLPH-SUMTER-GREENE-HALE-PERRY-BIBB-CHILTON-COOSA-TALLAPOOSA-
CHAMBERS-MARENGO-DALLAS-AUTAUGA-LOWNDES-ELMORE-MONTGOMERY-MACON-
BULLOCK-LEE-RUSSELL-PIKE-BARBOUR-
209 PM CDT TUE OCT 28 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR THE COUNTIES SERVED BY THE NATIONAL
WEATHER SERVICE OFFICE IN BIRMINGHAM.

.DAY ONE…THIS AFTERNOON AND TONIGHT.

AREAS OF FOG WILL LIMIT VISIBILITIES TO LESS THAN ONE MILE AT TIMES GENERALLY
ALONG AND SOUTH OF A LINE FROM DEMOPOLIS…TO CLANTON…TO LAFAYETTE. FOG
FORMATION IS EXPECTED AFTER MIDNIGHT AND LASTING THROUGH SUNRISE WEDNESDAY
MORNING. USE CAUTION WHILE DRIVING AND USE LOW BEAM HEADLIGHTS.

.DAYS TWO THROUGH SEVEN…WEDNESDAY THROUGH MONDAY.

NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME.

.SPOTTER INFORMATION STATEMENT…

ACTIVATION OF STORM SPOTTERS AND EMERGENCY MANAGEMENT IS NOT EXPECTED AT THIS
TIME.
$$
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Figure 5.2.15-14.1 Fog 28 Oct 2014, Wallsboro, at Williams Rd and US Hwy 231 looking South

Figure 5.2.15-14.2 Fog 28 Oct 2014, Wallsboro, Wellington Blvd and US Hwy 231 looking South

Figure 5.2.15-14.3 Fog 28 Oct 2014, nearing intersection of US Hwy 231 and Redland Rd

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5.2.16 Celestial Impact (Includes Space Weather)

Source: Michigan Hazard Mitigation Plan (Updated March 2011 edition)
Source: NOAA NWS Space Weather Prediction Center (SWPC)

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Space Weather

History: Low, 2
Frequency of Occurrence: Very Rare (5)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 41

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3)
Infrastructure: Very High (1)
Environment: Very Low (6)

Jurisdictions	Extent of the Natural Hazard – Celestial Impact (includes Space Weather): Geomagnetic Storm Intensity on a G-Scale, Solar Radiation Storms on a S-Scale, and Radio Blackouts on a R-Scale
All	G3-Strong, S2-Moderate and R3-Strong resulting in damage and failure of power grids, disruptions to satellite communications, and wide area HF radio communications blackouts.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to the effects of space weather.
Overall Significance Ranking: Low

Source: Michigan Hazard Mitigation Plan (Updated March 2011 edition)

CELESTIAL IMPACT

An impact or threatened impact from a meteorite, asteroid, comet, satellite, space vehicle, space debris, solar storms, or similar phenomena that may cause physical damages or other disruptions.

Hazard Description

The celestial impact hazard primarily concerns the effects of large forces (from objects or energy) upon the Earth or its atmosphere. Most such forces are extraterrestrial in origin—**meteors** (which burn up in the atmosphere) or **meteorites** (which impact physically upon the ground) that were originally **asteroids** or **comets** from elsewhere in the solar system. It must be noted that even in cases where no meteorite actually strikes the ground, the explosive energies from the meteor's impact upon the many layers of atmosphere can create an intense heat and blast area, along with very strong winds, and can release more energy than even the largest nuclear bombs. Massive or fast moving bodies that impact upon either the ground, the oceans, or the atmosphere can cause widespread destruction and disruption of both human and natural systems, including secondary hazards such as earthquakes, volcanoes, tsunamis, and severe winds, although events of that magnitude are extremely rare.

Much more common is the flare-up of energy and charged particles that are emitted and ejected by the Sun to impact upon the Earth, for these **solar geomagnetic storms** (also known as **space weather**) can cause widespread failures of important satellite, electronic, communication, navigation, guidance and electric power systems—which have all formed a very important part of our modern technology and lifestyles. Because of the amount and complexity of information concerning the potential impacts from space objects, a great deal of this section has been devoted to an explanation and analysis of that hazard. However, it is important to note at the outset that the solar storm hazard is far more likely in the near term to cause disruptive effects, large economic impacts, and risks to human life. The smaller amount of text dedicated to space weather in this document should not mislead readers into a sense that it is considered less important, or that it is expected to cause less impact in the near future. Rather, the conclusion of the analysis presented here is that the effects of space weather have already had, and are much more likely to have, strong impacts upon Alabama within the normal historical timeframe that is typical for this type of plan. By contrast, the extensive discussion of impacting physical objects is given

primarily to be "on the safe side" so that readers and emergency managers can be well-informed in the unlikely event that a very serious incident does occur, or threaten to occur.

Although it has been estimated that a major impact from a physical body upon the Earth occurs approximately once per century, recent discoveries (and the fact that much more of the Earth has been covered by human developments within the recent past) have caused increasing concern over this hazard. Although most meteorites would be expected to strike an ocean rather than a continent, the effects of a large enough ocean strike can still be widely damaging, through resulting tsunami and seismic activities.

An important type of celestial impact involves the interference or disruption of modern electronic and communications systems, including those upon which our modern aviation networks rely. Solar flares and storms (also known as "space weather") are highly relevant for their potential impacts and possible disruption of these complex modern communication systems—satellites, television, radio, GPS, power supply networks, and the extensive human and technological infrastructure that relies upon those communication and utility networks.

Extensive evidence of previous celestial impacts upon Earth has been discovered, including evidence of a historic crater site located in Wetumpka (Elmore County), Alabama, but the vast majority of historical Earth impacts have had their evidence erased from normal observation by the ongoing geological processes that take place over time. Even the largest of impact sites would no longer be evident to normal observation after a period of about 200 million years (usually much, much less). Such an amount of time is less than 5% of the Earth's overall age, but it has been found that impacts used to occur much more frequently during the earlier periods in Earth's history (i.e. nearer to the period of planetary formation) than they do in recent geological periods. Clearer evidence of the many historical impacts can be seen on other celestial bodies that are less geologically active, such as Earth's own Moon.

Figure 5.2.16-1 Wetumpka Impact Crater Source: The Planetary and Space Science Centre (PASSC), New Brunswick Canada, Earth Impact Database

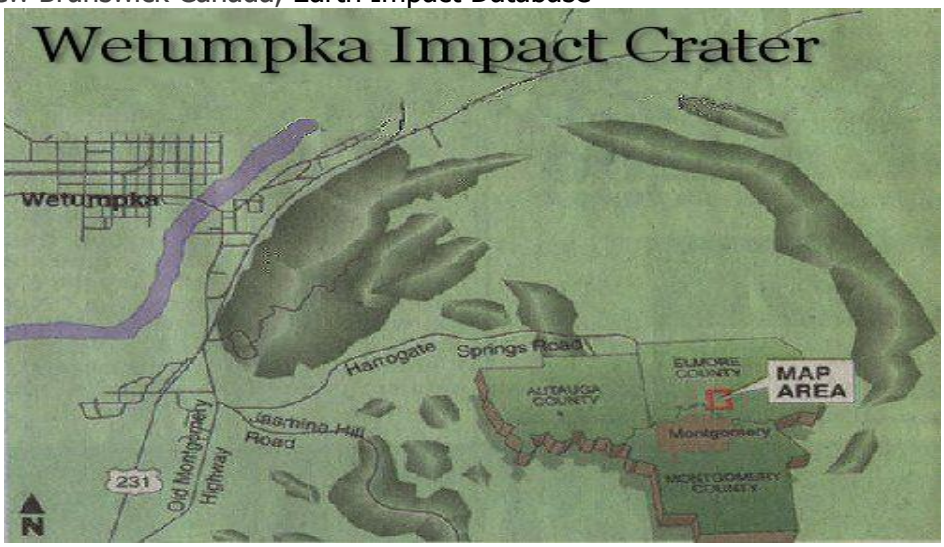
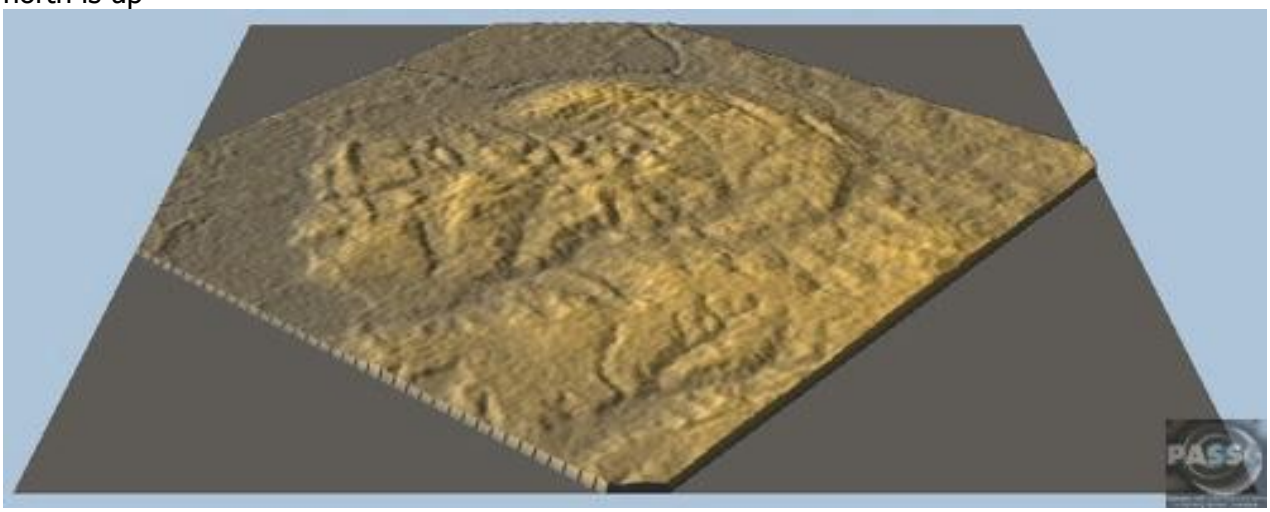


Figure 5.2.16-2 Wetumpka Impact Crater Digital Elevation Models (DEM) made using Shuttle Radar Topography Mission (SRTM). Generated by Dr. Ed Albin, Fernbank Museum, Atlanta; north is up



Wetumpka

Crater Name	Location	Latitude	Longitude	Diameter (km)	Age (Ma)*	Exposed	Drilled	Target Rock**	Bolide Type***
Wetumpka	Alabama, U.S.A.	N 32° 31'	W 86° 10'	6.5	81.0 ± 1.5	Y	Y	M	Chondrite?

Figure 5.2.16-3 Wetumpka Impact Crater Landsat – False color image made c. 1990, at about 30 m resolution showing the structure and surrounding area. Looking straight down. Submitted by David King

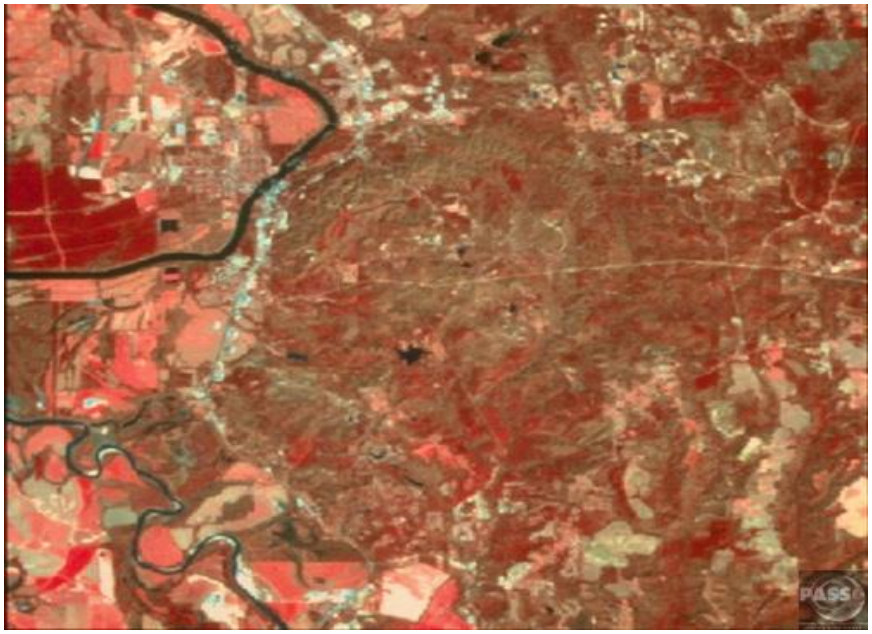


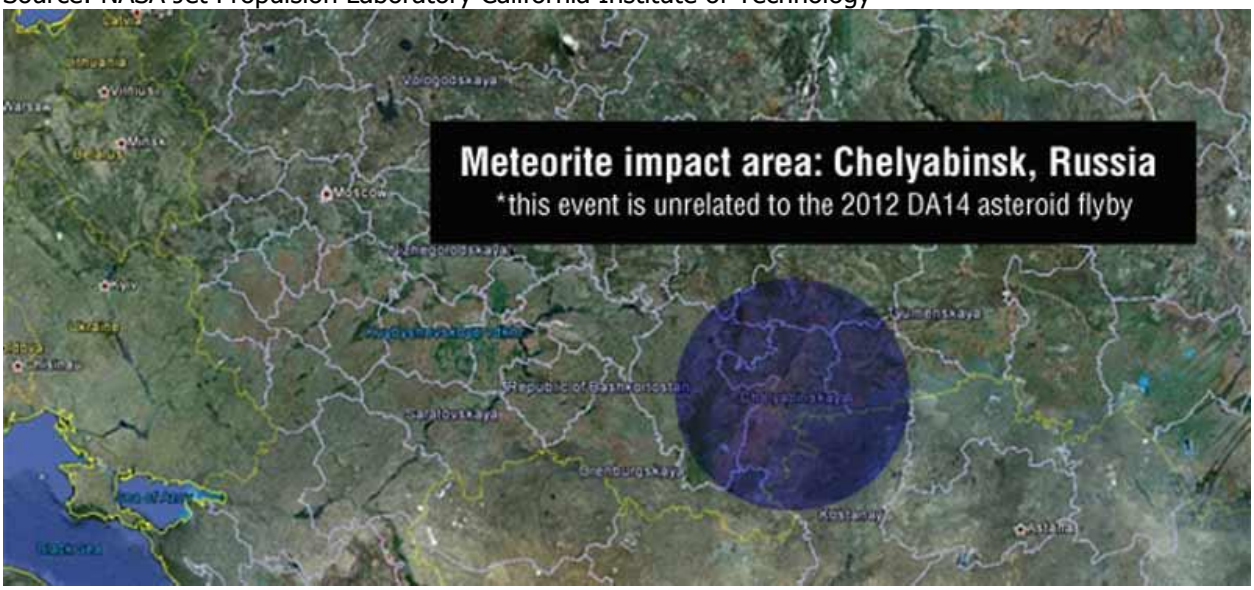
Figure 5.2.16-4 Digital Elevation Model (DEM) of Wetumpka, north is to the top. Compiled by Dr. Kevin Evans, Southwest Missouri State University

Asteroids

Most asteroids are located in the main asteroid belt and have well-defined orbits there between 200 and 310 million miles from the Sun, but thousands of asteroids also exist in other parts of the solar system. There are groups of "Trojan" asteroids that share an orbit with Jupiter, for

example, located 60 degrees both ahead of and behind that planet itself while going around the Sun. Asteroids that have paths which cross over Earth's orbit are classified as Near-Earth Objects (NEOs), and are called Apollo asteroids. Two other types of NEOs are Amor asteroids, which approach the Earth's orbit from positions outside of it, and Aten asteroids, which approach the Earth's orbit from the direction of the Sun. As of January 2009, there were 6,021 NEOs identified, of which 1,026 were classified as posing the possibility of threat (having the potential to come within 466,000 miles of the Earth's orbit). The typical asteroid would impact upon the Earth at an angle of 45 degrees and a speed of 10 miles per second.

Figure 5.2.16-5
Source: NASA Jet Propulsion Laboratory California Institute of Technology



A meteor seen flying over Russia on Feb. 15 at 3:20: 26 UTC impacted Chelyabinsk. Preliminary information is that this object was unrelated to asteroid 2012 DA14, which made a safe pass by Earth today. Image credit: Google Earth, NASA/JPL-Caltech

February 15, 2013
Update: March 21, 2013 2pm PST

The large fireball (technically, called a "superbolide") observed on the morning of Feb. 15, 2013, in the skies near Chelyabinsk, Russia, was caused by a relatively small asteroid approximately 17 to 20 meters in size (about 18.6 to 21.9 yards) that entered Earth's atmosphere at high speed and at a shallow angle. In doing so, it released a tremendous amount of energy, fragmented at high altitude, and produced a shower of pieces of various sizes that fell to the ground as meteorites.

The fireball was observed not only by video cameras and low-frequency infrasound detectors, but also by U.S. government sensors. Information on the composition of the meteor was also derived from meteorite fragments found in the Chelyabinsk area. With this new data incorporated, the details of the impact have become clearer.

At 9:20:20 a.m. local time (3:20:20 UTC) the meteor entered Earth's atmosphere over the Kazakhstan/Russia border. As it descended through the upper atmosphere, it traveled northwest into Russia. The impactor's trajectory approached Earth along a direction that remained within 15 degrees of the direction of the sun. Asteroid detection telescopes cannot scan regions of the sky this close to the sun.

During the atmospheric entry phase, an impacting object is both slowed and heated by atmospheric friction. In front of it, a bow shock develops where atmospheric gases are compressed and heated. Some of this energy is radiated to the object, causing it to ablate, and in most cases, break apart. Fragmentation increases the amount of atmosphere intercepted and so enhances ablation and atmospheric braking. The object disintegrates when the force from the unequal pressures on the front and back sides exceeds its tensile strength. This disruption, or disintegration, usually occurs around the time of maximum brightness.

Thirteen seconds after atmospheric entry, at 9:20:33 a.m. local time (03:20:33 UTC), the fireball, traveling at a velocity of 11.6 miles per second (18.6 kilometers per second), achieved its maximum brightness just south of Chelyabinsk, Russia, at an altitude of 14.5 miles (23.3 kilometers). The approximate effective diameter of the asteroid is estimated to be about 18 meters (about 19.7 yards), and its mass about 11,000 tons. Approximate total impact energy of the Chelyabinsk Fireball, in kilotons of TNT explosives (the energy parameter usually quoted for a fireball), is 440 kilotons. Note that these estimates of total energy, diameter and mass are very approximate. The Chelyabinsk event was an extraordinarily large fireball, the most energetic impact event recognized since the 1908 Tunguska blast in Russian Siberia.

Update: February 15, 2013 7pm PST
New information provided by a worldwide network of sensors has allowed scientists to refine their estimates for the size of the object that entered that atmosphere and disintegrated in the skies over Chelyabinsk, Russia, at 7:20:26 p.m. PST, or 10:20:26 p.m. EST on Feb. 14 (3:20:26 UTC on Feb. 15).

The estimated size of the object, prior to entering Earth's atmosphere, has been revised upward from 49 feet (15 meters) to 55 feet (17 meters), and its estimated mass has increased from 7,000 to 10,000 tons. Also, the estimate for energy released during the event has increased by 30 kilotons to nearly 500 kilotons of energy released. These new estimates were generated using new data that had been collected by five additional infrasound stations located around the world - the first recording of the event being in Alaska, over 6,500 kilometers away from Chelyabinsk. The infrasound data indicates that the event, from atmospheric entry to the meteor's airborne disintegration took 32.5 seconds. The calculations using the infrasound data were performed by Peter Brown at the University of Western Ontario, Canada.

"We would expect an event of this magnitude to occur once every 100 years on average," said Paul Chodas of NASA's Near-Earth Object Program Office at the Jet Propulsion Laboratory in Pasadena, Calif. "When you have a fireball of this size we would expect a large number of meteorites to reach the surface and in this case there were probably some large ones."
The trajectory of the Russia meteor was significantly different than the trajectory of the asteroid

2012 DA14, which hours later made its flyby of Earth, making it a completely unrelated object. The Russia meteor is the largest reported since 1908, when a meteor hit Tunguska, Siberia.

More information about asteroids and near-Earth objects is at: http://www.jpl.nasa.gov/asteroidwatch . More information about asteroid radar research is at: http://echo.jpl.nasa.gov/ . More information about the Deep Space Network is at: http://deepspace.jpl.nasa.gov/dsn .

Comets

More than 99% of all meteorites come from asteroids, but some comet impacts have also been confirmed (9 are known, constituting less than 0.03% of all meteorites). The main difference between comets and asteroids is that comets tend to have elliptical orbits that carry them out beyond the "nebular frost line" (located in the main asteroid belt, about 250 million miles from the Sun) and thus their composition includes a substantial amount of icy and frozen matter. Comets usually lose about 0.1% of this matter each time they pass by the sun, due to the effects of warming and the pressure of solar radiation, and this matter trails behind them in their long "tails," which include charged particles (with associated magnetic fields) and can stretch across many tens of millions of miles of space. Where such tails cross the Earth's orbit, this matter (typically small and harmless to us) generates sometimes spectacular "meteor showers" as it periodically burns up in the Earth's atmosphere at regular times during the year. After a certain number of orbits, however, the comet simply breaks apart. Even if less dense than the average asteroid, a comet's heavy nucleus can be sizeable (from several hundred meters to over 40km in diameter), and a comet impact upon the Earth would typically occur at a speed of 31 miles per second—about three times as fast as the average asteroid, with a proportionally larger momentum of destructive energy if the amount of mass is the same. (It is worth noting here that the maximum impact upon the Earth for any object orbiting the Sun would be no more than 44.5 miles per second.) Comets are classifiable by their orbital period, with long period comets taking more than 200 years to travel around the Sun, and short period comets taking less than that. The short period comets are further subdivided into Halley-type comets with orbital periods between 30 and 200 years, and Jupiter-type comets with orbital periods of less than 30 years. Long period comets originate in the farthest reaches of the Solar System (the Oort Cloud) and approach the Sun and Earth from any direction, while short period comets originate from the "Kuiper Belt" that exists beyond Neptune and is approximately in the same plane as all of the major planets. Short period comets thus would approach us from more predictable, shallow angles. The comet only begins to glow, though, when it approaches to within 3 and 5 Earth distances from the Sun (3 to 5 astronomical units). Since short-period comets tend to last for only a matter of hundreds or perhaps thousands of orbits, their number seems to be replenished by a reservoir in our solar system (whose orbits eventually become shifted by gravitational perturbations). The Oort Cloud probably contains about a trillion comets, but most of these remain so far away that we remain unaware of them. The Kuiper Belt contains billions of comets, and the average diameter of one that comes near to the Sun is about 10 km.

If advance notice of an approaching meteor, asteroid, or comet is available, then widespread alerts might be prompted by this information, much as the explosive breakup of the Space Shuttle Columbia in 2003 had required warnings and alerts across multiple southwestern states, due to

the possibility of persons and property being affected by falling debris. (See the event descriptions that appear later in this chapter.) In the case of the Cosmos 954 and Space Shuttle incidents, such debris needed special handling, both for purposes of investigation and out of concern for personal safety, since some of it could have contained hazardous substances. The threat of a celestial impact could be much more dangerous and far-reaching. One clear example of the potential damage was seen in the impact of the comet Shoemaker-Levy 9 on the planet Jupiter, in 1994, which resulted in blasts that were estimated as the equivalent of ten million megatons of explosives. In comparison, the 1979 Mount St. Helens eruption was roughly 5 megatons, and the 1885 Krakatoa eruption in Indonesia was about 100 megatons. Following the Shoemaker-Levy comet impact, Congress authorized new research to analyze this type of celestial impact hazard.

Space Weather

The Sun does not "burn" in the sense that we usually experience that common heat-generating process on Earth, but rather emits huge amounts of energy from the continuous processes of nuclear fusion that take place in the Sun's core. The gravitational pressures of the Sun's enormous mass, pulling toward itself, are thus generally offset by outward pressures from the fusion processes that take place at its core. Enormous amounts of energy are radiated from the Sun, including the spectrum of electromagnetic waves up through gamma wave frequencies. These include infrared (heat) radiation, ultraviolet, all colors of visible light, x-rays, microwaves, and radio waves. The intensity of these forms of radiation varies, and gamma waves are normally only emitted during solar flare events (to be explained shortly). It should also be understood that in the midst of all these solar interactions of matter and energy are powerful magnetic forces, which also affect the distribution of heat energy in and around the Sun and sometimes cause cooler areas, called **sunspots**, to form for a while, readily visible even with crude forms of observational equipment. (Although an observer should never look directly at the Sun, a pinprick of solar light projected onto a surface provides one basic means of seeing a Solar image). The relatively low temperatures of sunspot areas, however, are coupled with a rise in energy above the Sun's surface. **Solar prominences** are arches of plasma that soar above the Sun's surface, in a pattern that is itself shaped by the powerful magnetic fields present. In some cases, these magnetic fields have become too twisted to maintain such forces within these ordinary patterns, and a **solar flare** is generated, which releases a huge amount of energy from the Sun. Normally, a **solar wind** exists in the form of milder pressures exerted by emitted photons, ions, and other particles that flow outward from the Sun until they are eventually halted (beyond the orbit of Neptune, at an area called the heliopause) by the pressure of interstellar gases. Within the realm of the Sun's planets, however, the solar wind is an ongoing feature of the space environment, constantly sending energy and charged particles outward.

Space weather is a term that denotes the impacts of the Sun's activity upon the bodies within this sphere inside the heliopause, including our own Earth. As with the weather on Earth, there are some clear patterns that are exhibited by space weather. More turbulent space weather is produced during times when more sunspots are present (called a solar maximum), and space weather is calm during times when sunspots are rare and small (or not even seen to be present at all, called a solar minimum). A **sunspot cycle** exists, in which sunspot activity regularly shifts between a minimum and maximum level. As with our Earthly seasons, however, it cannot be

known in advance exactly how turbulent or calm things will be at a given moment during the sunspot cycle—only that calmer periods regularly give way to more turbulent periods. As to the regularity of the sunspot cycle itself, although it has been found that the average amount of time between a solar minimum and a solar maximum is about 11 years, the actual length varies quite a bit within each cycle. The interval is sometimes as long as 15 years and sometimes as short as 7 years. In addition, it has been observed that long periods can occur with little or no sunspot activity. The "Maunder minimum," which occurred between the years 1645 and 1715, is the primary example of such long-term variation from the normal cycle, but it is not yet known what caused it, or when it might recur. The Earth's atmosphere serves as a shield for us against many types of particles and radiation zipping across space, and Earth also has a **magnetosphere** that similarly provides protection against most of the charged particles traveling through space. There are some weak spots in the Earth's magnetic field, however, that exist near its two magnetic poles and allow many ions to penetrate, where they collide with atoms in the Earth's upper atmosphere and glow to produce the beautiful auroras in the skies of the arctic regions of the north and south. In addition, the Earth is surrounded by "belts" of charged particles (called Van Allen belts) which are hazardous to spacecraft and astronauts. These are known and predictable conditions of calm space weather, however, and the actual hazard is the turbulence that is generated by large solar flares, causing problems with radio communications, damage to satellites, and even disruptions in power delivery networks on the Earth. As of early 2011, sunspot cycle number 24 was proceeding, from a solar minimum that was reached in December 2008, projected to transition to a solar maximum by the middle of 2013.

Another type of solar disturbance is a **coronal mass ejection** (CME), in which built-up pressures cause the sudden release of gases and magnetic fields at tremendous speeds, with impacts that reach far across interplanetary space. Like solar flares, CME events are a cause of geomagnetic storm events on Earth (usually 1 to 4 days after the solar event), and they occur more frequently during periods with more sunspots. One of the additional effects of space weather involves increased exposure to ionizing radiation (e.g. x-rays), especially among those in aircraft at high altitudes and along polar flight paths. Extra costs, in fuel and delays, are imposed upon airlines during periods of harmful space weather.

Hazard Analysis

A couple of scales have been developed to numerically summarize the extent of risk that may be associated with extraterrestrial celestial bodies, such as comets, asteroids, and meteoroids. One scale is called the Palermo scale, but since it is more difficult for general citizens to interpret, the Torino Scale has been featured in media reports since its initial presentation at a United Nations conference in 1995, and it was adopted by the International Astronomical Union in 1999. Both scales take into consideration the amount of destructive energy that an impact could cause, and the probability of such an impact occurring. It is common for newly discovered objects to have their initial classifications on these scales subsequently downgraded, as additional information is collected that more precisely defines the exact path of the object. In other words, an object that is initially classified as having the potential for impact, and thus being worthy of closer study, is often later reclassified as additional information reveals that little or no significant impact potential exists. The lower numbers on the scale should not be interpreted as indicating any particular concern, and in the previous 15 years, only one object (99942 Apophis) had temporarily been

classified as high as a 4 on the Torino scale. Being an asteroid large enough to cause regional devastation if it struck, Apophis had initially been estimated to have a 1 in 45,000 chance of striking the Earth on April 13, 2036, but as more information was obtained about its trajectory, that estimate was downgraded to only a 4 in 1 million probability. Although the asteroid's approach will be spectacular to observe, it is predicted to come as close as 18,300 miles away from the Earth's surface as it passes. (In Celestial terms, this is a very near miss, because that distance is smaller than the circumference of the Earth.) The official explanation of Torino Scale ratings are provided below. In addition to numerical categories from 0 to 10, the scale is also color-coded in five categories, from white to red.

THE TORINO IMPACT HAZARD SCALE:

No Hazard (White Zone)

0: The likelihood of a collision is zero, or is so low as to be effectively zero. Also applies to small objects such as meteors and bodies that burn up in the atmosphere as well as infrequent meteorite falls that rarely cause damage.

Normal (Green Zone)

1: A routine discovery in which a pass near the Earth is predicted that poses no unusual level of danger. Current calculations show the chance of collision is extremely unlikely with no cause for public attention or public concern. New telescopic observations very likely will lead to re-assignment to Level 0.

Meriting Attention by Astronomers (Yellow Zone)

2: A discovery, which may become routine with expanded searches, of an object making a somewhat close but not highly unusual pass near the Earth. While meriting attention by astronomers, there is no cause for public attention or public concern as an actual collision is very unlikely. New telescopic observations very likely will lead to reassignment to Level 0.

3: A close encounter, meriting attention by astronomers. Current calculations give a 1% or greater chance of collision capable of localized destruction. Most likely, new telescopic observations will lead to re-assignment to Level 0. Attention by public and by public officials is merited if the encounter is less than a decade away.

4: A close encounter, meriting attention by astronomers. Current calculations give a 1% or greater chance of collision capable of regional devastation. Most likely, new telescopic observations will lead to re-assignment to Level 0. Attention by public and by public officials is merited if the encounter is less than a decade away.

Threatening (Orange Zone)

5: A close encounter posing a serious but still uncertain threat of regional devastation. Critical attention by astronomers is needed to determine conclusively whether or not a collision will occur. If the encounter is less than a decade away, governmental contingency planning may be warranted.

6: A close encounter by a large object posing a serious but still uncertain threat of a global catastrophe. Critical attention by astronomers is needed to determine conclusively whether or not a collision will occur. If the encounter is less than three decades away, governmental contingency planning may be warranted.

7: A very close encounter by a large object, which if occurring this century, poses an unprecedented but still uncertain threat of a global catastrophe. For such a threat in this century,

international contingency planning is warranted, especially to determine urgently and conclusively whether or not a collision will occur.

Certain Collisions (Red Zone)

8: A collision is certain, capable of causing localized destruction for an impact over land or possibly a tsunami if close offshore. Such events occur on average between once per 50 years and once per several 1000 years.

9: A collision is certain, capable of causing unprecedented regional devastation for a land impact or the threat of a major tsunami for an ocean impact. Such events occur on average between once per 10,000 years and once per 100,000 years.

10: A collision is certain, capable of causing global climatic catastrophe that may threaten the future of civilization as we know it, whether impacting land or ocean. Such events occur on average once per 100,000 years, or less often.

Note: This is the Torino Scale as revised in 2005. A graphic of the Torino Scale is also available at http://neo.jpl.nasa.gov/images/torino_scale.jpg .

The Palermo Technical Impact Hazard Scale is a bit different, with values less than -2 reflecting events for which no consequences are likely, values between -2 and 0 indicating situations that merit careful monitoring, and values above zero indicating situations that merit some level of concern. This document presents only the Torino scale in its entirety, since that scale was developed for general public informational uses.

About 40,000 to 60,000 tons of extraterrestrial material falls onto the Earth each year, but most of it is mere dust. Larger amounts of materials fall during regular cycles called meteor showers, but again most of it is small enough to harmlessly burn up (through ablation) as it hits the Earth's atmosphere at high speeds (typically about 67,000 mph). During meteor showers, the material is typically left over debris from comets that had crossed the Earth's orbit, and most such material is very small and harmless to us. Material that does survive ablation to strike the Earth's surface lands in random locations, and since 70% of the Earth's surface is water, these meteorites mostly go unnoticed by ordinary people. The risk to Elmore County, Alabama, is calculable in general terms, by considering the proportion of the Earth's total surface area that is occupied by Elmore County's land area. The earth's total surface area, according to the *Universe Today* website is: 510 million square kilometers or 196912100.857 square miles. Elmore County's total surface area is 1702.2km^2 or 657.21 square miles. The frequency of global impact events can then be multiplied by this factor to estimate the frequency of impact events directly upon Elmore County's land area. This results in the following estimates, on average, for different sizes of impacts upon Elmore County's land itself:

· About 1 to 5 impacts per year that are larger than 100g (golf-ball size) – This may kill an individual that is struck, but since most space is not occupied by a person at any particular moment, such a thing is exceptionally rare, and there have only been a couple of confirmed meteorite injuries worldwide. Instead, such incidents are more likely to simply cause limited property damage to a car or home, although their appearance in the sky can appear impressive and be accompanied by a sonic boom. (Example: the Washtenaw County strike of 1997.)

· About one impact per century involving an object of more than 100kg (220 pounds), and bout one impact every 1700 years involving an object of more than 1000kg (about 2200 pounds) – These types of events would result in a loud sounds and bright flare-ups in the sky, leaving a field of fragments strewn across an area that is miles across, but actual damages are likely to be only moderate unless a dense urban area or critical facility happens to be struck. (Example: the Park Forest, IL event of 2003.)

· About one impact every 350,000 years involving an object of more than 100,000kg (about 220,000 pounds) – This is the type of impact that resembles an atomic blast, exploding brightly in the sky and producing a very strong blast wave and severe winds that would cause extensive building damages and collapse at ground level, flatten forest lands, and start a large wildfire. (Example: the Tunguska, USSR event of 1908.)

Although that last type of event is so rare that it need not be of general concern for Elmore County, the probability of such an event affecting some part of the U.S. and potentially causing a national emergency is a bit larger, but still remote. It is most probable that the next such event will occur elsewhere in the world (on the order of about 1 event per century) and, although potentially devastating to that area, Alabama's/Elmore County's role would probably only involve the voluntary donation of humanitarian aid to the disaster area. One foreseeable scenario could involve an asteroid impact in the ocean, which causes tsunami impacts upon the associated coastline of the U.S.—waves could be more than 100 feet high from the impact of an asteroid with a diameter of 1300 feet, although that scale of event would only be expected about once in 80,000 years. These type of large events, of the type that would actually form sizeable craters and cause catastrophic national or global impacts (including major seismic and volcanic effects and global cooling from gaseous effects and dust, smoke, and particulates deposited into the atmosphere), are rare enough that no extensive description will be provided here—past events of that type are well-established in a geological timeframe but not in a human historical timeframe. (Reference will be made to such events primarily in the description of mitigation strategies.) Since meteors flare up brightly in the sky, some persons have speculated about whether meteorites could then cause wildfires to start up. As it turns out, this is generally not the case. The flaring fireballs are caused by ablation as the very fast meteors encounter the atmosphere and friction generates heat, but a great amount of material typically burns away in this process, followed by miles of additional falling before ground impact, during which time the contact with blowing air exerts a cooling effect. The vast majority of meteorites are actually cool when they strike the ground. It would take a very large impact to bring a degree of heat that is capable of igniting a forest fire, and impacts of that size are very rare. That type of rare, large impact would also tend to flatten forest lands at the same time, with blast pressure and wind effects that could offset much of the fire risk. A large (Tunguska-sized) event would cause forest fires, along with huge amounts of other damage, and it is conceivable that a smaller-sized (but still very rare) impact might cause wildfire ignition if there are already drought conditions present that have increased the natural wildfire risk. In general, wildfires will not be caused by meteorites, and there is no good evidence that any of Alabama's historic wildfires were of meteoritic origin.

Space weather can be very expensive for those who use or rely upon satellites. During a solar maximum, the Earth's upper atmosphere expands and increases the drag upon satellites within

low orbits, which will then require boosting in order to remain aloft. Electronic circuits can malfunction and cause interruptions or complete losses in operational capacity. Space missions may also need to be delayed, in order to ensure their safety and success. Special design features may require additional expenses, to mitigate the effects of space weather. Communication disruptions can inhibit navigation and hinder the safe management of air and sea traffic. Electric currents are induced by the relative motion of magnetized material, and these can affect power supply and pipeline infrastructure, potentially causing weakening and damage in these systems as well as electronic malfunctions. Three space weather scales are in use by NOAA/NWS to summarize the intensity and potential impact of three different types of space weather effects. Each uses a 5-category classification scheme, and the three scales denote (1) geomagnetic storm intensity, on a G-scale, (2) solar radiation storms, on an S-scale, and (3) radio blackouts, on an R-scale. Weaker events are given a number of 1 on the scale, and extreme events are rated as a 5. In this document, selected material is summarized below. For more detailed information, see the information found later in this section or please refer to the NOAA web site at http://www.swpc.noaa.gov/NOAAscales/.

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Figure 5.2.16-6 (April, 2015)
All materials provided within this section are from the NOAA NWS Space Weather Prediction Center's (SWPC) Webpage:

Our Mission

To deliver space weather products and services that meet the evolving needs of the nation.

Our Vision

A nation prepared to mitigate the effects of space weather through the understanding and use of actionable alerts, forecasts, and data products.

About Us

The Space Weather Prediction Center (SWPC) is part of the National Weather Service and is one of the nine National Centers for Environmental Prediction. It is the nation's official source of space weather alerts, watches and warnings. SWPC provides real-time monitoring and forecasting of solar and geophysical events which impact satellites, power grids, communications, navigation, and many other technological systems. SWPC also explores and evaluates new models and products and transitions them into operations. SWPC is also the primary warning center for the International Space Environment Service and works with many national and international partners with whom data, products, and services are shared.

ABOUT SPACE WEATHER IMPACTS: Different types of space weather can affect different technologies at Earth. Solar flares produce strong x-rays that modify the ionosphere so that it degrade or blocks the high-frequency radio waves that are used for radio communication. Solar Energetic Particles (energetic protons) can penetrate satellite electronics and cause electrical failure. These energetic particles can also modify the ionosphere at high latitudes blocking radio communications in these regions. Geomagnetic Storms induce extra current on electrical power lines which can cause serious damage and failure of the power grid. Geomagnetic storms can

also modify the ionosphere which, in turn, can modify the signal from radio navigation systems (GPS and GNSS) causing the systems to be much less accurate than normal. Geomagnetic storms produce aurora. Space weather will impact people who depend on these technologies. A description of some of the space weather phenomena can be found at Space Weather Phenomena.

SERVING ESSENTIAL SPACE WEATHER COMMUNITIES:

- **Aviation**
- **Electric Power**
- **Emergency Management**
- **Global Positioning System (GPS)**
- **Radio Communications**
- **Satellites**
- **Media**

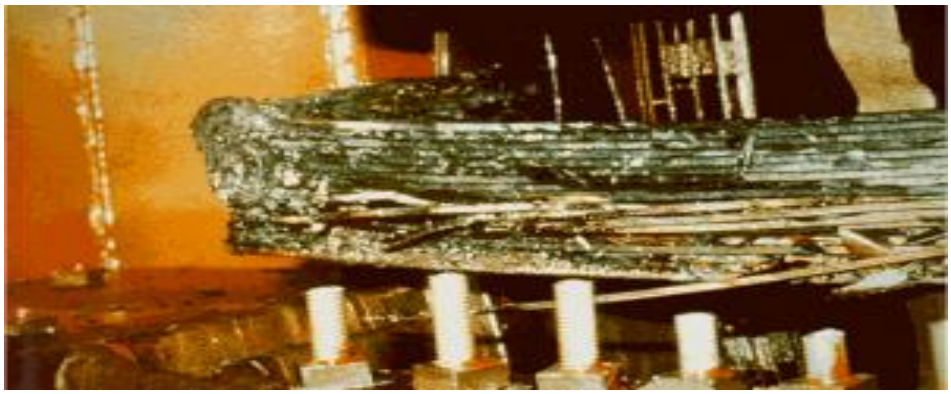

Figure 5.2.16-7 Source: SWPC

Electric Power Transmission

The electric power grid, and therefore the power to your home and business, can be disrupted by space weather. One of the great discoveries of the 19th century was the realization that a time-varying magnetic field is able to produce an electrical current in a conducting wire. The basic idea is that the time rate of change of the magnetic flux (i.e. lines of magnetic force) passing through a current loop is proportional to the current that is generated around the loop. A slightly earlier but equally important discovery was that a current-carrying wire produces a magnetic field. The application of these principles is widely prevalent in modern society, for example in electrical power generators, electrical power transformers, and electrical motors.

Time-varying magnetic fields and electrical current systems, however, are not just artificial phenomena, but in fact are quite common in nature. Natural electrical current systems which vary in time can be found inside the Earth, in the oceans, and in the upper atmosphere of the earth (above ~100 km) where the constituents of the atmosphere include positively charged ions and negatively charged electrons which move about in a myriad of complicated ways. Many of these

upper atmospheric current systems are constantly present and modulate in a regular way in response to the rotation of the earth, the gravitational pull of the moon, and the slow variation of solar radiation over the course of the solar cycle. At times, however, these current systems can be greatly enhanced and exhibit rapid changes with time and space, a phenomenon typically referred to as a geomagnetic storm. Geomagnetic storms in turn are caused by disturbances that propagate away from the Sun, travel through interplanetary space and interact with Earth's space environment.

We might expect that the early inventers of the telegraph systems did not realize that the electrical circuit they were constructing was threaded by lines of naturally produced magnetic flux, and even more surprising that this flux could vary with time and induce a natural current in their system. However, it was not too long after their deployment that reports of anomalous currents were observed which could at times prohibit communication or could enable a system to be run without an electrical power source, or in more dramatic instances cause the recording paper to catch fire (see review by Boteler 2003 and references therein). Similar effects continued to be noticed from time to time with the next generation of communication lines (coaxial cables).

Another system of artificial electrical circuits began to grow with the advent of electrical power systems. Just like the telegraphs, this complicated collection of circuits is threaded by naturally produced magnetic flux and just like the telegraphs, rapid variations of this magnetic flux during geomagnetic storms causes an unexpected, naturally produced current to flow through the system. This effect was first reported after the 24 March 1940 geomagnetic storm (Davidson, 1940; see also Germaine, 1940 for reports of effects on long-line communication cables). Numerous large and moderate impacts to the grid have been reported over the years including a power blackout in 1958 (Lanzerotti & Gregori, 1986), equipment tripping and voltage stability issues (4 August 1972), a nine-hour blackout in Canada and a transformer loss (13 March 1989 - see photo), a blackout in Sweden during the October 2003 storm. (See Boteler, 2001, for a comprehensive compilation of effects).

Assessing the impact of geomagnetic storms on the electrical power grid involves a number of considerations. The path for current flow that responds to the varying external currents in the upper atmosphere follows artificial current paths on the ground (the power lines) as well as various natural current paths (e.g. ground conducting structure below the surface and in nearby bodies of water). Once the natural current paths are adequately accounted for the net geoelectric field that is imposed on the artificial current paths results in a quasi D.C. (periods of 10 seconds to 10's of minutes) current in the power lines. These geomagnetically induced currents cause the 'exciting current' in power transformers to operate out of their designed range, resulting in saturation of the magnetic core material inside the transformer. Once the core saturates, the transformer no longer provides any back 'electromotive force' (a kind of electrical inertia) and the currents and voltages in the windings become abnormally large. Depending on the transformer design, this can lead in some cases to heating of the surrounding structures due to induced 'Eddy Currents' which has the potential to damage parts of the transformer. An additional impact of transformer saturation is that the voltages and currents no longer have a simple sinusoidal (60 cycle) form and this can cause protective equipment elsewhere in the grid to operate when it shouldn't. These equipment 'trips' can take needed equipment off line and cause voltage stability

problems. An additional issue for the system is that all of the transformers that are saturating show up as a significant inductive load on the grid as a whole. This means that a system that is near peak levels of demand prior to the geomagnetic storm event may not be able to meet the total power demand when the geomagnetic storm occurs, leading to partial or system wide blackouts.

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Figure 5.2.16-8 Source: SWPC

HF Radio Communications

Space weather impacts radio communication in a number of ways. At frequencies in the 1 to 30 mega Hertz range (known as "High Frequency" or HF radio), the changes in ionospheric density and structure modify the transmission path and even block transmission of HF radio signals completely. These frequencies are used by amateur (ham) radio operators and many industries such as commercial airlines. They are also used by a number of government agencies such as the Federal Emergency Management Agency and the Department of Defense.

There are several types of space weather that can impact HF radio communication. In a typical sequence of space weather storms, the first impacts are felt during the solar flare itself. The solar x-rays from the sun penetrate to the bottom of the ionosphere (to around 80 km). There the x-ray photons ionize the atmosphere and create an enhancement of the D layer of the ionosphere. This enhanced D-layer acts both as a reflector of radio waves at some frequencies and an absorber of waves at other frequencies. The Radio Blackout associated with solar flares occurs on the dayside region of Earth and is most intense when the sun is directly overhead.

Another type of space weather, the Radiation Storm caused by energetic solar protons, can also disrupt HF radio communication. The protons are guided by Earth's magnetic field such that they collide with the upper atmosphere near the north and south poles. The fast-moving protons have an affect similar to the x-ray photons and create an enhanced D-Layer thus blocking HF radio communication at high latitudes.

During auroral displays, the precipitating electrons can enhance other layers of the ionosphere and have similar disrupting and blocking effects on radio communication. This occurs mostly on the night side of the polar regions of Earth where the aurora is most intense and most frequent.

More information on solar activity from an amateur radio operator's perspective is available at http://www.aoc.nrao.edu/~pharden/hobby/FDIM81.pdf

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Figure 5.2.16-9

FEMA

Daily Operations Briefing
Sunday, June 15, 2014
8:30 a.m. EDT

Significant Activity: June 14 – 15
Significant Weather:
Space Weather: Past 24 hours –Minor (R1) Radio Blackouts; Next 24 hours – Minor (R1) Radio Blackouts

NOAA Scales Activity (Range: 1/minor to 5/extreme)	Past 24 Hours	Current	Next 24 Hours
Radio Blackouts	R1	None	R1

Figure 5.2.16-10

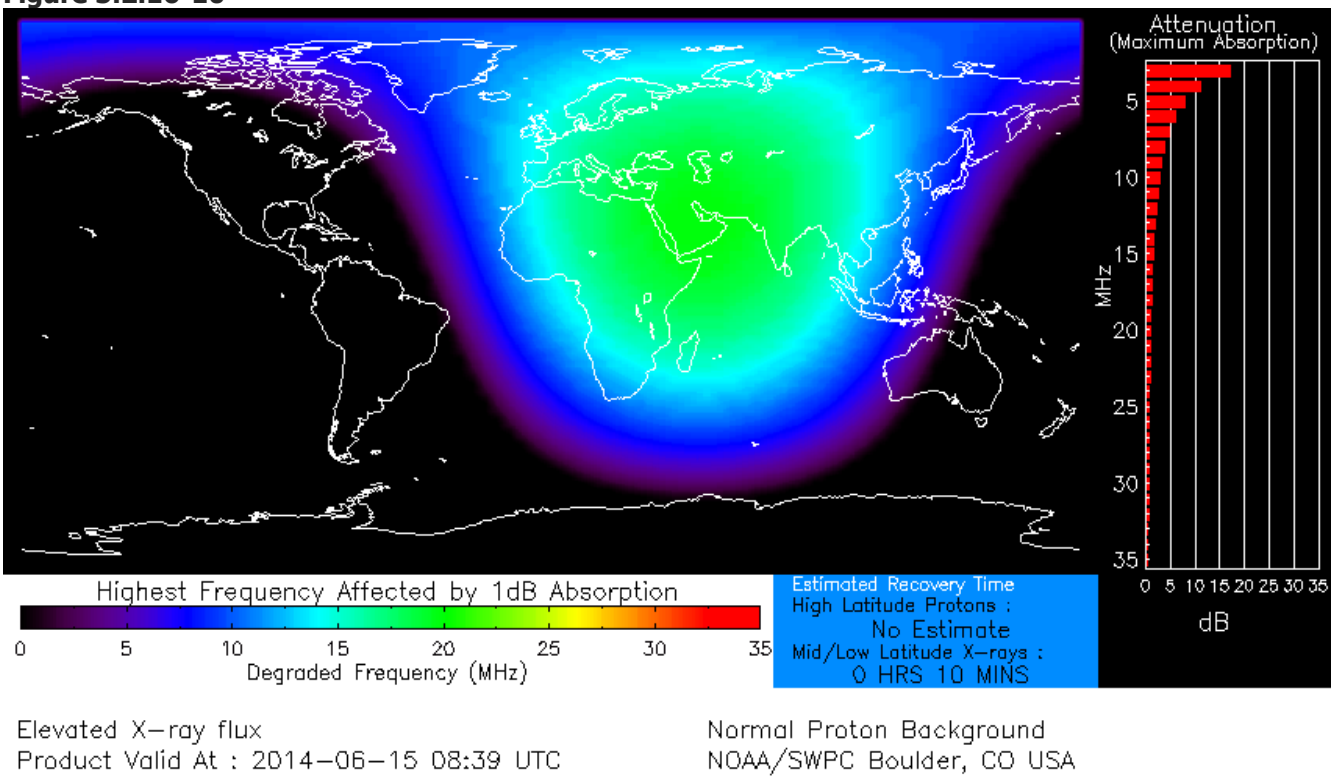
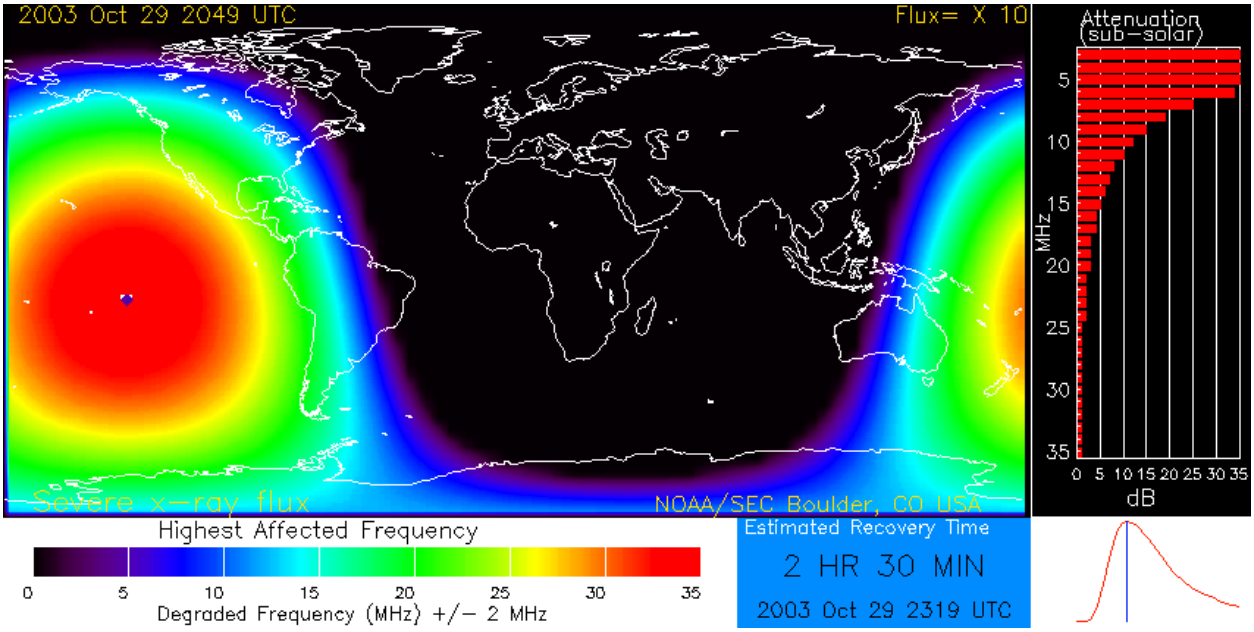


Figure 5.2.16-11
D-Region Absorption Prediction Animation (2003 Oct 29 2037 UTC - 2003 Oct 29 2116 UTC)
D-region Absorption - Long range communications using high frequency (HF) radio waves (3-30 MHz) depend on reflection of the signals in the ionosphere.



Source: SWPC

Satellite Communications

Satellite communication refers to any communication link that involves the use of an artificial satellite in its propagation path. Satellite communications play a vital role in modern life. There are over 2000 artificial satellites in use. They can be found in geostationary, Molniya, elliptical, and low Earth orbits and are used for traditional point-to-point communications, mobile applications, and the distribution of TV and radio programs. For a brief history of satellite communications see: http://www.britannica.com/EBchecked/topic/524891/satellite-communication... . For details on communication satellite orbits and satellite communication applications see: http://en.wikipedia.org/wiki/Communications_satellite.

Satellite communications tend to use high frequency signals: Ultra High Frequency (UHF), 300 MHz - 3 GHz and Super High Frequency (SHF), 3 - 30 GHz. Radio signals propagating to and from a satellite in orbit are affected by the environment conditions along the propagation path. In a vacuum, radio signals propagate at the speed of light but in the presence of plasma in the ionosphere, the signals are affected by group delay and phase advance and attenuation due to

absorption and scintillation. The environment's effect on the signal is frequency dependent and to a first approximation proportional to the amount of structure in the plasma present along the propagation path.

Due to ionosphere variability (Space Weather), the effects on propagating signals are highly variable. Up to some level, the effects of Space Weather on propagation can be mitigated through engineering design solutions. However, space weather can lead to a total loss of communication due to attenuation and/or severe scintillation when the broadcast signals cross the ionosphere. In trans-ionosphere propagation, scintillation refers to the rapid variation of the amplitude and phase of a received signal. Scintillation is produce by structure in the ionosphere. The severity of scintillation depends on the frequency of the used signal and the spatial structure of plasma density and plasma drifts along the propagation path. Specifically, scintillation at the receiver is produced by constructive and destructive interference of refracted and diffracted components of the broadcast signal. Scintillation is caused by gradients in plasma density along the propagation path.

An example of scintillation effects on satellite communications. (? ask Mihail)

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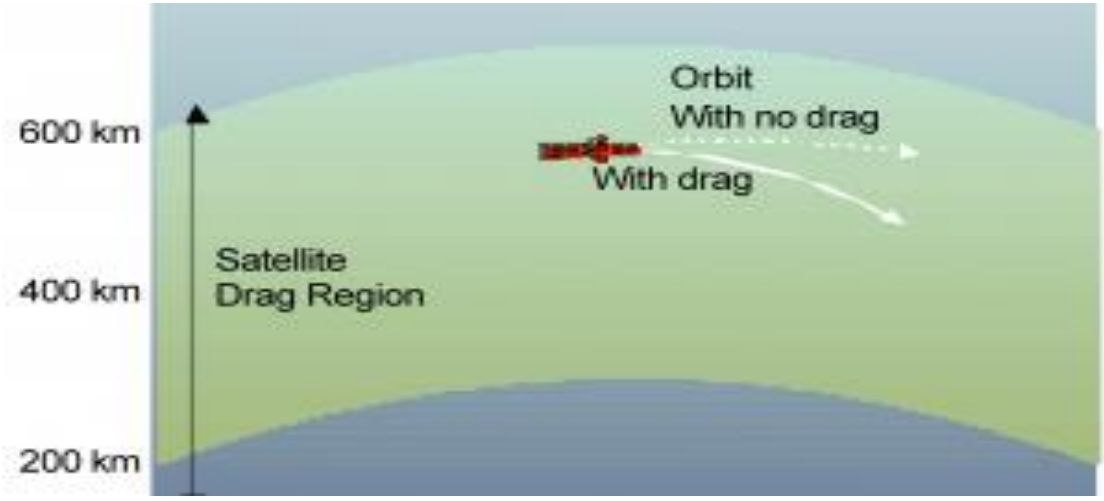
Figure 5.2.16-12 Source: SWPC



Satellite Drag

Drag is a force exerted on an object moving through a fluid, and it is oriented in the direction of relative fluid flow. It is the force that acts opposite to the direction of motion, and it tends to slow an object. An example is running against a high wind, and feel the drag pushing you back in the direction of relative fluid flow. This same force acts on spacecraft and objects flying in the space environment. Although the air density is much smaller in that medium, the air resistance at those layers of the atmosphere where satellites in low Earth orbit (LEO) travel through is still strong enough to tug at them, pulling them closer to the Earth (Fig1). LEO is a geocentric orbit generally defined as an orbit below an altitude of approximately 2,000 kilometers (1,200 mi). Given the rapid orbital decay of objects below approximately 200 kilometers (120 mi), the commonly accepted definition for LEO is between 160 kilometers (99 mi) and 2,000 kilometers (1,200 mi) above the Earth's surface. The International Space Station (ISS) and the Hubble Space Telescope are examples of spacecraft operating in LEO.

The atmospheric resistance or drag increases during times when the Sun is active. Just as the air in a balloon expands and rises when heated, the atmosphere rises and expands when the Sun adds extra energy to it. The thinnest layer of atmosphere rises, and the thicker atmosphere beneath it lifts to take its place. As a consequence, a spacecraft will move through a thicker layer of the atmosphere instead of the thin layer it was in when the Sun was less active. When the Sun is quiet, satellites in LEO have to boost their orbits about four times per year to make up for atmospheric drag. When solar activity is at its greatest over the 11-year solar cycle, satellites may have to be maneuvered every 2-3 weeks [1].

In addition to the long-term changes in atmospheric temperature modulated by the solar cycle, interactions between the solar wind and the Earth’s magnetic field during magnetic storms can produce significantly large short-term increases in the upper’s atmosphere temperature and density, perturbing orbital motions and reentry conditions, increasing drag on satellites, and changing their orbits. The North American Aerospace Defense Command (NORAD) has to re-identify hundreds of objects and record their new orbits after a large solar storm event. During the March 1989 storm event, for example, the NASA's Solar Maximum Mission (SMM) spacecraft was reported to have "dropped as if it hit a brick wall" due to the increased atmospheric drag (Fig2).

It is extremely important to keep track of spacecraft and objects flying in the space to avoid space junk and orbital debris that may be in their path. Collision avoidance has become of increasing concern due to the recent accidental hypervelocity collision of two intact spacecraft in February 2009. The collision occurred at an altitude of 790 km, leaving pieces of debris that have been gradually separated into different orbital planes around the Earth, threatening other satellites for the next few decades. Since 1957, more than 25,000 artificial space debris have been cataloged (Fig3), many of which have naturally decayed into the lower atmosphere. Currently, the U.S. Space Surveillance Network (SSN) tracks over 20,000 man-made objects larger than 10 cm in size, which are known as the “catalogued” population. Debris between 1 cm and 10 cm (approximately 500,000), referred to as the “lethal” population, are the most concerning as they cannot be tracked or cataloged and can cause catastrophic damage when colliding with a satellite.

Objects smaller than 1 cm (approximately 135 million measuring from 1mm to 1cm, and many more smaller than 1 mm) that could disable a satellite upon impact are termed the "risk" population [2]. The consequences of a spacecraft collision with debris can range from performance degradation to failure and satellite fragmentation. In LEO, debris as small as a few millimeters in diameter can puncture unprotected fuel lines and damage sensitive components, while debris smaller than 1 mm in diameter can erode thermal surfaces and damage optics. Although smaller objects can partly be mitigated through the use of meteor bumpers, such as on the ISS, the only way to mitigate larger objects impact is to maneuver the spacecraft to avoid collision. Such maneuvers are expensive, impact the operation of sensitive experiments on board, and ideally should only be done if the chance of collision is high. It is therefore extremely critical to reduce the chance of collisions. To assess the risk, and mitigate the likelihood of collision, the SSN monitor these objects and predicts their orbits about three days ahead.

Orbit propagation models are used to determine the location of space objects in the relatively near-term (typically over a period of a few days or less) for purposes of collision avoidance or re-entry predictions, and also to make long-term predictions (typically over a period of years) about the debris environment. Both short- and long-term propagation models must take into account the various forces acting on space objects in Earth's orbit, such as atmospheric drag, solar radiation pressure, gravitational perturbations by the Sun and the Moon, and irregularities in the gravitational field of the Earth. Since accurate orbit propagation models that include all forces acting on an orbiting object can be very computation intensive, most models take into account only the forces that strongly affect the space objects in particular orbital regions. The primary forces acting on a space object in lower orbits (below 800 km) are atmospheric drag and gravitational attraction of the Earth; for space objects in higher orbits, solar and lunar gravitational influences become more important factors [3].

The largest uncertainty in determining orbits for satellites operating in low Earth orbit is the atmospheric drag. Drag is the most difficult force to model mainly because of the complexity of neutral atmosphere variations driven by the Sun, and the propagation from below of lower atmosphere waves [4, 5]. Atmospheric neutral density models routinely used in orbit determination applications are mainly empirical. These models are based on historical observations to which parametric equations have been fitted, representing the known variations of the upper atmosphere with local time, latitude, season, solar and geomagnetic activity [6, 7, 8]. First-principle (or physics-based) models can also provide information about the atmospheric density conditions. Unlike empirical models, first principles physics models seek to calculate a physical quantity starting directly from established laws of physics without making assumptions such as empirical or fitted parameters. Taking into account the interactions between upper atmosphere winds, composition and densities, first-principle models are able to provide a realistic representation of neutral density in the upper atmosphere if the magnitude, spatial distribution, and temporal evolution of the solar sources can be defined with sufficient accuracy, especially in long-duration magnetic storm events [9](Fig4).

Fig 1. Region of the Earth's atmosphere where atmospheric drag is an important factor perturbing spacecraft orbits.
(http://lws.gsfc.nasa.gov/documents/mission_requirements/marcos_020900.pdf)

Fig 2. Number of satellites lost in connection with the March 13-14, 1989 storm. (http://ccar.colorado.edu/muri/index.html)

Fig 3. Thousands of manmade objects—95 % of them "space junk"— occupy low Earth orbit. Each black dot in this image shows either a functioning satellite, an inactive satellite, or a piece of debris. Although the space near Earth looks crowded, each dot is much larger than the satellite or debris it represents, and collisions are extremely rare. (NASA illustration courtesy Orbital Debris Program Office.)
(http://earthobservatory.nasa.gov/Features/OrbitsCatalog/page3.php)
(http://earthobservatory.nasa.gov/IOTD/view.php?id=40173)

Fig 4. "Fig4_density_movie_May15_2005.mov". Simulation using the coupled thermosphere-ionosphere-plasmasphere electrodynamics (CTIPe; http://helios.swpc.noaa.gov/ctipe/) physics-based model [10], illustrating the increase in atmospheric density at 400km altitude during the occurrence of a large magnetic storm on May 15, 2005, as a satellite (represented by the black diamond) flies through. The atmospheric density is given in Kg/m3. As the time progresses, the satellite will encounter denser air following the beginning of the magnetic storm (starting around 06:00 Universal Time). As the storm comes to end, atmospheric density slowly goes back to quiet conditions.

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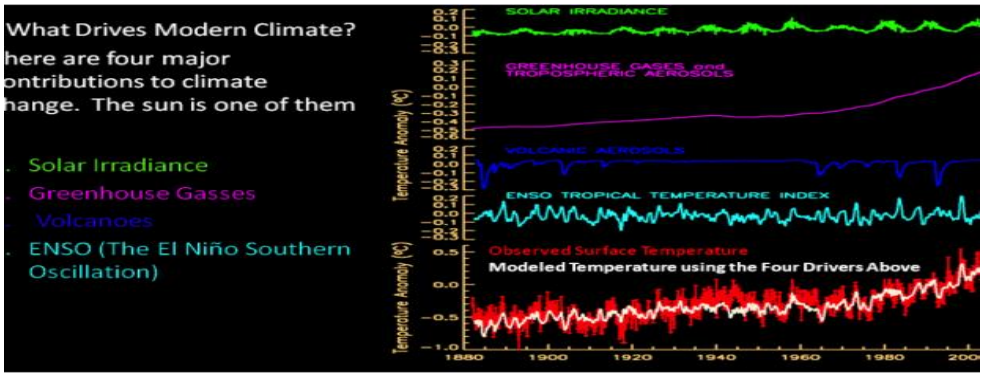
Figure 5.2.16-13 Source: SWPC

Space Weather and GPS Systems

The use of single and dual frequency radio navigation systems such as GPS has grown dramatically in the last decade. GPS devices are now in every cell phone and in many automobiles. High precision GPS using dual frequencies are used for farming, construction, exploration, surveying, snow removal and many other applications. There are several ways in which space weather impacts GPS. The GPS signal travels from the satellite to the receiver on the ground and passes through the ionosphere. The ionosphere bends the path of the GPS signal much the way a lens bends the path of light. During quite times when there is no space weather activity, the GPS system can compensate for the ionosphere thus removing much of it impact on the accuracy of the positioning information. However, when the ionosphere is disturbed due to space weather, the signals are delayed introducing errors in the calculated position. Single frequency GPS systems can provide position information with accuracy of a meter or less. During a severe space weather storm, these errors can increase to tens of meters or more. Dual frequency GPS systems can provide position information with accuracies of a few cm. In this case the two different GPS signals are used to better characterize the ionosphere and remove its impact on the position calculation. When the ionosphere becomes highly structured, the GPS system looses lock on the satellite signal and thus, looses the ability to provide position information at all.

Geomagnetic storms create large scale features in the ionosphere. The currents and energy introduced by the geomagnetic storm enhances the ionosphere and increases the total height-integrated number of ionospheric electrons, or Total Electron Count (TEC). The GPS system cannot correct for this enhancement and thus introducing errors in the position calculations. This usually occurs at high latitudes although major storms can produce large TEC enhancements and gradients at mid latitudes as well. Near the magnetic equator there are current systems and electric fields that create instabilities in the ionosphere. The instabilities are most severe just after sunset. These smaller scale (10s of km) instabilities, or bubbles, can have a scintillating affect on the GPS signal much like waves on the surface of the water will disrupt the path of light as it passes through them. Near the equator, dual frequency GPS systems often loose lock on the GPS signal on a regular basis. These ionospheric scintillations are not associated with any sort of space weather storm but are simply part of the natural equatorial ionosphere.

Figure 5.2.16-14

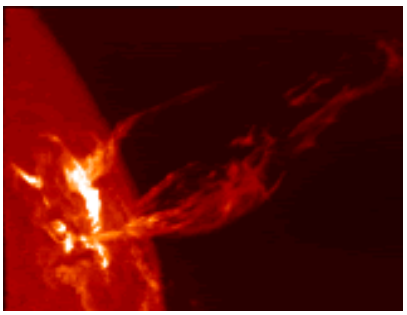


Source: SWPC

Space Weather and Earth's Climate

There are ways in which the space environment and space weather impacts Earth's atmosphere and climate. The most important impact is from the sun and the brightness or irradiance of the sun itself. The sun puts out energy in the form of photons of light. At different wavelengths, the output from the sun is more or less variable. In the visible (Approximately 400 – 800 nm), where most of the energy is emitted, the sun is nearly constant and changes by only on part in a thousand (0.1%) over the course of the 11-year solar cycle. At Ultra-Violet or UV wavelengths (120 – 400 nm), the solar irradiance change is larger, up to 15%. This has a significant impact on ozone and the stratosphere where these wavelengths are absorbed. At shorter wavelengths such as the Extreme UltraViolet or EUV, the sun changes by 30% - 300% over time scales of years to minutes. These wavelengths are absorbed in the upper atmosphere so they have minimal impact on the climate of Earth. At the other end of the light spectrum, at InfraRed or IR wavelengths (800 – 10,000 nm), the sun is very stable and only changes by a percent or less. The total wavelength-integrated energy from sunlight is referred to as the Total Solar Irradiance (TSI). It is measured from satellites to be about 1361 Watts/m2 at solar minimum. An increase of 0.1% in the TSI represents about 1.3 Watts/m2 change in energy input at the top of the atmosphere. This energy is scattered, reflected, and absorbed at various altitudes in the

atmosphere but the resulting change in the temperature of the atmosphere is measurable. It should be noted that the change in climate due to solar variability is small as compared with the change associated with anthropogenic activity such as the increase in greenhouse gasses. There are other types of space weather that can impact the atmosphere. Energetic particles penetrate into the atmosphere and change the chemical constituents. These changes in minor species such as NO can have long lasting consequences in the upper and middle atmosphere. There is a theory that cosmic rays, which are modulated by the solar wind, can create nucleation sites in the atmosphere which seed cloud formation and create cloudier conditions. If this were true, then there would be a significant impact on climate which would be modulated by the 11-year solar cycle.



Space Weather Alerts
Issued by the
Space Weather Prediction Center

Table 5.2.16-1
The table of Space Weather Alerts below shows each type of alert and their code. The equivalent NOAA Scale level is indicated and whether the warning can be extended or the alert can be continued. A **description** of the alert and their criteria, and **sample alerts**, are available online. For the latest alerts and near-real-time data displays see the **Alerts Home** page.

Code	WMO ID*	Watch, Warning, Alert, and Summary Message Name	NOAA Scale	Extended Warning Continued Alert
X-ray Flux Alert and Event Summaries				
ALTXMF	WOXX01	**ALERT: X-ray Flux exceeded M5**	**R2**	
SUMXM5 **SUMX01** **SUMX10** **SUMX20**	WOXX01 WOXX02 WOXX02 WOXX02	**SUMMARY: X-ray Event exceeded M5** **SUMMARY: X-ray Event exceeded X1** **SUMMARY: X-ray Event exceeded X10** **SUMMARY: X-ray Event exceeded X20**	**R2** **R3** **R4** **R5**	
Radio Burst Summaries				
ALTTP2 **ALTTP4**	WOXX04 WOXX04	**ALERT: Type II Radio Emission** **ALERT: Type IV Radio Emission**		
SUM10R	WOXX03	**SUMMARY: 10cm Radio Burst**		
Geomagnetic Warnings, Alerts, and Watches				

WARSUD	WOXX10	**WARNING: Geomagnetic Sudden Impulse expected**		
SUMSUD	WOXX10	**SUMMARY: Geomagnetic Sudden Impulse**		
WARK04 **WARK05** **WARK06** **WARK07**	WOXX13 WOXX11 WOXX12 WOXX14	**WARNING: Geomagnetic K-index of 4 expected** **WARNING: Geomagnetic K-index of 5 expected** **WARNING: Geomagnetic K-index of 6 expected** **WARNING: Geomagnetic K-index of 7 or greater expected**	**G1** **G2** **G3 or greater**	**Extended Warning** **Extended Warning** **Extended Warning** **Extended Warning**
ALTK04 **ALTK05** **ALTK06** **ALTK07** **ALTK08** **ALTK09**	WOXX13 WOXX11 WOXX12 WOXX14 WOXX15 WOXX16	**ALERT: Geomagnetic K-index of 4** **ALERT: Geomagnetic K-index of 5** **ALERT: Geomagnetic K-index of 6** **ALERT: Geomagnetic K-index of 7** **ALERT: Geomagnetic K-index of 8** **ALERT: Geomagnetic K-index of 9**	**G1** **G2** **G3** **G4** **G5**	
WATA20 **WATA30** **WATA50** **WATA99**	WOXX20 WOXX21 WOXX22 WOXX23	**WATCH: Geomagnetic Storm Category G1 predicted** **WATCH: Geomagnetic Storm Category G2 predicted** **WATCH: Geomagnetic Storm Category G3 predicted** **WATCH: Geomagnetic Storm Category G4 or greater predicted**	**G1** **G2** **G3** **G4 or greater**	
Electron Flux Alert				
ALTEF3	WOXX30	**ALERT: Electron 2MeV Integral Flux exceeded 1000pfu**		**Continued Alert**
Proton Flux Warnings, Event Alerts, and Event Summaries				
WARPX1	WOXX32	**WARNING: Proton 10MeV Integral Flux above 10pfu expected**	**S1 to S5**	**Extended Warning**
ALTPX1	WOXX32	**ALERT: Proton Event 10MeV Integral Flux exceeded 10pfu**	**S1**	
ALTPX2	WOXX32	**ALERT: Proton Event 10MeV Integral Flux exceeded 100pfu**	**S2**	
ALTPX3	WOXX32	**ALERT: Proton Event 10MeV Integral Flux exceeded 1000pfu**	**S3**	
ALTPX4	WOXX32	**ALERT: Proton Event 10MeV Integral Flux exceeded 10000pfu**	**S4**	
ALTPX5	WOXX32	**ALERT: Proton Event 10MeV Integral Flux exceeded 100000pfu**	**S5**	
SUMPX1	WOXX32	**SUMMARY: Proton Event 10MeV Integral Flux exceeded 10pfu**	**S1**	
SUMPX2	WOXX32	**SUMMARY: Proton Event 10MeV Integral Flux exceeded 100pfu**	**S2**	
SUMPX3	WOXX32	**SUMMARY: Proton Event 10MeV Integral Flux exceeded 1000pfu**	**S3**	

SUMPX4	WOXX32	**SUMMARY: Proton Event 10MeV Integral Flux exceeded 10000pfu**	**S4**	
SUMPX5	WOXX32	**SUMMARY: Proton Event 10MeV Integral Flux exceeded 100000pfu**	**S5**	
WARPC0	WOXX31	**WARNING: Proton 100MeV Integral Flux above 1pfu expected**		**Extended Warning**
ALTPC0	WOXX31	**ALERT: Proton Event 100MeV Integral Flux exceeded 1pfu**		
SUMPC0	WOXX31	**SUMMARY: Proton Event 100MeV Integral Flux exceeded 1pfu**		

The NOAA Space Weather Scales tables are shown below.

Geomagnetic Storms: disturbances in the geomagnetic field caused by gusts in the solar wind that blows by Earth.	G1	G2	G3	G4	G5
Solar Radiation Storms: elevated levels of radiation that occur when the numbers of energetic particles increase.	S1	S2	S3	S4	S5
Radio Blackouts: disturbances of the ionosphere caused by X-ray emissions from the Sun.	R1	R2	R3	R4	R5

Table 5.2.16-2
NOAA Space Weather Scale for Geomagnetic Storms

Category		**Effect**	**Physical measure**	**Average Frequency (1 cycle = 11 years)**
Scale	**Descriptor**	**Duration of event will influence severity of effects**		
Geomagnetic Storms			**Kp values***	**Number of storm events when Kp level was met; (number of storm days)**
G 5	**Extreme**	**Power systems:** : widespread voltage control problems and protective system problems can occur, some grid systems may experience complete collapse or blackouts. Transformers may experience damage. **Spacecraft operations:** may experience extensive surface charging, problems with	Kp = 9	4 per cycle (4 days per cycle)

		orientation, uplink/downlink and tracking satellites. **Other systems:** pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora has been seen as low as Florida and southern Texas (typically 40° geomagnetic lat.)**.		
G 4	**Severe**	**Power systems:** possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. **Spacecraft operations:** may experience surface charging and tracking problems, corrections may be needed for orientation problems. **Other systems:** induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.)**.	Kp = 8, including a 9-	100 per cycle (60 days per cycle)
G 3	**Strong**	**Power systems:** voltage corrections may be required, false alarms triggered on some protection devices. **Spacecraft operations:** surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and	Kp = 7	200 per cycle (130 days per cycle)

		corrections may be needed for orientation problems. **Other systems:** intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.)**.		
G 2	**Moderate**	**Power systems:** high-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage. **Spacecraft operations:** corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions. **Other systems:** HF radio propagation can fade at higher latitudes, and aurora has been seen as low as New York and Idaho (typically 55° geomagnetic lat.)**.	Kp = 6	600 per cycle (360 days per cycle)
G 1	**Minor**	**Power systems:** weak power grid fluctuations can occur. **Spacecraft operations:** minor impact on satellite operations possible. **Other systems:** migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan and Maine)**.	Kp = 5	1700 per cycle (900 days per cycle)

* The Kp-index used to generate these messages is derived from a real-time network of observatories the report data to SWPC in near real-time. In most cases the real-time estimate of the Kp index will be a good approximation to the official Kp indices that are issued twice per month by the German GeoForschungsZentrum (GFZ) (Research Center for Geosciences).

** For specific locations around the globe, use geomagnetic latitude to determine likely sightings (Tips on Viewing the Aurora)

Table 5.2.16-3

NOAA Space Weather Scale for Solar Radiation Storms

Category		Effect	Physical measure	Average Frequency (1 cycle = 11 years)
Scale	**Descriptor**	**Duration of event will influence severity of effects**		
Solar Radiation Storms			**Flux level of >= 10 MeV particles (ions)***	**Number of events when flux level was met (number of storm days**)**
S 5	**Extreme**	**Biological:** unavoidable high radiation hazard to astronauts on EVA (extra-vehicular activity); passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.*** **Satellite operations:** satellites may be rendered useless, memory impacts can cause loss of control, may cause serious noise in image data, star-trackers may be unable to locate sources; permanent damage to solar panels possible. **Other systems:** complete blackout of HF (high frequency) communications possible through the polar regions, and position errors make navigation operations extremely difficult.	10^5	Fewer than 1 per cycle
S 4	**Severe**	**Biological:** unavoidable radiation hazard to astronauts on EVA; passengers and crew in high-flying aircraft at high	10^4	3 per cycle

		latitudes may be exposed to radiation risk.*** **Satellite operations:** may experience memory device problems and noise on imaging systems; star-tracker problems may cause orientation problems, and solar panel efficiency can be degraded. **Other systems:** blackout of HF radio communications through the polar regions and increased navigation errors over several days are likely.		
S 3	**Strong**	**Biological:** radiation hazard avoidance recommended for astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.*** **Satellite operations:** single-event upsets, noise in imaging systems, and slight reduction of efficiency in solar panel are likely. **Other systems:** degraded HF radio propagation through the polar regions and navigation position errors likely.	10^3	10 per cycle
S 2	**Moderate**	**Biological:** passengers and crew in high-flying aircraft at high latitudes may be exposed to elevated radiation risk.*** **Satellite operations:** infrequent single-event upsets possible. **Other systems:** small effects on HF propagation through the polar regions and navigation at polar cap locations possibly affected.	10^2	25 per cycle

S 1	**Minor**	**Biological:** none. **Satellite operations:** none. **Other systems:** minor impacts on HF radio in the polar regions.	10	50 per cycle

* Flux levels are 5 minute averages. Flux in particles·s^{-1}·$ster^{-1}$·cm^{-2}. Based on this measure, but other physical measures are also considered.
** These events can last more than one day.
*** High energy particle measurements (>100 MeV) are a better indicator of radiation risk to passenger and crews. Pregnant women are particularly susceptible.

Table 5.2.16-4 NOAA Space Weather Scale for Radio Blackouts

Category		**Effect**	**Physical measure**	**Average Frequency (1 cycle=11 years)**
Scale	**Descriptor**	**Duration of event will influence severity of effects**		
Radio Blackouts			**GOES X-ray peak brightness by class and by flux***	**Number of events when flux level was met; (number of storm days)**
R 5	**Extreme**	**HF Radio:**Complete HF (high frequency**) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. **Navigation:** Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.	X20 (2×10^{-3})	Less than 1 per cycle
R 4	**Severe**	**HF Radio:** : HF radio communication blackout on most	X10 (10^{-3})	8 per cycle (8 days per cycle)

		of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. **Navigation:** Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.		
R 3	**Strong**	**HF Radio:** Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. **Navigation:** Low-frequency navigation signals degraded for about an hour.	X1 (10^{-4})	175 per cycle (140 days per cycle)
R 2	**Moderate**	**HF Radio:** Limited blackout of HF radio communication on sunlit side, loss of radio contact for tens of minutes. **Navigation:** Degradation of low-frequency navigation signals for tens of minutes.	M5 (5×10^{-5})	350 per cycle (300 days per cycle)
R 1	**Minor**	**HF Radio:** Weak or minor degradation of HF radio communication on sunlit side, occasional loss of radio contact. **Navigation:** Low-frequency navigation signals degraded for brief intervals.	M1 (10^{-5})	2000 per cycle (950 days per cycle)

* Flux, measured in the 0.1-0.8 nm range, in $W \cdot m^{-2}$. Based on this measure, but other physical measures are also considered.
** Other frequencies may also be affected by these conditions. March 1, 2005

Meteors are commonly observed illuminating briefly in the sky as the force of friction with the Earth's atmosphere burns away the solid matter they contain. Some meteors partially survive this process and thus become meteorites by striking the Earth's surface and potentially causing great amounts of damage. However, there are cases in which huge fiery blasts occurred in the sky (bolides) without any meteorite remnants being found, but enormous damage can still occur at

ground level from the effects of the heat, blast force, and strong winds that result from the atmospheric impact.

Part of the usefulness of this analysis is meant to involve the presentation of information that might alleviate confusion throughout Elmore County's communities and residents, in case some event actually does occur, or should some warning of an impending impact eventually be given out. In the former case, those who already have some information about meteors, and the potentially spectacular appearance of either sky or ground impacts, would have a means to make sense of an unusual bolide or impact event and would be less likely to mistake the event for a nuclear explosion. A greater general awareness of the variety and nature of Elmore County's hazards should eventually translate into a lessened demand for emergency services and information. For example, it might take only 30 seconds to explain to a knowledgeable citizen that a meteor impact caused a huge explosion in the sky (and an impact on the ground), whereas a less-knowledgeable citizen might seek 20 minutes of reassurance that the explosion was not nuclear, that the incident was not connected with a crashing airplane or a confidential military experiment, and so on. The provision of advance information that realistically describes and assesses the nature of unusually severe events can help to provide a framework in which the correct interpretation and response actions can be undertaken more quickly and efficiently.

In the latter case, involving an alert about an impending impact or potential impact, many persons would need information that allows them to understand the nature of the threat, and the techniques that may be used to prevent or mitigate its impacts. For example, there is an enormous difference between an alert that provides only a few weeks of notification, and one that has identified a need for action over the course of several decades.

It should be realized that although the atmosphere and air around us seems to be "light" and only a small obstacle to movement (mostly at high speeds or during strong wind gusts), the air nevertheless has enough substance to sustain heavy aircraft in flight, to hold aloft (for a while) huge thunderstorm clouds full of rain, and so on. A meteor crashing into the atmosphere thus releases tremendous amounts of energy, as the result of friction from plunging through large quantities of air at enormous speeds. This energy can result in large (and loud) blast waves, even if the meteor's trajectory is oblique enough to cause it to "bounce off" the atmosphere, rather than plunging through it and hitting the ground. For example, if a towel is wrapped around a bowling ball, a baseball can easily be bounced off the top of the bowling ball without leaving a dent or scratch in the bowling ball's surface, but it would still make a clearly audible noise and could crush any small insect that happened to be crawling underneath the towel. The towel can be seen as an analogy for our ecosphere on the surface of the planet, and the visible results of such an atmospheric impact could include great bursts of flame, damaging shock waves, severe winds, deafening noise, and disrupted weather patterns.

While this section does is not intended to focus upon planetary life-ending scenarios (which are remotely possible but extremely unlikely to occur within our lifetimes), it does consider the possibility of a major (averaging once per century) impact that may cause either an area of widespread destruction within the United States, or an impact somewhere else in the world that may cause unusual effects to be felt in distant locations. If a Tunguska sized event (see the 1908

entry in the list of Significant Events later in this section) were to affect a densely populated area, the results could be extreme enough to constitute a National Emergency. (Please refer to the new section describing "Catastrophic Incident," for more discussion about this, as well as the Nuclear Attack section, for more information about problems such as mass fires, which may arise from large blasts.)

This section also considers more common events that have fairly limited effects and damages, but may be associated with a significant degree of uncertainty about the area and population that could be struck by such impacts. Even though the number of celestial impact events has probably not increased in recent times, certain types of vulnerability have increased (see for example the description of the 1859 Carrington Solar Flare event, in the section describing Significant Events). Our public awareness of these possibilities has also increased, resulting in a need for additional information to inform citizens about the actual risks, effects that different types of celestial impact may have, and present-day means to prevent or mitigate some of the worst possible impact scenarios. Most significantly, the size of the human population, and the density of land area we occupy, has changed greatly during the past century. The global population is nearly four times what it was a century ago, and (especially in the richer nations) this population growth has been accompanied by a much larger portion of the land area that has been built-up for urban uses. Just since World War II, the population of the United States has more than doubled, and even in areas with a relatively stable population, residential neighborhoods take up a lot more space today than they previously had in the period of time before the suburban "explosion." A random impact point today is more likely to affect lands that are developed to at least a moderate residential capacity, which could result in thousands of casualties.

Although most comets and asteroids have very consistent trajectories that change only very slowly, in terms of human history, there is the possibility that Earth-threatening space bodies may exist but still remain undiscovered by humans. There is also the possibility that their traditional orbits may be unexpectedly disrupted by collisions with other bodies, or by gravitational effects such as that exerted by Jupiter on Comet Shoemaker-Levy 9, which caused that comet's eventual impact into the planet. "Jupiter-family comets" are those in which a normal (safe) orbit of a comet or asteroid may thus be "suddenly" altered in a manner that causes it to become a threat to Earth. In either case (a newly discovered object or one whose course is changed), the possibility exists that a serious impact threat may suddenly be discovered. However, extensive observations and calculations have been taking place to identify and track all potential threats of this kind.

It is likely that the next major celestial impact will occur somewhere in the world other than Elmore County, Alabama, and that Alabama's role as part of the United States would at most involve the provision of support to the impacted area and its surroundings. If a major impact happens to occur in North America, then state-level mutual aid may result, and possibly even the intake of evacuees, as had taken place during the Katrina and Rita hurricane disasters of 2005. For the most part, however, the meteorite hazard is important to know about mainly for preparedness and informational usefulness, rather than due to an actual pattern of damaging effects upon Elmore County, Alabama.

The space weather hazard, by contrast, is likely to cause one or more serious infrastructure failures in the near future, due to the extent of our reliance on complicated electronic and satellite systems that are vulnerable to disruption. In addition to power failures and phone communication breakdowns, it is also quite possible for the disruption of radio and navigational systems to cause risks for air and marine traffic. Even if cautious transportation providers are diligent about maintaining safety during such events, considerable economic impacts and delays can result from the electronic breakdowns caused by solar geomagnetic storm events.

Impact on the Public

A celestial impact from an object that is either sufficiently massive or fast-moving can have an effect that is comparable to nuclear blasts, in terms of the amount of energy released in the form of pressure (shock) waves and thermal effects (heat/fire). Additionally, major earthquake activity would be felt in areas that normally wouldn't have had to worry about such effects. An impact into major water bodies can cause intense tsunamis to occur, and severe winds could also result in extensive physical damages many miles (or hundreds of miles) away from the main impact site. Depending upon the mass and velocity of the meteorite, the impact on the public may range from the barely noticeable to the complete destruction of the entire area, with the most powerful impacts having effects similar to those described for nuclear attack (minus the radioactive fallout and electromagnetic pulse), earthquake, severe winds, and wildfires, all described in their own sections in this document. Space weather impacts will result in transportation delays and communication interference, and some cases may actually result in fatal transportation accidents, economic losses, and widespread power supply interruptions. If a major impact occurs in Alabama, many persons may feel disgruntled with the government if no advance warning was able to be provided. There is probably not a widespread familiarity with this type of hazard, and some popular conceptions may be rooted in televised or cinematic portrayals in which it was considered that part of the government perhaps "should have known" about a potential impact and been able to prevent it. While that certainly is true in some cases, the more common case with this type of hazard would involve a limited-area impact from an object that was too small to be detected in advance. Nevertheless, one of the reasons that this hazard is now being included in mitigation plans is to help provide information that will improve people's understanding of this hazard. Moreover, since a significant celestial impact event could easily be mistaken for a nuclear blast by many persons, an educational process could be useful in overcoming the possible harm caused by such assumptions. For example, if a large bolide is seen, or actually damages an area, it will be helpful for people to have been familiar with what the event actually might be, rather than assuming that it was a deliberate hostile action that may involve secondary radiation and security impacts, or assuming that a mass evacuation or escalated level of security alert may be needed. Rather, if it is understood that there is a natural phenomenon that in some cases may resemble that of an atomic blast or explosive attack, then people's behavior and attention can be more properly guided toward activities and attitudes that are appropriate for a natural disaster rather than those for a homeland security alert. The potential impacts of space weather will require greater public awareness in order to build an understanding about existing weaknesses and the expense involved in correcting those weaknesses, where possible.

Impact on Responders

A small impact incident would not be likely to cause much risk for responders, unless the impact was upon a structure that became weakened to the point of potential further collapse. Larger impact incidents would be extremely unusual, but may be expected to require extensive search and rescue operations, as well as various firefighting operations and probable infrastructure failure impacts to be dealt with simultaneously. The presence of hazardous materials would also be expected in any impact site that had been urban in nature, or had involved key agricultural or infrastructure facilities. A catastrophic impact event would require extensive use of mutual aid and state/federal disaster and emergency assistance, with the likelihood that all normal response resources would be disabled within the area of impact, and would need to be replaced by resources from adjacent local areas, or even from beyond the state. Underground sheltering would be a useful way to increase the odds of survival from the wind/shock/frame effects of a huge bolide event, which would likely pass quickly and then enable responders to deal with rescue operations, fires, infrastructure failures, and the organization of mutual aid. The impacts of space weather include interruptions in the function of radios, satellites, electronic, and even power supply systems that may be needed for emergency response. Response activities that involve electronic navigation technologies and Global Positioning Systems may need to fall back upon the use of less advanced means to accomplish their mission.

Impact on Continuity of Government

Impact is unlikely to cause relocation of government operations. Infrastructure may be affected and utility failures may result. If a major impact occurs in Alabama or Elmore County, many persons may feel disgruntled if no advance warning was able to be provided. There is probably not a widespread familiarity with this type of hazard, and some popular conceptions may be rooted in televised or cinematic portrayals in which it was considered that part of the government perhaps "should have known" about a potential impact and been able to prevent it. While that certainly is true in some cases, the more common case with this type of hazard would involve a limited-area impact from an object that was too small to be detected in advance. Nevertheless, one of the reasons that this hazard is now being included in Elmore County's plan is to help provide information that will improve people's understanding of this hazard. Moreover, since a significant celestial impact event could easily be mistaken for a nuclear blast by many persons, an educational process could be useful in overcoming the possible harm caused by such assumptions. For example, if a large bolide is seen, or actually damages an area, it will be helpful for people to have been familiar with what the event actually might be, rather than assuming that it was a deliberate hostile action that may involve secondary radiation and security impacts, or assuming that a mass evacuation or escalated level of security alert may be needed. Rather, if it is understood that there is a natural phenomenon that in some cases may resemble that of an atomic blast or explosive attack, then people's behavior and attention can be more properly guided toward activities and attitudes that are appropriate for a natural disaster rather than those for a homeland security alert. The potential impacts of space weather will require greater public awareness in order to build an understanding about existing weaknesses and the expense involved in correcting those weaknesses, where possible.

Impact on the Environment

An extremely large impact, even if not in Alabama, could cause a National Emergency situation to arise, which Alabama and Elmore County may have to help to respond to and recover from. A direct meteorite impact on land could destroy an entire area, and cause fires, earthquakes, and other hazards for a large area around the impact (each of which can have its own environmental impacts, as described later in this section). The same types of effects can also result from the atmospheric blast and heat impacts of a large bolide event, even if the celestial body itself does not strike the ground. A large impact in Lake Martin, for instance, could cause substantial flooding, seiche, and erosion impacts along areas at or near the lake's coasts. It has been speculated that space weather may be connected with global climate, but this is primarily due to the possibly coincidental occurrence of a "Little Ice Age" (lower average temperatures in America and Europe) during the same time that the Maunder minimum in solar activity was observed. The specific mechanisms that would underlie such a connection have not yet been figured out and therefore such a link should probably still be considered to be purely speculative. On the favorable side, solar activity helps to shield us from some of the cosmic rays that come from throughout the universe.

Significant Events

NOTE: Although many of the events listed here occurred out of state, some of them were nevertheless large enough to have direct impacts upon Alabama, due to the sheer magnitude of the impacts. Other events are included from a very long time ago, as well as smaller more recent events, to give an indication of the magnitude of what is possible. Some events describe "close calls" and events whose limited impact at the time could have been much greater had they struck a more developed location (for our current circumstances involve much greater population density and physical/infrastructure developments than had been present in the past). Some events are included because they help to indicate the range of threat posed by the hazard—events outside of Alabama usually represent the largest known events or threats, while events involving Alabama tend to represent the typical level of recorded impacts in the state.

Modern Events

July 1, 1770 – International

Lexell's comet (D/1770 L1) was computed by astronomers as having passed only about 1.4 million miles from Earth (less than 6 times the average distance of the Moon, or about 1.5% of the distance to the Sun). This was the nearest such Earth encounter to be measured astronomically rather than in terms of its actual impact effects as a meteorite (until the very recent tracking of smaller and slower objects). Now considered to be a "lost comet," its orbit had been calculated at the time (by Lexell) to be 5.6 years, eventually leading to the idea that space objects may be propelled toward Earth by a gravitational encounter with Jupiter—a circumstance that is one of the potential sources of asteroid impact threats that would provide little or no advance warning. The comet was initially observed on June 15, 1770, and was last observed moving away from the Sun on October 3 of the same year.

September 1, 1859 – International

A large solar flare was briefly observed by astronomer Richard Carrington. Just before dawn of the next day, however, brilliant auroras were visible in skies around the world, telegraph systems severely malfunctioned, and various damages (and minor injuries) resulted from sparks and

equipment failures. This was the first solar flare observation and it was also clearly seen that the phenomenon was connected with malfunctions in electronic communications systems on Earth. No solar flare of this magnitude has been seen in the 150 years since this occurred. Based upon evidence from arctic ice, it was estimated that the 1859 solar geomagnetic storm was the most intense in the past 500 years, nearly twice as much as the second-largest event. (Even though particular storm indicators have since been matched, no storm since has been able to simultaneously match this one, on all types of intensity measures.) Were such an event to happen again today, it has been estimated that tens of billions of dollars in damage would be done to the more than 900 satellites that orbit the Earth. These satellites are also essential for the safe and smooth operation of airlines, spacecraft, and various communications systems.

1863 – Arabian Peninsula

An event more than 300 miles southeast of Riyadh, Saudi Arabian, left an impact site of probably at least five craters (Wabar Craters) in the desert, one of which was more than 100 meters in diameter. The impact compressed desert sand into rock. The date of the event is approximate, because the impact site itself was not reported until 1932, but was then considered in retrospect to match up with fireball reports that had come from the city of Riyadh in 1863. It has been calculated that the impact occurred with the force of a Hiroshima-sized atomic bomb, but fortunately in this case, it affected only an uninhabited desert area.

June 30, 1908 – Russia

A large impact event occurred in Tunguska, Russia (in Siberia), in which a large object blasted into the atmosphere in a manner that created a forceful, spectacular, and destructive impact. Although the object was evidently destroyed in the air (leaving no impact crater like so many rocky meteoroids do), the force of this destruction has been estimated as equivalent to between 5 and 30 megatons of TNT, flattening an estimated 80 million trees over an area of approximately 830 square miles (a surface area equivalent to that of a disc 32½ miles in diameter). Brilliant meteor impacts like this have been termed "**bolides**," since they can resemble fireballs and are observed as explosive, incendiary events. Unusual levels of acid rain followed the event. Recent research from Cornell University concluded that the event was "very likely" a comet impact (with most of its mass in the form of ice that would dissipate in the atmosphere), since high-altitude noctilucent clouds (which normally occur only with certain types of icy, high-altitude conditions) were sighted across Europe for several days (as much as 3,000 miles away), and caused the night skies to glow. Estimates about the frequency of this scale of impact vary from once every thousand years to once per century.

May 1921 – International

An extremely strong geomagnetic storm occurred—the strongest such storm since 1859. According to one study, if a storm of this magnitude were to occur today, it could result in large-scale electrical blackouts that would affect more than 130 million persons across the northwestern U.S. (including Michigan) and the Pacific Northwest. These estimates were based upon estimates of regions susceptible to power grid collapse, and the 1921 storm was considered to be about 10 times as strong as the one that did cause power failures in 1989. Extra-high-voltage transformers were considered to be a particular vulnerability in these projected blackout areas, with places like New Hampshire, New Jersey, and Pennsylvania at particularly high risk in the interconnected grid.

February 12, 1947 – Russia

A bolide event that included many meteorites took place in far-eastern Russian Siberia (Sikhote-Alin), fortunately occurring in a relatively isolated and undeveloped area, between China and

Japan. The event was reported as a fireball, brighter than the Sun, at 10:38 am (local time). As the bolide descended at an angle of 41 degrees, it left a trail of smoke and dust 20 miles long that remained visible for several hours. The meteorite was broken into fragments as it fell at roughly 31,000 miles per hour. Upon reaching an altitude of about 3.5 miles, the bolide culminated in a giant explosion, scattering its remaining debris over an impact area of about one-half square mile. The largest impact crater in this area measured 85 feet wide and 20 feet deep. The total mass of all the meteorites from this event has been estimated as just under 1,000 tons, with the largest fragment later weighed at 1,745 kilograms and displayed in Moscow.

September 17, 1966 – Lake Huron
A bolide event occurred over Lake Huron, Michigan, involving an air blast estimated as the equivalent of 1/3 ton of TNT, approximately 8 miles above the surface of the water. Although no material from a meteorite was found to help determine more information about the size and characteristics of this meteor, this is not surprising since the location of the event probably placed the meteorite remnants at the bottom of Lake Huron. The bolide illuminated the whole of south-western Ontario and adjacent regions at about 8:48 pm, as it was seen traveling northwest across Lake Erie and the tip of Ontario, toward Lake Huron. At least a dozen loud "detonations" were reported from the Ontario area near the lake a few minutes after the fireball's passage. Astronomers later calculated that the meteor was about 8 miles up as it crossed over Lake Huron, and probably reached the lake's surface fewer than 18 miles west of the city of Kincardine, Ontario. The meteor was traveling about 10.6 miles per second and was brightly luminous for at least 10 seconds.
February 8, 1969 – Pueblito de Allende, Mexico
A large shower of stony meteorites fell near a village in the Mexican border state of Chihuahua. More than two tons of meteorites fell in that incident.
August 4, 1972 – Illinois
A huge solar flare ended up causing the failure of long-distance telephone communications across Illinois. AT&T redesigned its power system for transatlantic cables as a result of this event.
August 10, 1972 – Western U.S. and Canada
Since the angle of approach varies widely, some meteors simply graze or bounce off of the atmosphere. In 1972, such a fireball was seen from Utah to Alberta.
January 1978 – International
A Soviet satellite, Cosmos 954, which had been launched in September of 1977, was being monitored by U.S. agencies and by November was found to have a decaying orbit. By January, it had become apparent that the satellite had lost its attitude stabilization system. Such satellites were known to be powered by small nuclear reactors, using fuel that was 90 percent enriched Uranium-235. Thus, whenever and wherever this satellite fell to Earth, it had the potential to contaminate things and persons who came into contact with it. The U.S. National Security Council arrived at an estimate that there was only about a 1 in 10,000 chance that a human would be injured in the crash, but because of the political aspects of an enemy nation's nuclear satellite crashing onto friendly territory, it became important to treat the incident with more weight than what that small risk might normally be credited with. Operation Morning Light was thus created, in December of 1977, with the Department of Energy given lead responsibility for the possibility of a domestic crash site. Even though a crash site for the projected landing orbit was only supposed to have an 8% chance of being on land, plans were made for such a contingency, which

would involve the finding of radioactive debris, decontamination of affected land areas, and the treatment of any persons within an unsafe distance of such debris. After about 10 days of careful inquiries with the Soviet government, various types of confirmation were received about the satellite's nature and condition. On January 24, the satellite entered the atmosphere over Queen Charlotte Island, British Columbia, and at 6:53 am, finally crashed near the Great Slave Lake, just north of the Province of Alberta, in Canada. Aircraft and Nuclear Energy Search Teams were then dispatched to Canada, to assist with clean-up operations.

July 11, 1979 – International

The Skylab Space Station, which had been put into orbit in 1973 but abandoned in 1974, had its orbit finally deteriorate to the point where it plunged to Earth. Delays in the launch of the Space Shuttle program prevented the station from being salvaged by restoring it to a sustainable orbit. Instead, considerable uncertainty was expressed in the media about where the station might return to Earth, and with what potential for destructive impacts. Skylab re-entered the atmosphere on July 11 and the calculated area at-risk turned out to be in the Southern Hemisphere around the Indian Ocean. Debris impact areas on land were identified in Western Australia, the largest being a heavy metallic fragment (perhaps 5 feet in length).

March 13, 1989 – Canada and Eastern United States

Geomagnetic storms caused by a huge solar flare caused widespread disruptions in the transmission of electrical power, causing a widespread blackout across most of Quebec and affecting 6 million persons for a period of up to 9 hours. Specifically, when five transmission lines went down, the system was unable to withstand the loss of their 21,350 megawatt load, and collapsed within the subsequent 90 seconds. The blackout closed schools and businesses, shut down the Montreal Metro Airport, and delayed flights from other airports. Street traffic backups took place, since traffic signals and traffic control systems no longer functioned smoothly. Workers in downtown Montreal were stranded in dark offices, stairwells, and elevators. Elsewhere, power surges caused by the geomagnetic storm (geomagnetically induced currents, or GICs) caused power transformers in New Jersey to be overloaded and damaged. The functioning of long-distance telephone cables were also affected by auroral currents, major power substations experienced voltage swings, generators went offline, and the U.S. Air Force temporarily lost its ability to track satellites. Costs from the loss of power exceeded $100 million, including stalled production processes, idled workers, and spoiled products. This was considered to be the strongest geomagnetic storm of the space age.

October 9, 1992 – New York

The "Peekskill Meteorite" damaged a parked car in Peekskill, New York, after creating a bright fireball in the sky that was seen across several states. The original meteor (estimated to be 1 to 2 meters wide) had fragmented at a height of about 41.5 km, then again about 20 seconds later, until it was under a foot in diameter.

January 1994 – Canada

Inclement space weather caused electric charges to build up and then discharge within the electronic components of two expensive communications satellites. One satellite was disabled for about 7 hours, due to damage to its control electronics. A second satellite went out of service entirely, when its backup systems also became damaged, requiring 6 months of service before its functions were restored. The satellite disruptions prevented news information from being electronically delivered to 100 newspapers and 450 radio stations. Television and data services to more than 1,600 remote communities broke down with the second satellite failure. Telephone

service in 40 communities was also interrupted. Total costs of the event were estimated at between 50 and 70 million U.S. dollars.

July 15 to 24, 1994 – International

Comet Shoemaker-Levy 9 crashed into the planet Jupiter, after being broken into 21 fragments by gravitational forces, and caused enormous impacts, which quickly became visible to telescopes on Earth. (The impact took place on the far side of Jupiter, but the planet quickly rotated and allowed the impact points to be visible). The energy released by this impact was estimated as greater than many thousands of 50-megaton nuclear bombs, as the comet's debris was vaporized and released enormous amounts of heat, temporarily exceeding the amount given off by the entire (exothermic) planet as a whole and also exceeding the temperature of the surface of the Sun. The impacts caused atmospheric spots to appear that were comparable in size to the diameter of the Earth. The comet had first been detected by astronomers only 17 months prior to its impact. It was calculated that on the comet's previous approach toward Jupiter on July 7, 1992 (which tore it into fragments), its distance from the planet was only 16,000 miles (less than the diameter of the Earth). It was estimated that the largest fragment of the comet may have exceeded 2 miles in diameter. As a result of this impact, the U.S. Congress asked NASA to propose how to identify and track all large space objects with the potential to impact the Earth.

March 19, 1996 – International

A celestial "close call" involved asteroid 1996 JA1 (large enough to cause catastrophic damage), which came within 280,000 miles—nearly as close as the Moon.

January 11, 1997 – International

A satellite that had cost $200 million was incapacitated by the impact of a Coronal Mass Ejection. After efforts to restore the satellite's function failed, it was officially decommissioned.

September 1, 1997 – Salem Township (Washtenaw County)

After numerous persons reported a bright daylight meteor and sonic booms, the object broke up into at least three parts. One meteorite (called the "Worden Meteorite") then struck a residential garage roof (in Salem Township, midway between the villages of Salem and Brookville), as the family was nearby working in their back yard. They had heard a whistling sound passing overhead, and then investigated a boom and crash, finding the garage full of plaster dust, pieces of drywall, and insulation. There was a dent in the roof of a car that was parked in the garage, and the meteorite itself was found on the floor nearby, along with a couple of associated fragments. The large meteorite weighed about 1.5kg, and its dimensions were about 6 inches long, 4 inches wide, and an inch thick.

April-May, 1998 – International

The failure of the attitude control system of an expensive Galaxy IV satellite (the cost of such satellites is usually on the order of $200 to $250 million) disrupted the function of about 45 million pagers. Various other satellite problems were noted, and researchers eventually concluded that these problems were "caused, or at least exacerbated by" the impacts of geomagnetic conditions originating from "highly disturbed" solar conditions. Although the satellite problems occurred in May, weeks of problematic space weather that had started back in April was considered to have eventually led up to May's events.

June 14, 2002 – International

Another "near miss," in celestial terms, as asteroid 2002 MN passed within 75,000 miles of the Earth, but wasn't spotted until three days after it had already passed. An impact from the asteroid would have been of Tunguska-like force.

Feb 1, 2003 – National

The Space Shuttle Columbia broke apart violently when returning from a mission, causing a widespread alert about the potential for falling debris across the southwestern United States. More than 2,000 debris impact sites were eventually reported, but fortunately these were predominantly in sparsely populated areas. NASA issued warnings that the shuttle debris could contain hazardous materials and that it should remain untouched (and instead reported to authorities upon discovery).

March 26, 2003 – "Park Forest event" in Suburban Chicago, Illinois

Hundreds of meteorites fell across residential areas in the suburbs of Chicago. It must be noted that this event is highly unusual, having been described as "the most densely populated region to be hit by a meteorite shower in modern times." Coincidentally, the area of impact was in the midst of numerous highly-trained experts associated with the University of Chicago and other scientific institutions. The original meteoroid was calculated to have been between 1 and 7 thousand kilograms (possibly more) before it broke apart in the atmosphere. About 30 kilograms of meteorite fragments were recovered, the largest of them weighing 5.26kg. Numerous holes were punched through windows, roofs, and ceilings in homes, and also a fire station. One roof hole was caused by a meteorite that weighed only 545 grams. There were about 18 documented fragments of about that size or larger across a couple of square miles of neighborhoods.

October and November, 2003 – International

Geomagnetic storms took place in late October and November, and although power grids had learned from the March 1989 event and were better able to withstand the storms' effects, there were some heavy impacts upon the aviation sector from this event. The FAA had implemented a WAAS (Wide Area Augmentation System) to better guide navigation and aviation system control, and a part of what WAAS supports is the ability of air traffic to maintain safe distances from each other. The vertical navigation component of WAAS was disabled for approximately 30 hours across most of the United States during the late October storms.

January 2005 – International

Space weather at this time included solar radiation storms. In addition to the loss of HF radio communications, such storms can cause elevated radiation exposure to persons in aircraft flying at high latitudes (e.g. across polar regions). The use of polar routes has increased dramatically since the 1990s, since such routes can reduce travel time and fuel costs (by avoiding strong wintertime headwinds). Aircraft must divert to lower-latitude routes during such storm events, resulting in delays, increased flight times, missed connections, higher costs, and greater fuel consumption.

December 2005 – International

A geomagnetic storm caused the disruption of satellite-to-ground communications and GPS (Global Positioning System) navigational signals. Although this disruption only lasted about 10 minutes, it threatened the safety of commercial air flights and marine traffic during that time.

December 6, 2006 – International

A burst of solar radio wave energy caused a disruption in the function of GPS units across the entire sunlit side of the Earth (the Western hemisphere in this case). Some users of navigation systems found their capacities disrupted for many minutes, which was of particular significance for military aircraft.

September 20, 2007 – Southern Peru
After a loud explosion was heard, residents of an isolated village found a large crater measuring 41 feet in diameter near Lake Titicaca and filled with water. A 1.5 magnitude earthquake was detected in the area. The unusual aspect of this incident is that many villagers subsequently reported symptoms such as headaches and nausea. It has been proposed that the impact of a meteorite, along with the heat that was generated, caused the release of toxic fumes from the ground.

Figure 5.2.16-15

Image showing identified impact crater sites across the United States and Canada
(Map based on information from the Impact Database website – http://www.unb.ca/passc/ImpactDatabase/NorthAmerica.html)

Programs and Initiatives

In recent decades, a number of programs and research projects have examined this hazard, sought additional information about near-Earth objects (NEOs), and developed models of the potential risks and effects of an impact. Although most historic meteors went unnoticed (or unrecorded as such) in earlier times, today's satellite systems allow practically every meteor to be detected as it ignites in the atmosphere.

Near-Earth Object Detection Programs

Various agencies and universities have set up or coordinated in the creation of detection programs designed to locate and measure the characteristics of Near-Earth Objects such as "Apollo asteroids" that cross the orbit of the Earth. (It has been estimated that there are about 200 such asteroids with diameters of at least 1km, which would thus be capable of catastrophic damage if an impact were to occur. It has also been estimated, by NASA, that fewer than 10% of the estimated NEOs larger than a half-mile in diameter have yet been detected.) Most of these detection programs involve systematic telescope surveillance, measurements, complex modeling and orbital projection. Programs include the following:

- Lincoln Near-Earth Asteroid Research (LINEAR) project – at MIT, funded by NASA and the USAF.
- Lowell Observatory NEO Survey (LONEOS) program – in Flagstaff, Arizona.
- Near-Earth Asteroid Tracking (NEAT) system – operated by NASA's Jet Propulsion Laboratory in conjunction with the U.S. Air Force on Mt. Haleakala, Hawaii. The goal of NASA's 1998 Near-Earth Object Program was to locate at least 90 percent of all NEOs that are at least 1km in diameter.
- Palomar Planet-Crossing Asteroid Survey
- Panoramic Survey Telescope and Rapid Response System (Pan-STARRS) – Hawaii program supported by the U.S. Air Force.
- Raptor – a stereoscopic observation system operated by Los Alamos National Laboratory.
- The Sentry System – of the NASA Jet Propulsion Laboratory
- Spaceguard – started by NASA in 1998, a global survey devoted to asteroid analysis.
- The Spacewatch program – run by the University of Arizona in Tucson at Kitt Peak, Arizona.

More information about these programs can be found at their associated web sites on the internet.

Solar Monitoring and Measurement Programs

Various spacecraft are gathering data on solar flares, coronal mass ejections (CMEs), and charged-particle emissions (solar storms and space weather). These include:

- The Solar and Heliospheric Observatory (SOHO) (http://sohowww.nascom.nasa.gov/) is a collaborative international project between the U.S. National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA). It was launched in 1995. Among its solar studies, it tracks the intensity of solar winds and flares, and has also been responsible for the discovery of 2000 comets.
- Hinode – A Japanese satellite that engages in solar missions coordinated with other space agencies around the world, Hinode employs optical, ultraviolet, and X-ray equipment that measures the Sun's magnetic field, the Sun's corona (turbulent outer atmosphere), and the solar particles that are radiated.
- Solar Terrestrial Probes (STP) – Currently, the Solar Terrestrial Relations Observatory (STEREO) is the third of NASA's Solar Terrestrial Probes program and has been engaging in 3-D observations, imaging, and measurements of solar activity since 2006. Using a pair of spacecraft, the combined views cover most of the solar surface at all times, including the far side of the Sun, and make use of extreme ultraviolet waves to better detect and analyze coronal activity. A phone application is available from NASA that allows solar monitoring and the receipt of alerts to be transmitted to users' phones. The STEREO web

site is located at http://www.nasa.gov/mission_pages/stereo/main/index.html. On February 3, 2011, the two STEREO craft reached positions directly opposite each other, 180 degrees apart on each side of the Sun, allowing the entire surface to be monitored simultaneously. A Magnetosphere Multiscale (MMS) mission is planned for 2014, and will study three important plasma processes in the Earth's magnetosphere, to better understand space weather processes.

- Advanced Composition Explorer (ACE) – Launched in 1997, NASA's ACE provides solar wind monitoring and measurement in nearly real-time. From its space location at a point of gravitational equilibrium between the Earth and the Sun, ACE provides one hour of advance notice about impending geomagnetic activity that can disrupt communications and/or overload power grids. ACE instruments provide information about energetic ions and electrons, magnetic field vectors, high energy particle flux, and solar wind ions. The ACE web site is found at http://www.swpc.noaa.gov/ace/.
- Solar Dynamics Observatory – This program was designed by NASA to help understand the causes of solar variability, and its impacts on Earth. Launched in 2010, the mission focuses on the Sun's magnetic field, solar coronal activity and plasma, space weather, and the irradiance underlying planetary ionospheres. The SDO web site is at http://sdo.gsfc.nasa.gov/mission/about.php.

NOAA/NWS Space Weather Prediction Center

A web site at http://www.swpc.noaa.gov/ allows continuous access to information about space weather, including the convenient classification of space weather into NOAA's convenient 5-category schemas (e.g. from G1 to G5). Alerts and warnings are also accessible through this web site, along with a number of Space Weather User Groups, covering topics such as navigation, radio, electric power, and satellite operators.

Grid Reliability and Infrastructure Defense Act (GRID)

In 2010, the U.S. House of Representatives passed an act that included the following language specifically directed toward mitigating some of the impacts of geomagnetic storms:

"Geomagnetic storms.--Not later than 1 year after the date of enactment of this section, the Commission shall, after notice and an opportunity for comment and after consultation with the Secretary and other appropriate Federal agencies, issue an order directing the Electric Reliability Organization to submit to the Commission for approval under section 215, not later than 1 year after the issuance of such order, reliability standards adequate to protect the bulkpower system from any reasonably foreseeable geomagnetic storm event. The Commission's order shall specify the nature and magnitude of the reasonably foreseeable events against which such standards must protect. Such standards shall appropriately balance the risks to the bulk-power system associated with such events, including any regional variation in such risks, and the costs of mitigating such risks."

The full text of the act can be found at http://www.fas.org/irp/congress/2010_cr/grid.html.

The celestial impact hazard has not yet been identified as one of Elmore County's most significant hazards in the local hazard mitigation plan.

Mitigation Alternatives for Celestial Impacts

- Enough public awareness to allow recognition and understanding of the impacts of rare but potentially damaging meteorite impacts.
- Advance planning for catastrophic scenarios. For example, the U.S. Air Force used an asteroid strike for its December 2008 Interagency Deliberate Planning Exercise. The after-action report for that exercise was posted online at http://neo.jpl.nasa.gov/neo/Natural_Impact_After_Action_Report.pdf. An asteroid detected at a distance equivalent to that of the Earth's Moon could still give 8 hours of advance warning for the evacuation of coastal areas (to mitigate loss of life from a projected sea impact).
- Continued surveillance and analysis of Near-Earth Objects, and support for agencies that are engaged in such work. For example, since 1975, the Department of Defense has amassed extensive data about meteors entering the atmosphere, finding that hundreds per year explode in the atmosphere with explosive energy of at least 1 kiloton.
- Existing technologies would allow the diversion of a large asteroid or comet, if a sufficient lead time is available. Objects on a collision course 10 to 100 years in the future can be diverted or reduced by the use of conventional rockets and explosives. (Such action would be coordinated in the United States by the Departments of Defense and Energy, and would likely include international partners.) Explosives would require knowledge of an object's composition to be effective. Laser targeting could be used to change an object's velocity, although weeks or months may be required to obtain a large enough effect. With a sufficient amount of warning time (on the order of years), other mitigation techniques could include attaching a solar sail to the object, an interception/landing mission, and/or use of the "Yarkovsky effect" in which asteroid temperatures could be changed to affect its orbit.
- Various space missions have occurred to gather more information about asteroids and comets, and more are planned for the future. Some past missions have included Vega 1, Vega 2, Giotto, Suisei, and Sakigake (1986 flybys of Halley's Comet); Galileo (1995 observations of the Shoemaker-Levy comet impact); Near-Earth Asteroid Rendezvous (NEAR—asteroid investigations from 1997 to 2001); Deep Space 1 (comet rendezvous in 2001), Stardust (comet material collected and returned for analysis in 2006); Hayabusa (aka MUSES-C – asteroid landing and probing from 2005 to 2010); Rosetta (asteroid flybys from 2008 to 2010, and comet intercept mission scheduled for 2014-2015); and Deep Impact/EPOXI (comet rendezvous in 2005 and flyby in 2010). Additional missions can be expected to provide even more information.
- Awareness campaigns for industries and systems involving satellite communications, GPS, or radio communications that could be disrupted by solar flare (space weather) activity. In addition to the use of GPS for navigation, aviation, and military applications, it is also important for offshore drilling operations, precision farming, transportation, and mapping and surveying.
- Operating procedures that include back-up systems allowing complex systems (e.g. air traffic control) to continue to function when key technological systems (e.g. GPS, radio communications, satellites) malfunction. For example: the maintenance of "legacy" non-GPS navigational systems as a back-up, and the use of new GPS signals and codes to remove ranging errors.

- The use of special procedures, equipment, and redundancies by utility systems (e.g. electrical power and pipeline systems) to minimize the potential for geomagnetic effects to cause inappropriate shutdowns and system damage. For example: the provision of reserve capacity may offset the effects of geomagnetic storms, and the temporary disconnection of components for their own protection.
- Additional back-up satellites, for communications and navigation, will be needed to limit the damaging effects of a major solar storm, which may put current satellite equipment out of action and require their rapid replacements.

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The following excerpts are also derived from the **SWPC's Webpage** and various presentations delivered during the **Space Weather Workshop, Boulder, CO, 9 April, 2014.**

Space Weather Workshop 2014 was co-sponsored by the NOAA Space Weather Prediction Center, the NSF Division of Atmospheric and Geospace Sciences, and the NASA Heliophysics Division.

About Space Weather Workshop

Space Weather Workshop is an annual conference that brings industry, academia, and government agencies together in a lively dialog about space weather. What began in 1996 as a conference for the space weather user community, Space Weather Workshop has evolved into the Nation's leading conference on all issues relating to space weather.

The conference addresses the remarkably diverse impacts of space weather on today's technology. The program highlights space weather impacts in several areas, including communications, navigations, spacecraft operations, aviation, and electric power. The presentations and discussions at the Space Weather Workshop also focus on identifying the highest priority needs for operational services that can guide future research and identifying new high-value capabilities that can be transitioned into operations. The conference fosters communication among researchers, space weather service providers, and users of space weather services.

Researchers have the opportunity to discuss relevant research in many areas of the space environment. Recent progress in large-scale modeling efforts will be featured; while new developments in Sun-to-Earth coupled modeling systems will also be a highlight.

Key components of our global infrastructure and economy are at risk from space weather. Modern society depends on reliable access to advanced technologies such as GPS, satellite communications, and a stable energy distribution network. No other natural occurring phenomenon has the potential to be so far reaching in its impact to mankind.

Consequently, space weather mitigation strategies are being addressed by many nations. Meeting the space weather needs is beyond the capability of any single agency or country, and we

recognize that society is best served by the ability of all nations and all sectors - public, private, and academic to work together as partners to meet our common goals to plan, prepare and respond to space weather storms.

Figure 5.2.16-16
From: Update on Space Weather Activities in the National Weather Service

PPT Presented By: Dr. William 'Bill' Lapenta

Director, National Centers for Environmental Prediction (NCEP) NWS, NOAA
[Recreated] **Slide 5 of 17:**

The Drivers:

Owners and operators of the Bulk-Power System to implement operational procedures to mitigate Geomagnetic Storm effects.

FERC
FEDERAL ENERGY REGULATORY COMMISSION

FERC Orders Development of Reliability Standards for Geomagnetic Disturbances

The Federal Energy Regulatory Commission (FERC) today issued a final rule requiring development reliability standards that address the impact of geomagnetic disturbances (GMD) to ensure continued reliable operation of the nation's Bulk-Power System.

United Nations ICAO and US FAA Introducing policies and protocols for space weather.

Federal Aviation Administration

INTERNATIONAL CIVIL AVIATION ORGANIZATION
A United Nations Specialized Agency

Threat/ Hazard Group	Threat/Hazard Type	National-level Event Description
Natural	Animal Disease Outbreak	An unintentional introduction of the foot-and-mouth disease virus into the domestic livestock population in a U.S. state
	Earthquake	An earthquake occurs within the U.S. resulting in direct economic losses greater than $100 Million
	Flood	A flood occurs within the U.S. resulting in direct economic losses greater than $100 Million
	Human Pandemic Outbreak	A severe outbreak of pandemic influenza with a 25% gross clinical attack rate spreads across the U.S. populace
	Hurricane	A tropical storm or hurricane impacts the U.S. resulting in direct economic losses of greater than $100 Million
	Space Weather	The sun emits bursts of electromagnetic radiation and energetic particles causing utility outages and damage to infrastructure
	Tsunami	A tsunami with a wave of approximately 50 feet impacts the Pacific Coast of the U.S.
	Volcanic Eruption	A volcano in the Pacific Northwest erupts impacting the

Homeland Security
Home | Topics | How Do I? | Get Involved | News | About DHS
Home > About DHS > Organization > The Strategic National Risk Assessment (SNRA)
About DHS
The Secretary
Budget & Performance
The Strategic National Risk Assessment (SNRA)

Space weather now included in the Strategic National Risk Assessment

Figure 5.2.16-17

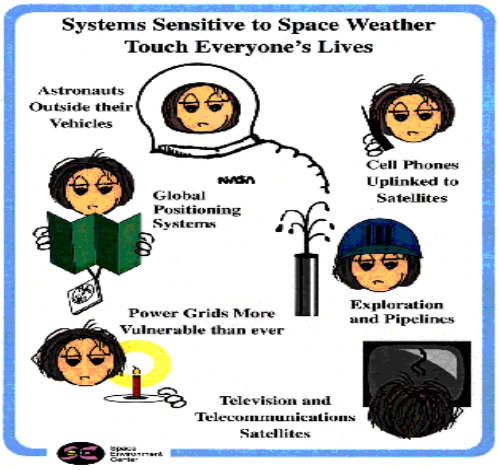
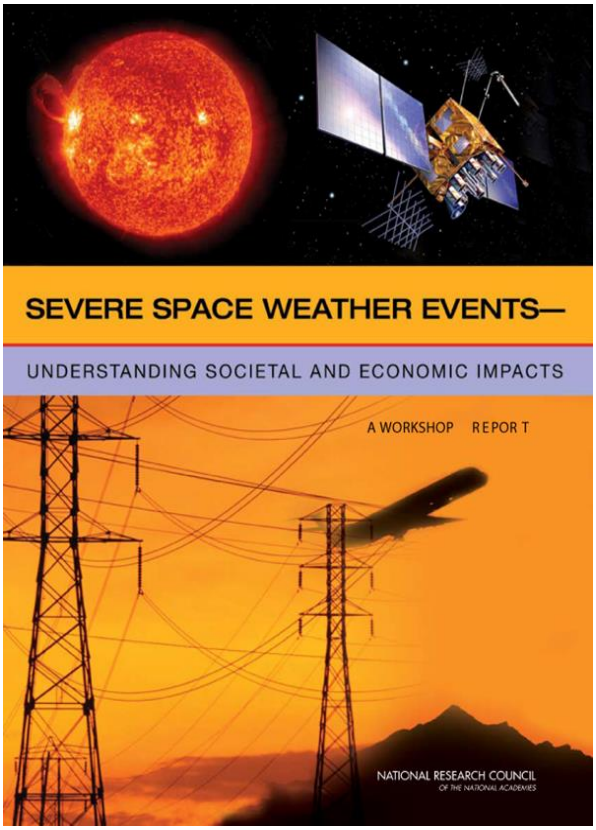


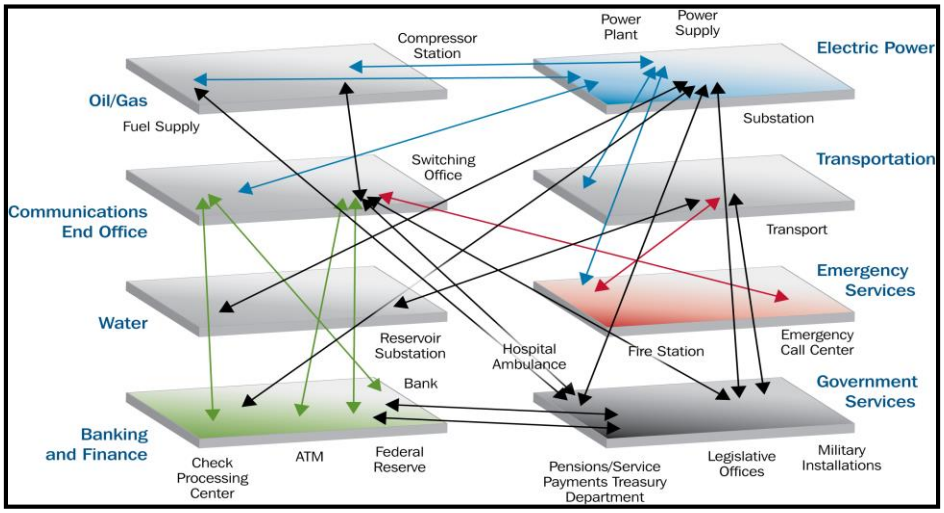
Figure 5.2.16-18
From: A Major Solar Eruptive Event in July 2012: Defining Extreme Space Weather Scenarios



PPT Presented By: Daniel N. Baker
Laboratory for Atmospheric and Space Physics, Astrophysical and Planetary Sciences Department

Figure 5.2.16-19
[Recreated] **Slide 2 of 22:**

The Interdependencies of Society



This is **Figure 3.1** from the 8/28/08 Review Draft. **Connections and interdependencies** across the economy. Schematic showing the interconnected infrastructures and their qualitative dependencies and interdependencies. **SOURCE:** Department of Homeland Security, National Infrastructure Protection Plan, available at http://www.dhs.gov/xprevprot/programs/editorial_0827.shtm.

Figure 5.2.16-20
[Recreated] **Slide 6 of 22:**
CME events produce Geomagnetic Disturbances (GMD) which produce Ground Induced Currents (GIC) on Earth Washington Post Graphic

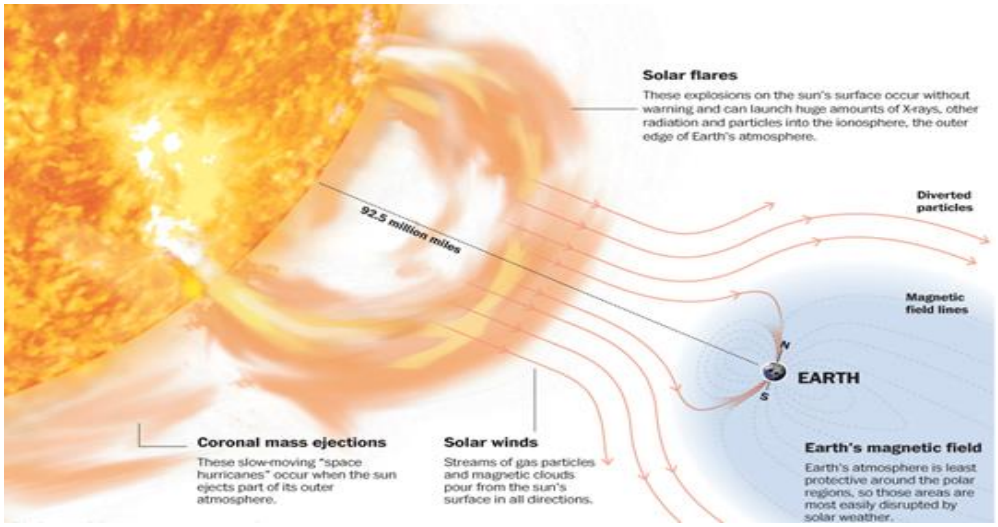
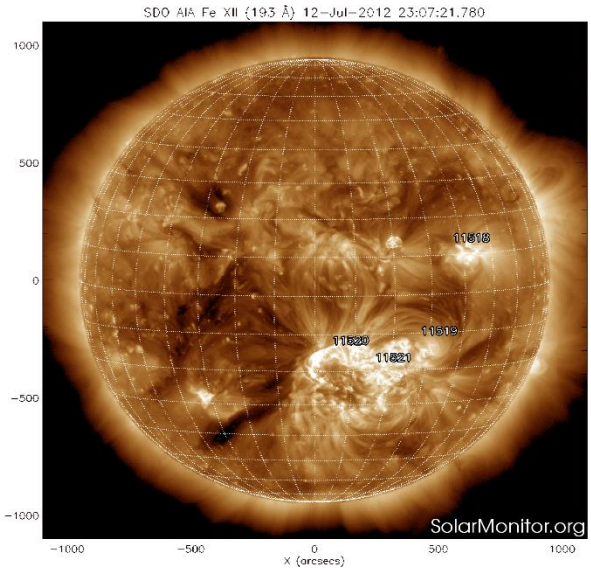


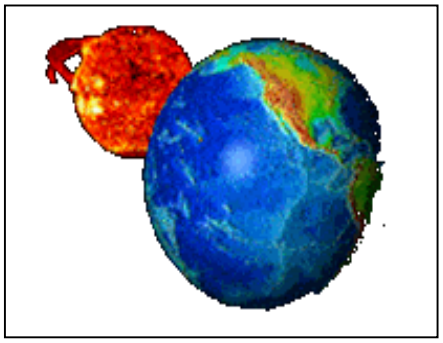
Figure 5.2.16-21
Slide 7 of 22:



[From, but not all of] **Slide 19 of 22:**

Summary

- Nature performed an almost ideal active experiment on 23-24 July 2012: Powerful solar storm but directed away from Earth and key technical assets
- July 2012 storm should be adopted by policy makers and space weather professionals to "war game" emergency preparedness planning for extreme Space Weather events.



Real-time and Near-real-time Solar Image Sites

The Space Weather Prediction Center (SWPC) provides real-time monitoring and forecasting of solar and geophysical events. An ongoing analysis of the sun is important in combining current

data, climatological statistics, and relevant research results to formulate predictions of solar and geophysical activity.

The Internet has a wealth of useful data available. The following are image sites with current space weather images that are used by SWPC in performing their daily analysis. Many of the links below are non US Government sites, see disclaimer. Also see Non-SWPC Sources of Space Weather Data

The National Science Foundation Facilities Assessment Database **Listing of Solar Instrument resources** is a catalog of worldwide solar observatories, instruments, and archives.

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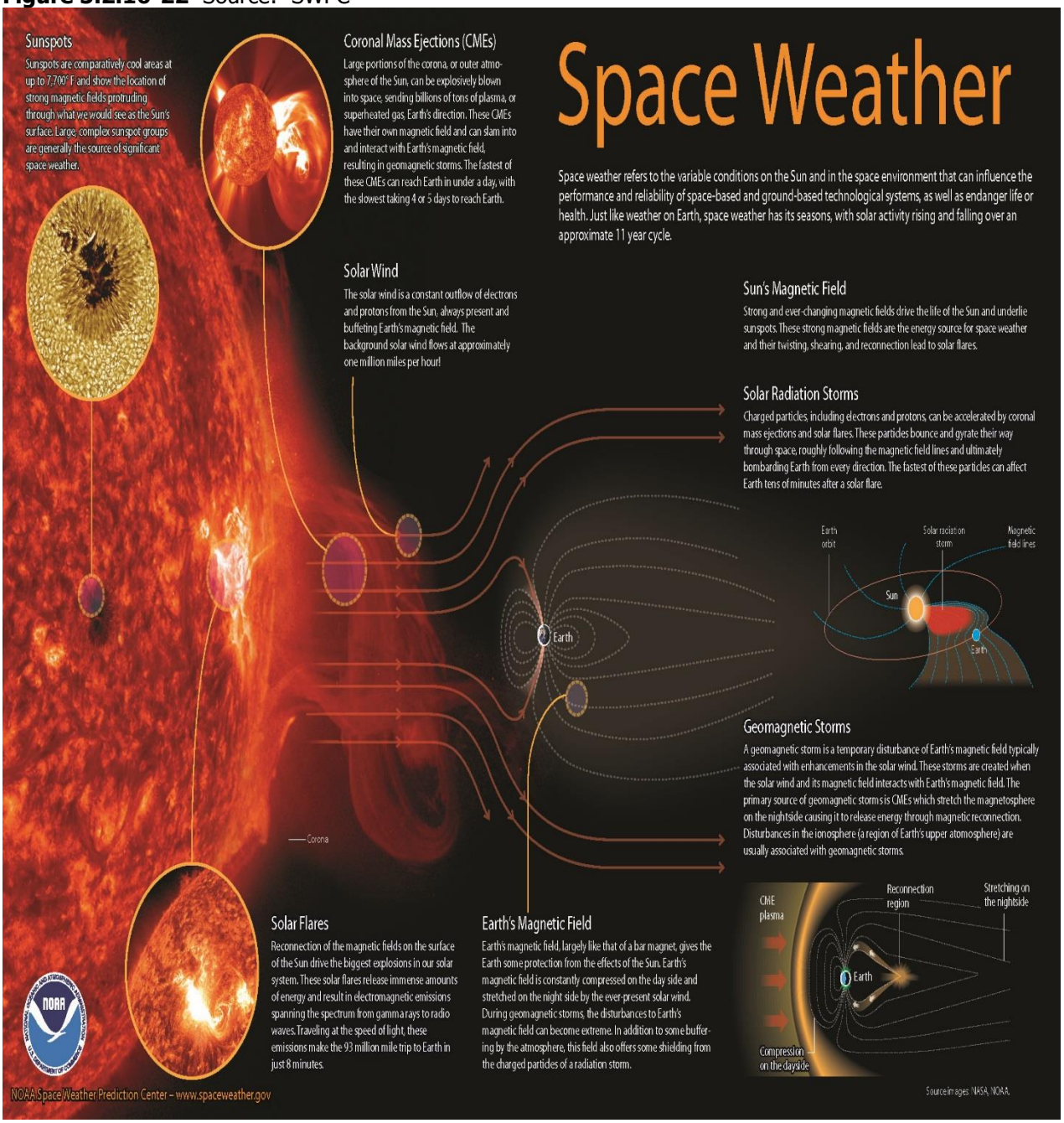
Education and Outreach

Figure 5.2.16-22 Source: SWPC



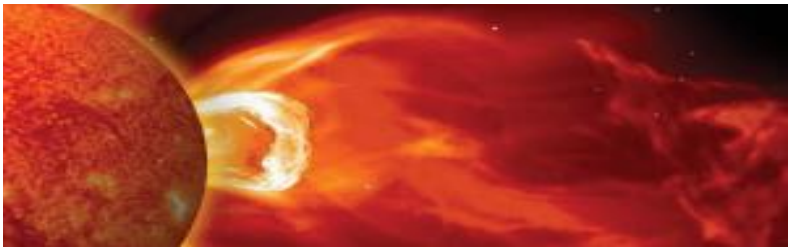


Figure 5.2.16-23 Source: Information below is from FEMA Ready.gov

Learn About Space Weather

In order to protect people and systems that might be at risk from space weather effects, we need to understand the causes of space weather.

The sun is the main source of space weather. Sudden bursts of plasma and magnetic field structures from the sun's atmosphere called coronal mass ejections (CME) together with sudden bursts of radiation, or solar flares, all cause space weather effects here on Earth.

Space weather can produce electromagnetic fields that induce extreme currents in wires, disrupting power lines, and even causing wide-spread blackouts. Severe space weather also produces solar energetic particles, which can damage satellites used for commercial communications, global positioning, intelligence gathering, and weather forecasting.

The strongest geomagnetic storm on record is the Carrington Event of August-September 1859, named after the British astronomer Richard Carrington. During this event currents electrified telegraph lines, shocking technicians and setting their telegraph papers on fire; and Northern Lights (electrically charged particles from the sun that enter Earth's atmosphere) were visible as far south as Cuba and Hawaii.

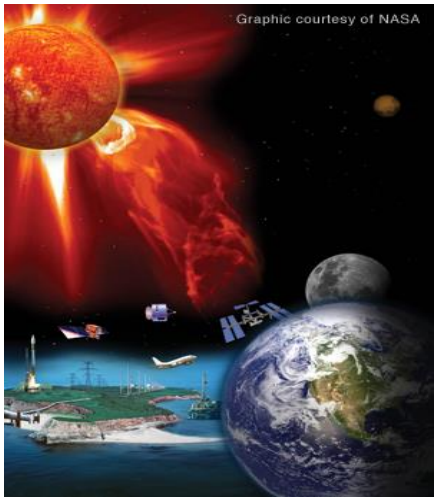
Another significant space weather event took place on March 13,1989; a powerful geomagnetic storm set off a major power blackout in Canada that left six million people without electricity for nine hours. According to the North American Electric Reliability Corporation (NERC), the flare disrupted electric power transmission from the Hydro Québec generating station and even melted some power transformers in New Jersey. NASA stated, however, that this 1989 space weather event was nowhere near the same scale as the Carrington event.

Predicting Space Weather

Space weather prediction services in the United States are provided primarily by NOAA's Space Weather Prediction Center (SWPC) and the U.S. Air Force's (USAF) Weather Agency (AFWA), which work closely together to address the needs of their civilian and military user communities. The SWPC draws on a variety of data sources, both space and ground-based, to provide forecasts, watches, warnings, alerts, and summaries as well as operational space weather products to civilian and commercial users.

Before Space Weather Occurs

Figure 5.2.16-24 Source: Ready.gov



Space weather can have an impact on our advanced technologies which has a direct impact on our daily lives. The main area of concern will most likely be our nation's electric power grid. Northern territories are more vulnerable to these effects than areas farther south. Generally, power outages due to space weather are very rare events, but evidence suggests that significant effects could occur. These power outages may have cascading effects, causing:

- Loss of water and wastewater distribution systems
- Loss of perishable foods and medications
- Loss of heating/air conditioning and electrical lighting systems
- Loss of computer systems, telephone systems, and communications systems (including disruptions in airline flights, satellite networks and GPS services)
- Loss of public transportation systems
- Loss of fuel distribution systems and fuel pipelines
- Loss of all electrical systems that do not have back-up power

To begin preparing, you should build an emergency kit and make a family communications plan. Other steps you can take include:

- Fill plastic containers with water and place them in the refrigerator and freezer if there's room. Leave about an inch of space inside each one, because water expands as it freezes. This chilled or frozen water will help keep food cold during a temporary power outage.
- Be aware that most medication that requires refrigeration can be kept in a closed refrigerator for several hours without a problem. If unsure, check with your physician or pharmacist.
- Keep your car tank at least half full because gas stations rely on electricity to power their pumps.
- Know where the manual release lever of your electric garage door opener is located and how to operate it. Garage doors can be heavy, so know that you may need help to lift it.
- Keep a key to your house with you if you regularly use the garage as the primary means of entering your home, in case the garage door will not open.

- Keep extra batteries for your phone in a safe place or purchase a solar-powered or hand crank charger. These chargers are good emergency tools to keep your laptop and other small electronics working in the event of a power outage. If you own a car, purchase a car phone charger because you can charge your phone if you lose power at your home.
- If you have a traditional landline (non-broadband or VOIP) phone, keep at least one non-cordless receiver in your home because it will work even if you lose power.
- Prepare a family contact sheet. This should include at least one out-of-town contact that may be better able to reach family members in an emergency.
- Make back-up copies of important digital data and information, automatically if possible, or at least weekly.

Space Weather Scales

The NOAA Space Weather Scales report three categories of solar effects. These scales communicate current and future space weather conditions, and their possible effects on people and systems. Similar to the Saffir-Simpson Hurricane Wind Scale, the NOAA space weather scales correlate space weather events with their likely effects on technological systems. As shown in the table below, the scales describe the environmental disturbances for three event types: Geomagnetic Storms (G-scale), Solar Radiation Storms (S-scale), and Radio Blackouts (R-scale). The scales have numbered levels, analogous to hurricanes, tornadoes, and earthquakes that convey severity.

NOTE: The vast majority of "5" level events will not cause catastrophic damages to the electric grid. On average, the Earth is impacted by such storms about four times during every 11-year solar cycle, so many large storms have impacted the planet since the Carrington Storm with much less signification impact.

For more information visit NOAA Space Weather Scales.

Know the Terms

Watches are used for making long-lead predictions of geomagnetic activity.

Warnings are used to raise the public's level of alertness based on an expectation that a space weather event is imminent.

Alerts indicate that the observed conditions, highlighted by the warnings, have crossed a preset threshold or that a space weather event has already started.

Space Weather Alerts

You can find alerts about space weather at the NOAA/Space Weather Prediction Center or register your email address to receive alerts, warnings, watches, forecasts, and summaries via email within moments of issue.

During Space Weather Occurrences

Source: FEMA Ready.gov

Follow energy conservation measures to keep the use of electricity as low as possible, which can help power companies avoid imposing rolling blackouts during periods when the power grid is compromised.

Follow the Emergency Alert System (EAS) instructions carefully.

Disconnect electrical appliances if instructed to do so by local officials.

Do not use the telephone unless absolutely necessary, during emergency situations keeping lines open for emergency personnel can improve response.

After Space Weather Occurrences

Source: FEMA Ready.gov

Throw out unsafe food:

- Throw away any food that has been exposed to a temperature of 40° F (4° C) or higher for 2 hours or more or that has an unusual odor, color, or texture. When in doubt, throw it out!
- Never taste food or rely on appearance or odor to determine its safety. Some foods may look and smell fine, but if they have been at room temperature too long, bacteria causing food-borne illnesses can start growing quickly. Some types of bacteria produce toxins that cannot be destroyed by cooking.
- If food in the freezer is colder than 40° F and has ice crystals on it, you can refreeze it.
- If you are not sure food is cold enough, take its temperature with a food thermometer.

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5.2.17 Hazardous Materials Incidents/Spills

Source: Michigan's 2012 Threat and Hazard Identification and Risk Assessment
Source: Michigan's Hazard Mitigation Plan, March 2011
Source: U.S. Nuclear Regulatory Commission
Source: U.S. Environmental Protection Agency
Source: U.S. Department of Transportation Pipeline & Hazardous Materials Safety Administration (PHMSA)
Source: Pipeline and Information Planning Alliance (pipa)

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan*, *December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Chemical Release (Rail, Pipeline, Transportation Accident)

History: Low, 2
Frequency of Occurrence: Rare (4)
Probability: Low, 7; Occasional Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Disaster (2)

Infrastructure: Moderate (4)
Environment: Low (5)

Jurisdictions	Extent of the Technological Hazard – Hazardous Materials Incidents/Spills
All	Overall impacts from a hazardous materials incident anywhere in Elmore County would likely be limited with 10-25 percent of the area affected.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Significant: A significant portion of the planning area is susceptible to hazardous materials releases based primarily upon proximity to the mode of transportation of the hazardous material, i.e., rail, pipeline, or roadways.
Overall Significance Ranking: High

Elmore County EMA historic files indicate **22** incidents have occurred in the county involving combustible liquids between March 2009 and March 2014. An incident in March, 2009, resulted in the fatality of the truck driver.

HAZARDOUS MATERIAL INCIDENTS

A hazardous material is any solid, liquid, or gas that can cause harm to humans and other living organisms due to its being radioactive, flammable, explosive, toxic, corrosive, a biohazard, an oxidizer, an asphyxiant, or capable of causing severe allergic reactions. Mitigating the risks associated with hazardous materials often requires extensive safety precautions during their transport, use, disposal and storage. Hazardous materials are transported by highway, rail, pipeline, air, and water. Below is a chart showing the number of hazardous material transportation incidents in the United States reported to the federal Pipeline and Hazardous Materials Safety Administration. (Note: the chart only lists transportation incidents, not fixed site incidents.)

Table 5.2.17-1

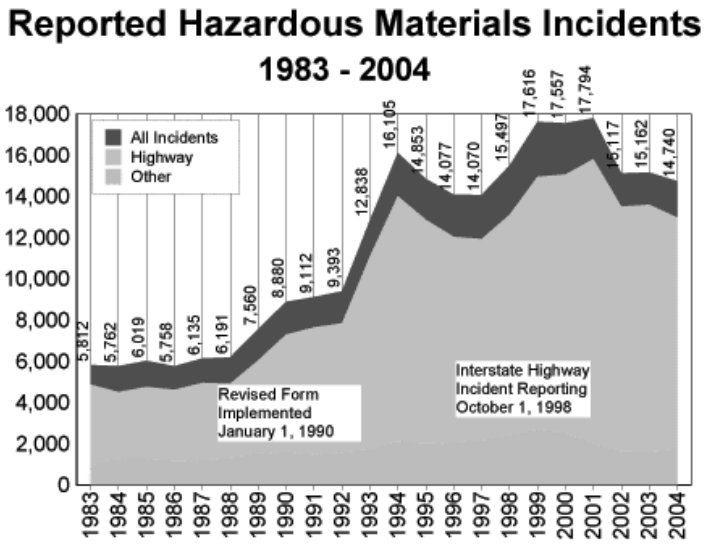


Table 5.2.17-2 Alabama Accident Summary Statewide 2008

HAZARDOUS CARGO

REPORT NO 18

TOTAL ACCIDENTS STATE WIDE

FOR THE PERIOD OF 01 01 2008 - 12 31 2008

HAZARDOUS CARGO	NUMBER OF ACCIDENTS				NUMBER OF PERSONS		NUMBER OF PERSONS INJURED BY SEVERITY		
	TOTAL	FATAL	NON-FATAL INJURY	PROPERTY DAMAGE ONLY	KILLED	INJURED	INCAPA-CITATING INJURY	EVIDENT INJURY	POSSIBLE INJURY
01. NONE	121984	881	25403	95700	958	35359	20176	3782	11401
02. EXPLOSIVES	8	0	2	6	0	2	0	1	1
03. GAS	53	2	13	38	2	16	12	0	4
04. FLAM/CUMBUST LIQ	35	1	7	27	1	10	5	0	5
05. FLAMMABLE SOLID	5	0	3	2	0	4	0	0	4
06. OXIDIZER/PEROXIDE	0	0	0	0	0	0	0	0	0
07. POISON	7	0	2	5	0	7	2	0	5
08. RADIOACTIVE MATERIAL	2	0	0	2	0	0	0	0	0
09. CORROSIVE MATERIAL	11	0	3	8	0	3	3	0	0
98. OTHERS	40	0	5	35	0	9	7	0	2
99. UNKNOWN	1798	3	171	1624	3	205	86	33	86
TOTALS	123943	887	25609	97447	964	35615	20291	3816	11508

Source: Pipeline and Hazardous Materials Safety Administration (PHMSA)

Table 5.2.17-2.1 Alabama Accident Summary Statewide 2008

HAZARDOUS CARGO

REPORT NO 18

TOTAL ACCIDENTS STATE RURAL

FOR THE PERIOD OF 01 01 2008 - 12 31 2008

HAZARDOUS CARGO	NUMBER OF ACCIDENTS				NUMBER OF PERSONS		NUMBER OF PERSONS INJURED BY SEVERITY		
	TOTAL	FATAL	NON-FATAL INJURY	PROPERTY DAMAGE ONLY	KILLED	INJURED	INCAPA-CITATING INJURY	EVIDENT INJURY	POSSIBLE INJURY
01. NONE	34259	586	9833	23840	644	14243	10851	1138	2254
02. EXPLOSIVES	2	0	0	2	0	0	0	0	0
03. GAS	19	1	6	12	1	6	5	0	1
04. FLAM/CUMBUST LIQ	19	1	4	14	1	6	3	0	3
05. FLAMMABLE SOLID	3	0	3	0	0	4	0	0	4
06. OXIDIZER/PEROXIDE	0	0	0	0	0	0	0	0	0
07. POISON	0	0	0	0	0	0	0	0	0
08. RADIOACTIVE MATERIAL	0	0	0	0	0	0	0	0	0
09. CORROSIVE MATERIAL	7	0	3	4	0	3	3	0	0
98. OTHERS	10	0	3	7	0	6	6	0	0
99. UNKNOWN	192	1	29	162	1	30	20	4	6
TOTALS	34511	589	9881	24041	647	14298	10888	1142	2268

Incident – An unintentional release of product from a transmission pipeline that may or may not result in death, injury, or damage to property or the environment. (Note that as used in pipeline safety regulations, an "incident" is an event occurring on a natural gas pipeline for which the operator must make a report to PHMSA's Office of Pipeline Safety. Events of similar

magnitude affecting hazardous liquid pipelines are considered "accidents". (Reference 49 CFR 191.3, 49 CFR 195.50)).

Impact on the Public

Both fixed site and transport-related hazardous material incidents involve the potential for evacuation (or sheltering in place), with significant problems possible for special populations in hospitals, schools, nursing homes, and other critical facilities. Certain types of extremely hazardous substances may result in a public health emergency, and a resulting need for triage, mass treatment, and congregate care. In addition to the direct impacts of the hazardous material event itself, transportation incidents may directly affect the transportation infrastructure in the area and cause extensive delays in travel and the conduct of business.

Impact on Responders

Special procedures and additional information tend to be needed for incidents involving hazardous materials. Additional risks to responders may be present from exposure to extremely hazardous substances at or near these incident locations. Exposure can involve direct contact, the presence of toxic fumes, or the risk of fires and explosions from chemical reactions. Additional complexity therefore tends to be present in any response involving hazardous materials.

Impact on Continuity of Operations

The impact is unlikely to cause relocation of government operations. Transportation may be affected due to traffic delays and detours. Discontent may arise from difficulties in planning to avoid conflicting land uses. Mixed attitudes toward useful and needed employers/businesses may be fairly common, recognizing the economic benefits of companies that use hazardous materials, but unsettled by the perceived risks in the location of some of them or the number of SARA Title III sites in Elmore County. Such perceptions of risk may be over-generalized toward other, undeserving businesses (e.g. those that pose minimal risks). Part of the public may not understand the balance between regulation and business needs concerning the use and handling of hazardous materials. Transportation delays due to transportation-related incidents may cause dissatisfaction with roadway provision, capacity, and maintenance.

Impact on the Environment

An incident involving hazardous material, whether at a fixed site or during transportation, may cause harm to the environment, as various types and quantities of chemicals are released. A hazardous spill involving an industrial or chemical plant can affect air quality, soil surrounding the area of the release, and an area's drinking water. A hazardous spill caused by a transportation accident can similarly impact the air, soil, and nearby lakes and rivers. A toxic release can also destroy the wildlife habitat in or around the areas where the release occurs.

Area intentionally left blank.

HAZARDOUS MATERIAL INCIDENTS: FIXED SITE
(INCLUDING INDUSTRIAL ACCIDENTS)

Hazardous Material Incident – Fixed Site: An uncontrolled release of hazardous materials from a fixed site capable of posing a risk to life, health, safety, property or the environment.

Industrial Accident: A fire, explosion, or other severe accident (especially if it involves hazardous materials) at an industrial facility that results in serious property damage, injury, or loss of life.

Hazard Description

Hazardous Material Incidents

Over the past few decades, new technologies have developed at a stunning pace. As a result, hazardous materials are present in quantities of concern in business and industry, agriculture, universities, hospitals, utilities, and other facilities in our communities. Hazardous materials are materials or substances which, because of their chemical, physical, or biological nature, pose a potential risk to life, health, property, or the environment if they are released. Examples of hazardous materials include corrosives, explosives, flammable materials, radioactive materials, poisons, oxidizers, and dangerous gases.

Hazardous materials are highly regulated by federal and state agencies to reduce risk to the general public and the environment. Despite precautions taken to ensure careful handling during the manufacture, transport, storage, use, and disposal of these materials, accidental releases do occur. These releases can cause severe harm to people or the environment, and response actions often need to be immediately performed. Most releases are the result of human error. Occasionally, releases can be attributed to natural causes, such as a flood that washes away barrels of chemicals stored at a site. However, those situations are the exception rather than the rule.

Industrial Accidents

Industrial accidents differ from hazardous material incidents in the scope and magnitude of offsite impacts. Whereas hazardous material incidents typically involve an uncontrolled release of material into the surrounding community and environment that may require evacuations or in-place sheltering of the affected population, the impacts from industrial accidents are often confined to the site or facility itself, with minimal physical outside impacts. Nonetheless, industrial accidents, such as fires, explosions, and excessive exposure to hazardous materials, may cause injury or loss of life to workers at the facility, and significant property damage. In addition, industrial accidents can cause severe economic disruption to the facility and surrounding community, as well as significant long-term impacts on the families of the workers injured or killed.

Hazard Analysis

Hazardous Material Incidents

Per the Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III, Section 312, the Emergency Planning and Community Right-to-Know Act (40 CFR Part 370 Subpart B, Section 370.25), any facility located in Elmore County that maintains hazardous substances in amounts

equal to or greater than the minimum threshold quantity must complete an annual Tier II Emergency and Hazardous Chemical Inventory and provide copies to the Local Emergency Planning Committee (known as the Elmore County Multi-Agency Coordination Group, which includes all fire departments having jurisdiction over each reportable facility). The Tier II Inventory covers the reporting period of January 1st thru December 31st of each year. Based on a review of Tier II Inventory Forms received by the Elmore County EMA Office between reporting years 2008 – 2013, inventories were received on an average of 46 reportable facilities/sites, reporting on an average of 98 (SARA III) hazardous substances located in Elmore County. Based on the 2013 inventories, there are 44 facilities/sites located throughout the county, including the areas of: Wetumpka (13), Tallassee (8), Millbrook (7), Coosada (5), Elmore County (4), Elmore (3), Holtville (3), and Eclectic (1). The greatest concentrations of facilities/sites span the southern half of the county, with City of Millbrook (7) in the south-western, City of Wetumpka (13) in the south-central, and City of Tallassee (8) in the south-eastern portions of Elmore County. Fortunately, these are generally the areas with more resources to prepare for and respond to a hazardous material incident. However, the greater population concentrations also make these areas more vulnerable to a serious hazardous material incident.

Like all heavily industrialized states, Alabama will always be concerned with the risk of accidental hazardous material releases. However, the threat of accidental hazardous material releases that can affect life, health, property or the environment can be greatly reduced by: 1) developing and maintaining adequate community hazardous material response plans and procedures; 2) adequately training hazardous material workers and off-site emergency responders; 3) educating the public about hazardous materials safety; 4) enforcing basic hazardous material safety regulations; and 5) mitigating, wherever possible, the threat of accidental hazardous material releases. Fortunately, many Alabama and Elmore County communities are making great strides in these important areas.

NOTE: Nuclear research facilities can produce / use radioactive materials, as well as other hazardous substances, and therefore need to be dealt with by specially trained personnel. Caution should be exercised at these facilities, and proper radiological survey equipment should be used during a response.

Industrial Accidents

*Significant **Fixed-Site** Hazardous Material Incidents and Industrial Accidents*

December 3, 1984 – Bhopal, India

The world's worst hazardous material incident occurred on December 3, 1984 in Bhopal, India when a cloud of methyl isocyanate gas (an extremely irritating chemical that can cause severe acute respiratory problems) escaped from a Union Carbide chemical plant, killing about 2,500 persons and injuring tens of thousands more. Many of the injured later suffered permanent disabilities. Over 30 tons of the chemical was released. The exact cause of the release was not firmly established, but several safety systems designed to prevent a major release were either inoperative, under maintenance, or not activated by workers. Atmospheric conditions at the time of the release kept the toxic cloud close to the ground as it slowly drifted over the city, increasing the number of persons exposed. Unfortunately, warning systems for the community were not

activated in a timely manner and many individuals died in their sleep. The Bhopal incident helped to illustrate many important points about accidents that involve a release of hazardous materials. First, it was not caused by a single factor; rather, a number of contributing events had to occur for the methyl isocyanate to be released and have such a deadly public health impact. Second, human error and lack of adherence to safety rules and procedures played a substantial role in the incident. Third, the impact would not have been nearly so great had the population around the plant not been so large and densely housed, and had there been better preparation about how to respond to a hazardous materials release. Finally, the deadly release proved that worst-case scenarios do occur, and that emergency planning, training, and education must be geared toward that worst-case incident. As tragic as the Bhopal incident was for India, it did have a positive side in that it triggered historic federal legislation intended to minimize such disasters from occurring in the United States. Shortly after the Bhopal incident, Congress enacted legislation (the Superfund Amendments and Reauthorization Act, signed into law October 17, 1986) that established new requirements for federal, state and local government, and private industry, for reporting on and planning for hazardous material incidents. (See the Programs and Initiatives section for more information on this law.)

NOTE: A reportable hazardous material incident is one in which all three of the following conditions apply:
(1) a material is present that is suspected to be other than ordinary, combustible by-product material; (2) the material is in such a state, quantity or circumstance that, if left unattended, it is presumed to pose a threat to life, health, property or the environment; and (3) special hazardous material resources were dispatched or used, or should have been dispatched or used, for assessing, mitigating or managing the situation.)

Mobile, Alabama: May 25, 1865
On May 25, 1865, in Mobile, Alabama, an ordnance depot exploded, resulting in about 300 fatalities. This event occurred just after the end of the American Civil War. The depot was a warehouse where troops had stacked about 200 tons of shells and powder. The shells caught fire and exploded with flames shooting up into the sky and the bursting shells were heard throughout the city. After the explosion there were fires that burned until the entire northern part of Mobile was destroyed. The exact cause of the explosion was never determined.
Halifax, Nova Scotia, Canada: December 6, 1917
One of the biggest and most deadly explosions occurred on December 6, 1917 in Halifax, Nova Scotia, Canada known as the Halifax Explosion. The incident occurred when a French freighter the SS Mont Blanc that was carrying ammunition/wartime explosives collided with a Norwegian ship SS Imo in Halifax Harbor. About 2,000 people were killed by debris, fires, or collapsed buildings and it is estimated that over 9,000 people were injured. The Mont Blanc caught fire 10 minutes after the collision and later exploded about 25 minutes later. The explosion was equivalent to about three kilotons of TNT and a fire ball rose over a mile in the air forming a giant mushroom cloud. All of the buildings and structures covering nearly 2 square kilometers along the adjacent shore were destroyed, including those in the neighboring communities of Richmond and Dartmouth. The explosion also caused a tsunami in the harbor with waves as high as 60 feet,

and a pressure wave of air that snapped trees, bent iron rails, demolished buildings, grounded vessels, and carried the remaining fragments of the Mont-Blanc for miles.

New London, Texas: March 18, 1937

On March 18, 1937 the deadliest school disaster in United States history occurred in New London, Texas after an explosion. The explosion was caused by a natural gas leak and resulted in the death of at least 295 students and/or teachers. Approximately 600 students and 40 teachers were in the building at the time; and only about 130 escaped without serious injury.

Port Chicago, California: July 17, 1944

A major munitions explosion occurred in Port Chicago, CA on July 17, 1944 at a naval base. The incident occurred during World War II when munitions detonated while being loaded onto a cargo vessel bound for the Pacific Theater of Operations, killing 320 sailors and civilians and injuring 390 others. The explosion resulted in an enormous fireball.

Cleveland, Ohio: October 20, 1944

A significant gas explosion occurred October 20, 1944 in Cleveland, Ohio that resulted in 130 fatalities and destroyed one square mile around Cleveland's east side. The event occurred when an above ground storage tank, holding liquefied natural gas in the East Ohio Gas Company's tank farm began to emit a vapor that poured from the tank. As the gas mixture flowed and mixed with air and sewer gas, the mixture ignited. In the ensuing explosion, manhole covers launched skyward as massive fires erupted from the depths of the sewer lines. Then a second above-ground tank exploded, leveling the tank farm. The explosions and fires continued to occur, trapping many who had returned to what they thought was the safety of their own homes. In all over 600 people were left homeless, and 70 homes, two factories, many cars and miles of underground infrastructure was destroyed. The explosion also had a long range impact on the natural gas industry. Until the disaster, above ground storage of natural gas, used as fuel for homes, office buildings and factories, was a common sight in cities across America. Following the disaster, utility companies and communities began to rethink their natural gas storage systems, and below ground storage of natural gas grew in popularity.

April 16, 1947 – Texas City, Texas

One of the worst industrial accidents in United States history occurred on April 16, 1947 in Texas City, Texas when approximately 2,300 tons of ammonium nitrate detonated and resulted in a chain reaction of fires and explosions. The incident started with a mid-morning fire on board the French-registered vessel SS Grandcamp in the Port of Texas City. The fire led to a massive explosion that sent a 15 foot wave across the water—a wave that was detectable along about 100 miles of the Texas shoreline. The incident resulted in at least 581 fatalities, over 5,000 injuries, and the destruction of nearly 1,000 buildings, including the Monsanto Chemical Company plant. The Grandcamp explosion also caused the ignition of refineries and chemical tanks on the waterfront. Windows were shattered 40 miles away in Houston, and people reported feeling the shock about 250 miles away. The Texas City disaster triggered the first ever class action lawsuit against the United States government, under the then-recently enacted Federal Tort Claims Act (FTCA), on behalf of 8,485 victims. Also a result of the Texas City disaster was efficient widespread disaster response planning to help organize local and regional responses to emergencies. Offers of assistance came in from all over the country and several funds were established to handle donations, mainly the Texas City Relief Fund.

Hazardous Material Incidents – Alabama, including Elmore County

Alabama has not experienced such a large-scale hazardous material release involving mass casualties as that which occurred in Bhopal, India. This can be attributed, in large part, to the steps taken by government and private industry to carefully regulate those processes and practices that could cause an accidental hazardous material release. Alabama's population density is also lower, and its zoning and planning personnel tend to separate conflicting land uses from each other. Bhopal's 2001 population density was 12,655 persons per square mile. Conversely, according to a query of the U.S. Census Bureau's QuickFacts website on October 21, 2013, the 2010 census data reflects 94.4 persons per square mile in Alabama and 128.2 persons per square mile in Elmore County. As for the highest individual jurisdiction populations in Elmore County, alabama-demographics.com estimated the 2012 populations for the City of Millbrook at 14,952; the City of Wetumpka at 7,103; and the City of Tallassee at 4,829. Bhopal's population was reported as totaling 1.5 million in 2001. Alabama's statewide population per the 2010 census stands at 4,822,023, with Elmore County's population accounting for 79,303 of that. Elmore County's mostly rural composition tends to make it overall less vulnerable to the most severe types of impacts, as do the regulations currently in place to oversee the handling of extremely hazardous substances.

However, Alabama has had numerous hazardous material incidents over the years that required a response by local fire departments and hazardous material response teams, and implementation of evacuation, in-place sheltering, and other protective actions.

Alabama Industrial Accident History

Alabama has seen its share of tragic industrial and hazardous materials incidents over the years, resulting in numerous deaths and injuries, serious property damage, and economic disruption to the facilities and surrounding communities.

Some of the most dangerous professions are in industrial workplaces. From manufacturing to mining, millions of work-related accidents occur every year, with OSHA estimating 12 deaths each day in the industrial world. Alabama has a long history of industrial accidents. Throughout the history of the state, residents have dealt with many types of industrial accidents. More than a century ago, some of the worst mining accidents plagued the state, and mining remains the most common type of industrial workplace accident in Alabama today.

Following are brief synopses of the more significant accidents and their impacts:

1905 Mining Accident: One of the many major accidents that occurred in Alabama mines around the early 1900s, this tragic accident resulted in 112 worker deaths.

1910 Mining Explosion: Only 5 years after the major accident of 1905, this mining explosion trapped 145 workers and resulted in 80 deaths.

1925 Transportation Accident: Two carloads of ammonium nitrate caught fire during transportation around Muscle Shoals, Alabama—causing serious damage.

1960 Mining Accident: The bodies of 13 men were found in a coal pit at one of the Holden Mine locations—just one year after a mine inspector was crushed to death at a competitors mine.

1975 Nuclear Plant Accident: Fires broke out at the Athens nuclear plants, burning for seven hours. This damaged the controls of three nuclear reactors, costing millions of dollars in handling costs.
1984 Nuclear Plant Outage: Various safety violations, design problems, and operator errors at one of the Athens' plants led to a major outage that was imposed for six years.
2001 Mining Explosion: A gas explosion at Jim Walter Resources Inc. killed 13 workers.
2013 Train Accident: A 90 car crude oil train derailed, causing massive fires in 20 of the cars. No injuries were reported in the Pickens County train accident.
2014 Construction Accident: While working on a crossover ramp in Montgomery, two R.R. Dawson Bridge Co. employees fell to their death.

HAZARDOUS MATERIAL INCIDENTS: TRANSPORTATION

An uncontrolled release of hazardous materials during transport, capable of posing a risk to life, health, safety, property, or the environment.

Hazard Description

As a result of the extensive use of chemicals in our society, all modes of transportation – highway, rail, air, marine, and pipeline – are carrying thousands of hazardous materials shipments on a daily basis through local communities. A transportation accident involving any one of those hazardous material shipments could cause a local emergency affecting many people.

Hazard Analysis

Alabama has had numerous hazardous material transportation incidents that affected the immediate vicinity of an accident site or a small portion of the surrounding community. Those types of incidents, while problematic for the affected community, are fairly commonplace. They are effectively dealt with by local and state emergency responders and hazardous material response teams. Larger incidents, however, pose a whole new set of problems and concerns for the affected community. Large-scale or serious hazardous material transportation incidents that involve a widespread release of harmful material (or have the potential for such a release) can adversely impact the life safety and/or health and well-being of those in the area surrounding the accident site, as well as those who come in contact with the spill or airborne plume. In addition, damage to property and the environment can be severe as well. Statistics show that almost all hazardous material transportation incidents are the result of an accident or other human error. Rarely are they caused simply by mechanical failure of the carrying vessel.

(Note: Pipeline transportation accident issues are addressed in the Petroleum and Natural Gas Pipeline Accidents section of this document. Refer to that section for specific information on that hazard.)

The maps found in *Section 3 County Profile* illustrate the major railroads, highways, and pipelines in Elmore County. These transportation links and nodes have the greatest probability of experiencing a hazardous material transportation incident. Although the greatest risk involving

hazardous materials comes from highway and rail shipments, a petroleum or chemical spill on either Lake Jordan or Lake Martin could have disastrous consequences for shoreline communities, recreational areas, tourism, and the environment.

PIPELINES-PETROLEUM/OIL AND NATURAL GAS

Incident – An unintentional release of product from a transmission pipeline that may or may not result in death, injury, or damage to property or the environment. (Note that as used in pipeline safety regulations, an "incident" is an event occurring on a natural gas pipeline for which the operator must make a report to PHMSA's Office of Pipeline Safety. Events of similar magnitude affecting hazardous liquid pipelines are considered "accidents". (Reference 49 CFR 191.3, 49 CFR 195.50)). (Ref: PIPA Report, November 2010, Glossary of Terms)

Hazard Description

The petroleum and natural gas industry is highly regulated and has a fine safety record, but the threat of accidental releases, fires and explosions still exists. Petroleum and natural gas pipelines can leak or fracture and cause property damage, environmental contamination, injuries, and even loss of life. Many structures are located right next to pipelines and thus may be at risk. Pipelines can also cross through rivers, streams, and wetlands, thus posing the possibility of extensive environmental damage in the event of a major failure.

Petroleum and natural gas pipelines pose a real threat in many Alabama communities, including Elmore County. In addition to these hazards, many of Alabama's oil and gas wells contain extremely poisonous hydrogen sulfide (H2S) gas. Hydrogen sulfide is a naturally occurring gas mixed with natural gas or dissolved in the oil or brine and released upon exposure to atmospheric conditions. As the table below indicates, at concentrations of 700 ppm, as little as one breath of hydrogen sulfide can kill. Although hydrogen sulfide can be detected by a "rotten egg" odor in concentrations from .03 ppm to 150 ppm, larger concentrations paralyze a person's olfactory nerves so that odor is no longer an indicator of the hazard. Within humans, small concentrations can cause coughing, nausea, severe headaches, irritation of mucous membranes, vertigo, and loss of consciousness. Hydrogen sulfide forms explosive mixtures with air at temperatures of 500 degrees Fahrenheit or above, and is dangerously reactive with powerful oxidizing materials. Hydrogen sulfide can also cause the failure of high-strength steels and other metals. This requires that all company and government responders be familiar not only with emergency procedures for the well site, but also with the kinds of materials that are safe for use in sour gas well response.

While it is true that the petroleum and natural gas industries have historically had a fine safety record, and that pipelines are by far the safest form of transportation for these products, the threat of fires, explosions, ruptures, and spills nevertheless exists. In addition to these hazards, there is the danger of hydrogen sulfide (H2S) release. These dangers (fully explained in the Oil and Natural Gas Well Accidents section) can be found around oil and gas wells, pipeline terminals, storage facilities, and transportation facilities where the gas or oil has a high sulfur content. Hydrogen sulfide is not only an extremely poisonous gas, but is also explosive when mixed with air at temperatures of 500 degrees Fahrenheit or above.

Hazard Analysis

The maps contained in this section show the locations of pipeline systems within the United States, Alabama and Elmore County. It is apparent from the map that petroleum and natural gas pipelines crisscross the entire state, from well heads to storage sites, through distribution to consumers. Major compressor stations that receive and redistribute natural gas are located at key points along the pipelines (but are not shown on the map). These stations monitor and maintain pressure levels within the pipelines. In the event of a pipeline rupture, the compressor stations shut down to stop the flow of product. Many smaller compressor stations are located across the state to complete the distribution process to consumers.

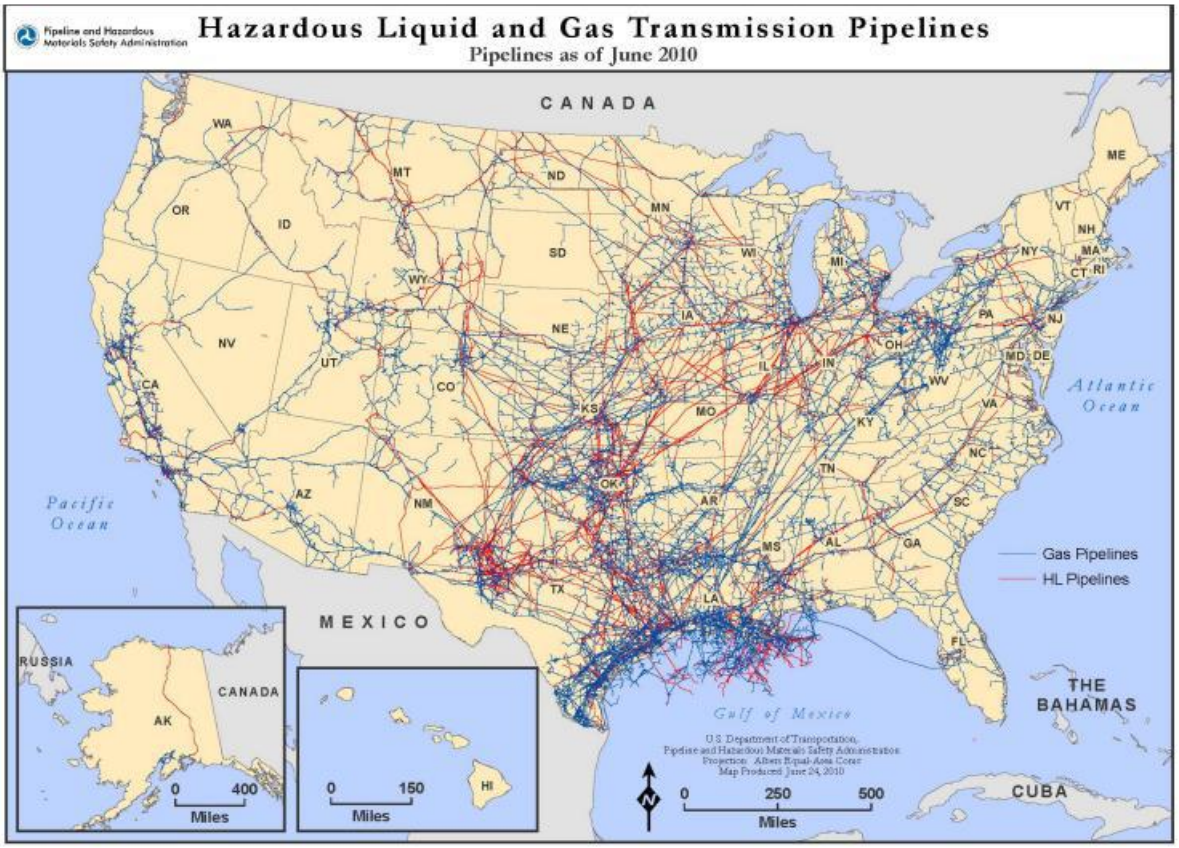
Petroleum and natural gas pipeline accidents are on the rise, due to the aging of the underground infrastructure (much of which was laid over 50 years ago) and an increase in construction excavation. According to studies conducted by the General Accounting Office (GAO), an average of 22 people died annually from 1988 to 1998, when the number of accidents was increasing by four percent per year. The GAO also found that the USDOT/OPS has not adequately enforced many safety regulations passed by Congress since 1988 and is instead relying more on industry self-regulation as an enforcement tool.

Increased pipeline safety regulations again came to the forefront in 2000, after deadly pipeline explosions occurred in Bellingham, Washington in June 1999 (three deaths) and Carlsbad, New Mexico in August 2000 (11 deaths). In 2004, the Pipeline and Hazardous Materials Safety Administration (PHMSA) was signed into law. The purpose of the Act was to provide a more focused research organization and establish a separate operating administration for pipeline safety and hazardous materials transportation safety operations.

The Pipeline Safety Improvement Act of 2002 mandated significant changes and new requirements in the way that the natural gas industry ensures the safety and integrity of its pipelines. The law applies to natural gas transmission pipeline companies. The law places requirements on each pipeline operator to prepare and implement an "integrity management program" that, among other things, requires operators to identify so-called "high consequence areas" (HCA) on their systems, conduct a risk analysis of these areas, perform baseline integrity assessments of each pipeline segment, and inspect the entire pipeline system. Companies were required to identify all HCAs and submit specific integrity management programs to the Office of Pipeline Safety (OPS), the Research and Special Projects Administration, and the U.S. Department of Transportation. All pipeline segments within HCAs were to be inspected and remediation plans completed by December 17, 2008, while non-HCA segments must be inspected by 2012. All segments must be re-inspected on a 7-year cycle, with certain exceptions.

Because petroleum and natural gas pipeline accidents will occur eventually, affected local communities must be prepared to respond to the accident, institute necessary protective actions, and coordinate with federal and state officials and the pipeline company emergency crews to effectively manage and recover from the accident. That can best be accomplished through the collaborative planning, training, and exercising of emergency procedures with all potentially involved parties.

Figure 5.2.17-1



Source: Pipelines and Informed Planning Alliance (PIPA) *Partnering to Further Enhance Pipeline Safety In Communities Through Risk-Informed Land Use Planning Final Report of Recommended Practices November 2010*

Impact on the Public

Severe events may cause shortages of, and higher prices for, petroleum and other fuels. Some residents with low incomes or fixed budgets may find higher prices to be unaffordable, and may face problems involving heating and other energy needs being used to maintain their homes and health. Transportation and fuel costs may become too expensive to allow business profits to be maintained, when such businesses rely on fuel-driven transportation or functions. Those in the vicinity of the pipeline break itself may suffer from health problems, unpleasant odors, evacuations, and damage/contamination of their property. Some pipeline accidents result in explosions that cause extensive damage, injury and even loss of life. Gas leaks in particular can cause surprising amounts of damage from sudden explosions, without any advance warning to those nearby.

Impact on Responders

Special expertise is often needed, and the cooperation of the utility provider is often critical to an efficient and successful response. Enclosed areas may be involved in these incidents (e.g. those

occurring in a densely populated urban area), and thus may require special equipment, personnel, and training in search and rescue.

Impact on the Continuity of Operations

The impact is unlikely to cause the relocation of government operations. Transportation may be affected due to traffic delays and detours. As with other hazards, there may be a sense that inadequate regulation, authorization, or oversight was maintained by the state, if there is an event of significant size or impact. The nature of the transported materials also causes concern about environmental and health impacts.

Impact on the Environment

Petroleum and natural gas pipelines pose a real threat in many Alabama communities because they can lead to leaks, fractures, fires, explosions, ruptures, and spills that cause environmental contamination. The danger of hydrogen sulfide (H2S) release can occur where the gas or oil has a high sulfur content. Hydrogen sulfide is not only an extremely poisonous gas, but is also explosive when mixed with air at temperatures of 500 degrees Fahrenheit or above. Atmospheric concentrations of greenhouse gases, especially carbon dioxide, methane, and nitrous oxide, can contribute to climate change, both regionally and globally. Adverse local consequences to ecological and socio-economic systems can result from a major petroleum or natural gas pipeline accident. Particulate pollutants may consist of metals, soot, or similar small substances. Soft sloping ground near waterway crossings can be susceptible to erosion or lateral spreading, which may cause significant pipe displacement or rupture.

History of Pipeline Accidents/Incidents in Alabama

Source: U.S. Department of Transportation, Pipeline & Hazardous Materials Safety Administration

Alabama Significant Incidents Listing – Alabama, All Pipeline Systems: 2003 – 2014 YTD (Report Data as of: May 7, 2014)

According to the U.S. DOT & PHMSA, this listing provides details of significant incidents reported for the state of Alabama over the period 2003-2014. According to the Report, Note: D, Significant Incidents are those incidents reported by pipeline operators when any of the following conditions are met: 1) Fatality or injury requiring in-patient hospitalization. 2) $50,000 or more in total costs, measured in 1984 dollars. 3) Highly volatile liquid releases of 5 barrels or more or other liquid releases of 50 barrels or more. 4) Liquid releases resulting in an unintentional fire or explosion. Serious incidents, a subset of Significant Incidents, are incidents which involve a fatality or injury requiring in-patient hospitalization. The current Listing includes all pipeline systems incidents occurring between 2003–2014 and contains 40 Significant Incidents that occurred statewide, one of which was in Elmore County.

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The Listing referenced above identifies seven different "causes" for each of the 40 releases that have occurred in the state of Alabama during the reporting period—2003-2014 Year to Date.

Table 5.2.17-3 below shows the total number of incidents per cause:

CAUSE	NUMBER OF INCIDENTS PER CAUSE
Material/Weld/Equip Failure	11*
All Other Causes	10
Excavation Damage	7
Incorrect Operation	4
Corrosion	3
Natural Force Damage	3
Other Outside Force Damage	2
	Total: 40

(*Cause of Elmore County Jan 2007 Incident)

These 40 incidents resulted in 6 fatalities, 12 injuries, and more than 7 million dollars in damages.

Alabama Significant Incidents Listing – Elmore County, Alabama
Source: U.S. Department of Transportation, Pipeline & Hazardous Materials Safety Administration

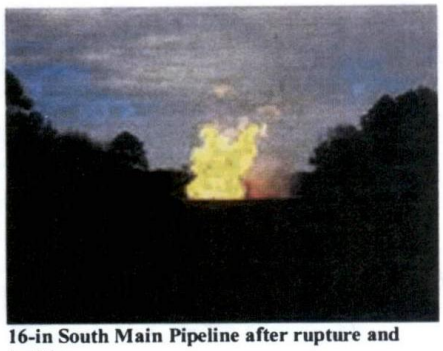
During the reporting period, 2003-2014, Elmore County experienced the below release:
Date: 01/23/2007
City: Wetumpka
Operator: Southern Natural Gas Company
Cause: Material/Weld/Equipment Failure
Sub-Cause: Butt Weld
Fatalities: 0 *
Injuries: 0 *
Property Damage: ########
Gross Barrels: N/A
Net Barrels: N/A
(*According to the U.S. DOT Memorandum cited below, no evacuations were ordered.)

Figure 5.2.17-2 Source: WSFA.com

Source of Following (8) Photos: U.S. Department of Transportation, PHMSA, Memorandum to Office of Pipeline Safety, Southern Region, Dated: March 23, 2011, Subject: Accident Report – Southern Natural Gas Pipeline Rupture of January 23, 2007, Elmore, Alabama, NRC Report #824407

Figure 5.2.17-3
Four Photos

PHOTOGRAPHS



16-in South Main Pipeline after rupture and ignition

16-in South Main Pipeline after shut-in. Cover completely displaced by high natural gas pressure

Aerial view of raging fire.

Aerial view of incident site after shut-in

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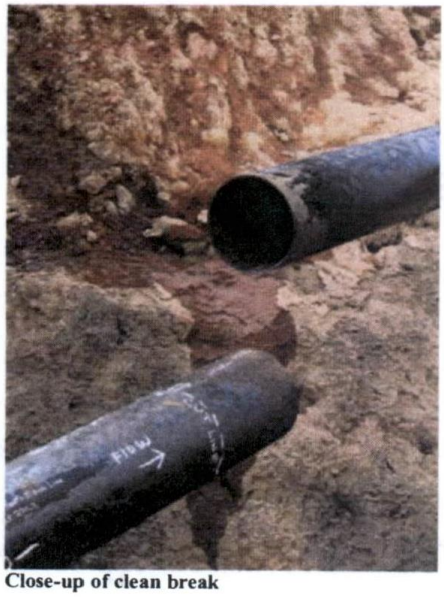
Figure 5.2.17-3.1
Four Photos

PHOTOGRAPHS

Failed 16-in South Main Line. Abandoned 12-in Montgomery to Columbus pipeline in background (partially exposed)

Failed 16-in South Main Line looking downstream



Close-up of clean break

Weldcap intact on failed pipe.

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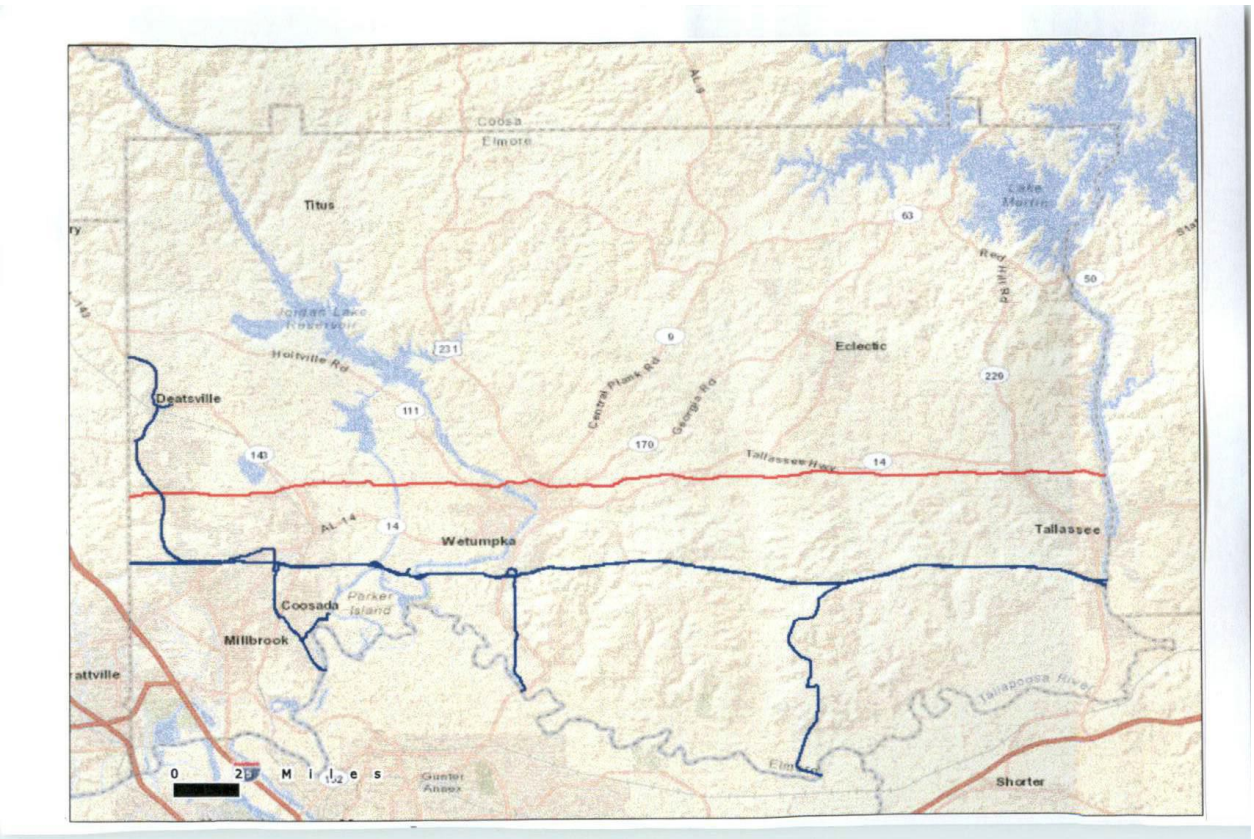

Figure 5.2.17-4 Source: National Pipeline Mapping System Public Map Viewer, 4 June 2014

Table 5.2.17-4
Below are the four pipeline companies currently operating within Elmore County, AL:

Pipeline Operator Name	Contact Address	Phone/ Fax / Email
Alabama Gas Corporation	605 Richard Arrington Blvd. North Birmingham, AL 35203	Phone: (205) 326-1892
Dixie Pipeline Company LLC	1100 Louisiana Street, Houston, TX 77002	Phone: (713) 381-2802
Southeast Alabama Gas District	P.O. Box 1338 Andalusia, AL 36420	Phone: (334) 222-4177 Fax: (334) 428-2896
Southern Natural Gas Co	569 Brookwood Village Suite 749, Birmingham AL 35209	Phone: (205) 325-7277 Fax: (205) 325-7559

OIL AND NATURAL GAS WELL ACCIDENTS

An uncontrolled release of oil or natural gas, or the poisonous by-product hydrogen sulfide, from production wells.

Table 5.2.17-5

Physiological Response to H2S

10 ppm	Beginning eye irritation
50-100 ppm	Slight conjunctivitis and respiratory tract irritation after 1 hour exposure
100 ppm	Coughing, eye irritation, loss of sense of smell after 2-15 minutes. Altered respiration, pain in the eyes and drowsiness after 15-30 minutes, followed by throat irritation after 1 hour. Several hours of exposure results in gradual increase in severity of these symptoms and death may occur within the next 48 hours.
200-300 ppm	Marked conjunctivitis and respiratory tract irritation after 1 hour of exposure.
500-700 ppm	**Loss of consciousness and possibly death in 30 minutes to 1 hour.**
700-1000 ppm	**Rapid unconsciousness, cessation of respiration, and death.**
1000-2000 ppm	**Immediate unconsciousness, with early cessation of respiration and death following within a few minutes. Death may occur even if the individual is removed to fresh air at once.**

Source: American National Standards Institute, Standard: 237.2-1972

Impact on the Public

Those who are in or near a well site during a hazardous event (workers, inspectors, trespassers) may face severe injury or death. Those living in the close vicinity of such a well may potentially be affected by gases and thus require temporary evacuation, but these cases would be extremely rare.

Impact on Responders

Wells may contain poisonous hydrogen sulfide gas, and thus require responders to use special equipment when nearby. Special search and rescue skills may be needed for victim extraction. In this regard, the oil and gas well hazard may be considered to be similar to a fixed site hazardous materials incident (q.v).

Impact on Continuity of Operations

The impact is unlikely to cause relocations of government operations. Transportation may be affected due to traffic delays and detours. As with other hazards, there may be a sense that inadequate regulation, authorization, or oversight was maintained by the state, if there is an

event of significant size or impact. The nature of the transported materials also causes concern about environmental and health impacts.

Impact on the Environment

The process of getting oil and natural gas from underground to the end user has the potential to be environmentally destructive. The environmental impacts of oil and natural gas well accidents include the emission of air pollutants, leaks and spills, groundwater contamination, and the effects of well "blowouts." Many of Alabama's oil and gas wells contain extremely poisonous hydrogen sulfide (H2S) gas. Productive natural gas wells and their associated utilities and access roads also "eat up" natural land, and many areas where gas is found are natural areas where drilling puts industrial facilities into rustic settings.

An unplugged abandoned well (orphan well) can be a hazard to the environment. For example, a rusted-out casing in a gas well can let chemical substances flow underground, and gas leaking from an old well could contaminate a nearby water well. An old well might also be a conduit that allows salt brine from deeper formations to pollute fresh groundwater, or to discharge at the surface. In some cases, oil leaks from abandoned wells may cause the pollution of soil and water.

Programs and Initiatives

Note: Many of the programs and initiatives designed to mitigate, prepare for, respond to, and recover from hazardous material transportation incidents have the dual purpose of also protecting against fixed-site hazardous material incidents and some industrial accidents. As a result, there is some overlap in the narrative "Programs and Initiatives" sections for each respective hazard. This redundancy allows each hazard section to stand alone, eliminating the need to refer to other hazard sections for basic information.

Superfund Amendments and Reauthorization Act (SARA), Title III

As explained earlier, the Bhopal, India tragedy initiated a chain of events aimed at enhancing preparedness activities to minimize the potential for a similar event to occur in the United States. On October 17, 1986 the Superfund Amendments and Reauthorization Act (SARA) was signed into law. A major SARA provision is Title III (the Emergency Planning and Community Right-To-Know Act, also known as SARA Title III), which establishes hazardous material emergency planning, reporting and training requirements for federal, state and local governments, and private industry. In Alabama, the SARA Title III program is jointly administered and implemented by two state departments—the Alabama Department of Environmental Management and the Alabama Emergency Response Commission (AERC).

The emergency planning provisions of SARA Title III require each state to establish a state emergency response commission, emergency planning districts, and a local emergency planning committee for each district. The state commission and local committees are responsible for preparing and implementing emergency plans, as well as receiving and disseminating copies of material safety data sheets, chemical inventories, and other reports and forms necessary for compliance under the Act. The community right-to-know provisions of SARA Title III allow the public to access information on the hazardous materials stored in their community, and the quantities of toxic materials released into the environment.

2014 Alabama State Emergency Response Commission (SERC)

Source: Alabama Emergency Management Agency (AEMA), October 15, 2014

Purpose: SERC was established under SARA Title III and The Emergency Planning and Community Right-to-Know Act (EPCRA) to: Help communities plan for emergencies involving hazardous substances, and establish requirements for reporting on hazardous and toxic chemicals. Alabama Executive Order Number 4: Appoints the Alabama Emergency Management Agency (AEMA) and the Alabama Department of Environmental Management Agency (ADEM) to carry out the provisions on the EPCRA Act and established the Alabama State Emergency Response Commission (SERC). SERC oversees the implementation of four major provisions of EPCRA: Emergency Planning, Emergency Release Notification, Hazardous Chemical Storage Reporting, and Toxic Chemical Release Inventory and administers the HMEP Grant program.

Composition and Responsibilities: Co chairs: AEMA: Appoint local emergency planning districts to facilitate preparation and implementation of emergency plans and training for local planning and response organizations. ADEM: Maintain jurisdiction over chemical releases, serve as the repository of the lists of chemical inventory forms, and provide public access to the lists, forms, and information. Hazardous Materials Advisory Group: (All appointed provide information to their counterparts in membership and assistance as needed. Disseminate information to public and private sector

SERC: 23 state agencies

Current Activities: The SERC conducts two public meetings each year. The SERC is working to create the By-laws, addressing the use of EPlan for Tier II filing, discussing LEPC guidance and updating and revising the LEPC guide, addressing Bakken crude oil issues and the protection and confidentiality of information submitted by the railroads.

Local Emergency Planning Committees (LEPC)

Also Known As: the Elmore County Multi-Agency Coordination (MAC) Group

One of the major provisions of SARA Title III is the establishment of Local Emergency Planning Committees (LEPCs) for designated planning districts. The LEPCs are responsible for developing emergency response plans for communities that have facilities in their jurisdiction subject to SARA Title III emergency planning requirements. The LEPC is the primary mechanism through which local SARA Title III planning, training and exercising activities are implemented. Per the Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III, Section 312, the Emergency Planning and Community Right-to-Know Act (40 CFR Part 370 Subpart B, Section 370.25), any facility located in Elmore County that maintains hazardous substances in amounts equal to or greater than the minimum threshold quantity must complete an annual Tier II Emergency and Hazardous Chemical Inventory and provide copies to the Local Emergency Planning Committee (known as the Elmore County Multi-Agency Coordination Group, which includes all fire

departments having jurisdiction over each reportable facility). The Tier II Inventory covers the reporting period of January 1st thru December 31st of each year. Based on a review of Tier II Inventory Forms received by the Elmore County EMA Office between reporting years 2008 – 2013, inventories were received on an average of 46 reportable facilities/sites, reporting on an average of 98 (SARA III) hazardous substances located in Elmore County. Based on the 2013 inventories, there are 44 facilities/sites located throughout the county, including the areas of: Wetumpka (13), Tallassee (8), Millbrook (7), Coosada (5), Elmore County (4), Elmore (3), Holtville (3), and Eclectic (1). The greatest concentrations of facilities/sites span the southern half of the county, with City of Millbrook (7) in the south-western, City of Wetumpka (13) in the south-central, and City of Tallassee (8) in the south-eastern portions of Elmore County. Fortunately, these are generally the areas with more resources to prepare for and respond to a hazardous material incident. However, the greater population concentrations also make these areas more vulnerable to a serious hazardous material incident.

Hazardous Material Response Planning

Each Section 302 site must be covered by a community response plan that addresses the emergency planning requirements found under SARA Title III. The Alabama Emergency Response Commission co-chairs (ADEM and AEMA) are available to provide technical planning assistance to the Elmore County Multi-Agency Coordination (MAC) Group (LEPC) to facilitate the development and maintenance of those required plans. That assistance typically includes provision of written planning guidance, interaction with the planning team, plan reviews, and limited financial assistance via federal grant funds to offset the costs of preparing the plans. Additionally, each facility plan must address the following critical areas: 1) hazard identification (to include chemical inventories, locations, release detection, and chemical-specific response information); 2) vulnerability map and analysis (to include a vulnerability zone, special populations affected, and other facilities and areas that may contribute to risk); 3) population protective actions (to include warning, access control, evacuation and in-place sheltering); 4) response procedures (to include both on-site and off-site expertise and equipment); and 5) a training and plan exercising program.

The Alabama Department of Environmental Management provides technical information and planning assistance in the areas of community-right-to-know, material safety data sheets, chemical inventories, incident reporting, and (on a limited basis) incident cleanup.

Hazardous Material Response Training

A wide array of hazardous material response training is available through a variety of sources. Training can be accomplished myriad ways, such as on-line, in-residence/on-campus, or delivered by a certified instructor to the local jurisdiction. Hazardous material response training is offered through a variety of sources, including: the U.S. Department of Homeland Security; the Federal Emergency Management Agency; the Emergency Management Institute; the National Fire Academy; the Center for Domestic Preparedness; and any number of other partners with the National Domestic Preparedness Consortium, such as Texas A&M Engineering Extension Service (TEEX) and the Rural Domestic Preparedness Consortium (RDPC). Additionally, the Alabama Fire College offers in-residence and field training courses for eligible personnel to attend. There are also a number of courses offered through colleges and universities throughout Alabama, as well as private companies.

Located approximately two hours north from Elmore County, in Anniston, Alabama, is FEMA's Center for Domestic Preparedness (CDP), the United States Department of Homeland Security (DHS)'s only federally chartered Weapons of Mass Destruction (WMD) training center. According to the website, the CDP began operations in June 1998 as the only all-hazards training center, offering training on Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) weapons. While the training tempo has increased dramatically, the CDP's training programs provide the very best in advanced hands-on training for America's emergency responders. On March 31, 2007, the Noble Training Facility (NTF) was transferred from the U.S. Fire Administration (USFA) to the CDP. NTF is the only hospital facility in the United States dedicated to training hospital and healthcare professionals in disaster preparedness and response. Programs

Emergency response providers in Elmore County responsible for planning, inspection, response, mitigation, and cleanup activities involving hazardous materials have a number of training resources available to them, focused on subjects such as: 1) computer-aided management; 2) hazardous materials chemistry; 3) hazardous materials emergency response; 4) hazardous waste worker compliance; 5) incident management; 6) hazardous materials monitoring/sampling; and 7) other specialized hazardous materials-related courses such as highway and rail cargo tanker handling, confined space entry, emergency medical services, and technical rescue.

Federal/State Hazardous Material Response Resources

Even prior to the Bhopal, India incident in 1984, there were numerous groups at the federal, state, and local levels, and in private industry, trained to deal with hazardous material incidents. Those groups include the National Response Team (NRT), Regional Response Teams (RRTs), and state and local hazardous material response teams. The Chemical Manufacturers Association established the Chemical Transportation Emergency Center (CHEMTREC) to provide 24-hour technical advice to emergency responders. The National Response Center (NRC), which operates much like CHEMTREC, was established to provide technical advice and coordinate federal response to a hazardous material incident.

In Alabama, response to spills of oil and hazardous materials and fish kills should be reported to the nearest ADEM field office or by calling the 24-hour statewide Alabama Emergency Management Warning Point at 1-800-843-0699.

U.S. EPA Chemical Emergency Preparedness and Prevention Office

The USEPA's Chemical Emergency Preparedness Office (CEPPO) provides leadership, advocacy and assistance to states, local governments, and private industry to: 1) prevent and prepare for chemical emergencies; 2) respond to environmental crises; and 3) inform the public about chemical hazards that may be present in their community. The CEPPO works closely with several Alabama state agencies to implement and coordinate a number of regulatory and non-regulatory programs designed to protect human health and the environment in Alabama from chemical accidents - including the SARA Title III program.

Resource Conservation Recovery Act

Not all facilities with hazardous materials fall under the requirements of SARA Title III. The Alabama Department of Environmental Management is responsible for regulating small and large

hazardous waste generators under the federal Resource Conservation Recovery Act (RCRA). The RCRA provides ADEM with the authority to control hazardous waste from the "cradle to grave", which includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The high number of RCRA facilities in Alabama is indicative of the widespread prevalence of hazardous materials throughout the state.

Mitigation Alternatives for Fixed Site Hazardous Material Incidents

- Maintaining an active and viable Local Emergency Planning Committee (LEPC).
- Developing and exercising site emergency plans and community response plans as required under SARA Title III.
- Development of Risk Management Plans for sites that manufacture, store, or handle hazardous materials, to comply with EPA regulations. (For guidance, see the EPA's CEPPO web site at http://www.epa.gov/swercepp/acc-pre.html .)
- Training in and compliance with all safety procedures and systems related to the manufacture, storage, transport, use, and disposal of hazardous materials.
- Policies stressing the importance of safety above other considerations.
- Trained, equipped, and prepared site and local hazardous material emergency response teams.
- Compliance with/enforcement of Resource Conservation and Recovery Act (RCRA) standards.
- Elimination of clandestine methamphetamine laboratories through law enforcement and public education.
- Hazardous material public awareness and worker education programs.
- Facility and community training and exercise programs.
- Brownfield cleanup activities.
- Identification of radioactive soils and high-radon areas
- Proper separation and buffering between industrial areas and other land uses.
- Location of industrial areas away from schools, nursing homes, etc.
- Evacuation plans and community awareness of them.
- Developing site emergency plans for schools, factories, office buildings, shopping malls, hospitals, correctional facilities, stadiums, recreation areas, and other appropriate sites.
- Public warning systems and networks for hazardous material releases.
- Increased coverage and use of NOAA Weather Radio (which can provide notification to the community during any period of emergency, including large scale hazardous material incidents).
- Road closures and traffic control in accident areas.
- Trained, equipped, and prepared search and rescue teams.
- Compliance with all industrial, fire, and safety regulations.
- Insurance coverage.
- Enhanced security and anti-terrorist/sabotage/civil disturbance measures.
- Encourage residents to develop a Family Disaster Plan which includes the preparation of a Disaster Supplies Kit.

Fixed Site Hazardous Materials Incident Guidance for Local Hazard Mitigation Planning
Individual firms doubtlessly vary a great deal in their safety records, just as they vary in the types and quantities of hazardous materials that they handle. There are separate plans (called Emergency Site Plans) that should exist for each facility that qualifies as a "SARA Title III (Section 302)" site because of the types and amounts of extremely hazardous substances it uses. Local Emergency Planning Committees (LEPCs) should exist in any community that has handlers of such materials, and the LEPC would then help hazard mitigation plan writers to gain access to and evaluate the Emergency Site Plans pertaining to your community (either within it or near enough to be a potential hazard). One of the useful items included in the standard Emergency Site Plan form is an estimated evacuation area—if a harmful release or incident were to occur at the facility, an estimate has been made about the potential impact area based on the types and amounts of extremely hazardous substances being used there. Use of GIS can be helpful since Section 302 sites can be located spatially and then ringed with a buffer representing the identified evacuation zone. A vulnerability assessment would primarily be based on the development that exists within that zone—especially if vulnerable populations are located within that area, such as schools, hospitals, other medical facilities such as blood banks or kidney dialysis centers, high-rise senior facilities, and day care centers. The probability of a local incident might be assessed from historical records of industrial accidents or chemical releases. Wide variation in estimates is likely depending on whether the history of an entire industry or only a particular site is used. Often, a local site may appear to have an incident-free history, but the risk cannot be assumed to be zero. Information from the EPA may be valuable for estimating risk probabilities.

Mitigation Alternatives for Pipeline Accidents

- Locating pipelines away from dense development, critical facilities, special needs populations, and environmentally vulnerable areas whenever possible.
- Increasing public awareness of pipeline locations and appropriate emergency procedures.
- Developing site emergency plans for schools, factories, office buildings, shopping malls, hospitals, correctional facilities, stadiums, recreation areas, and other appropriate sites.
- Increasing public awareness and widespread use of the "MISS DIG" utility damage prevention service (800-482-7171).
- Proper pipeline design, construction, maintenance and inspection.
- Encourage residents to develop a Family Disaster Plan which includes the preparation of a Disaster Supplies Kit.

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5.2.18 Transportation Systems Failure

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Transportation System Failure

History: Low, 2
Frequency of Occurrence: Rare (4)
Probability: Low, 7; Occasional Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Medium, 10
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 49

Maximum Probable Extent (Magnitude/Strength):
Public: Serious (4)
Infrastructure: Substantial (3) – Low (5)
Environment: Very Low (5)

Jurisdictions	Extent of the Technological Hazard – Transportation System Failure
All	Mass casualty incident resulting from school/commercial bus accident seriously straining or overwhelming local response and medical services.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Significant: A significant portion on the planning area is susceptible to and would be impacted by a failure in the transportation system.
Overall Significance Ranking: High

Hazard: Aircraft Accident (See: 5.2.21 for Aircraft As Weapons)

History: Low, 2
Frequency of Occurrence: Rare (4)
Probability: Low, 7; Unlikely Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Serious (4)
Infrastructure: Moderate (4) – Low (5)
Environment: Substantial (3)

Jurisdictions	Extent of the Technological Hazard – Transportation System Failure: Aircraft Accident
All	Mass casualty incident involving military or commercial aircraft seriously straining or overwhelming local response and medical services.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive to Negligible: The entire planning area is susceptible to an aircraft accident/incident occurring in the airspace over Elmore County. A negligible portion of the planning area is susceptible to an aircraft accident occurring at or within close proximity to one of the available airfields in Elmore County.
Overall Significance Ranking: Low

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Transportation System Failures (Including Accidental/Intentional Vehicular, Railway, Aircraft, and Pipeline Incidents)

Source: State of North Dakota DRAFT 2014 Multi-Hazard Mitigation Plan
Source: Michigan's 2012 Threat and Hazard Identification and Risk Assessment
See: Section 5.16. Hazardous Materials for detailed information on Pipeline & Rail Systems

Description

Transport or **transportation** is the movement of people, animals and goods from one location to another. Modes of transport include air, road, rail, pipeline, water, cable, and space. The field can be divided into infrastructure, vehicles, and operations. This Plan addresses road, rail, air, and pipeline transport as related to Elmore County. The impacts of transportation infrastructure failures are addressed elsewhere in this document, under categories such as transportation accidents, pipeline accidents, and hazardous material releases.

The one commonality all transportation accidents share, whether air, land, or water-based, is that they can result in mass casualties. Air transportation accidents, in particular, can result in tremendous numbers of deaths and injuries, and major victim identification and crash scene management problems. Water transportation accidents, on the other hand, may require a significant underwater rescue and recovery effort that few local jurisdictions may be equipped or trained to handle.

Failure of transportation systems, is generally considered to be an area of clear governmental responsibility, although the blame for failures will depend upon what kind of failure had taken place. Road maintenance can have local, state, and federal components. Transportation planning tends to involve both local and regional decisions, overseen by state and federal guidelines and regulations. When the safety of major bridges, highways, airports, and railroads comes into question, significantly more weight tends to be placed upon the role of higher-level (e.g. state and federal) agencies than local ones. A bridge collapse like the one that occurred in Minnesota would be expected to result in substantial amounts of dissatisfaction with government, and that event may have increased general concerns about the adequacy of bridges, nationwide. Otherwise, the public is probably more focused upon road conditions and individual driving behavior, rather than larger-scale transportation-related systems and regulatory issues (e.g. airlines, trains, ferries). Please refer to the Transportation Accidents subsection that follows.

TRANSPORTATION ACCIDENTS

A crash or accident involving an air, land, or water-based commercial passenger carrier.

Hazard Description

Airline crashes, like other transportation accidents, are less likely to lead to a state or federal disaster declaration than other hazards. Elmore County recognizes the severity of these incidents, which often lead to deaths and injuries.

Air Transportation Accidents

There are four circumstances that can result in an air transportation accident: 1) an airliner colliding with another aircraft in the air; 2) an airliner crashing while in the cruise phase of a flight due to mechanical problems, sabotage, or other cause; 3) an airliner crashing while in the takeoff or landing phases of a flight; or 4) two or more airliners colliding with one another on the ground during staging or taxi operations. When responding to any of these types of air transportation accidents, emergency personnel may be confronted with a number of problems, including: 1) suppressing fires; 2) rescuing and providing emergency first aid for survivors; 3) establishing mortuary facilities for victims; 4) detecting the presence of explosive, radioactive, or other hazardous materials; and 5) providing for crash site security, crowd and traffic control, and protection of evidence.

Major Land Transportation Accidents

A major land transportation accident in Elmore County has the potential to create a local emergency event, or to seriously strain or overwhelm local response and medical services. It could involve a school bus, charter bus, or train for instance. Although these modes of land transportation have an excellent safety record, the combination of large numbers of passengers, unpredictable weather conditions, potential mechanical problems, and human error always leaves open the potential for a transportation accident involving mass casualties. Typically, bus accidents are caused by the bus slipping off a roadway in inclement weather or colliding with another vehicle. Train accidents usually involve a collision with a vehicle attempting to cross the railroad tracks before the train arrives at the crossing. Unless the train accident results in a major derailment, serious injuries are usually kept to a minimum. Bus accidents, on the other hand, can be quite serious—especially if the bus has tipped over. Numerous injuries are a very real possibility in those types of situations. Sometimes, "ordinary" highway crashes can be of unusual significance, when they either involve a large number of vehicles or in some manner cause the entire shut-down of a major highway for a significant period of time.

Hazard Analysis

The one commonality all transportation accidents share, whether air, land or water-based, is that they can result in mass casualties. Air transportation accidents, in particular, can result in tremendous numbers of deaths and injuries, and major victim identification and crash scene management problems. Water transportation accidents, on the other hand, may require a significant underwater rescue and recovery effort that few local jurisdictions may be equipped or trained to handle.

Air Transportation Accidents

Statistics from the NTSB and the airline industry show that the majority (over 75%) of airplane crashes and accidents occur during the takeoff or landing phases of a flight. As a result, developed areas that are adjacent to major airports, and along airport flight paths, are particularly vulnerable to this hazard. Accordingly, the greater the number of landings and takeoffs, the greater the probability of a crash or accident. The challenge for jurisdictions with a passenger air carrier airport is to develop adequate procedures to handle a mass casualty incident that could result from an airplane crash or accident.

Following are maps, aerial photos, and information found on AirNav.com on seven airports listed as being located in Elmore County and/or within 30 nautical miles (NM) of the Wetumpka Municipal Airport. Airports included are:

- Wetumpka Municipal Airport;
- Montgomery Regional Airport (Dannelly Field) (14 nm S);
- Maxwell Air Force Base (9 nautical miles S);
- Prattville Airport – Grouby Field (11 nm SW);
- Reeves Airport (23 nm E);
- Chilton County Airport (24 nm NW) and
- Thomas C Russell Field Airport (30 nm NE).

Information provided herein does not include all available information on AirNav.com for each airport, rather only those excerpts deemed supportive of this plan. Available information on each airport varied depending on whether general aviation, commercial aviation, or military aviation was involved. The following information was extracted, based on availability:

- FAA Identifier,
- Location,
- Operations,
- Runway Information,
- Instrument Approach Procedures,
- Airport Operational Statistics,
- Other Nearby Airports,
- Notes (Added for Maxwell AFB and Montgomery Regional Airport only)

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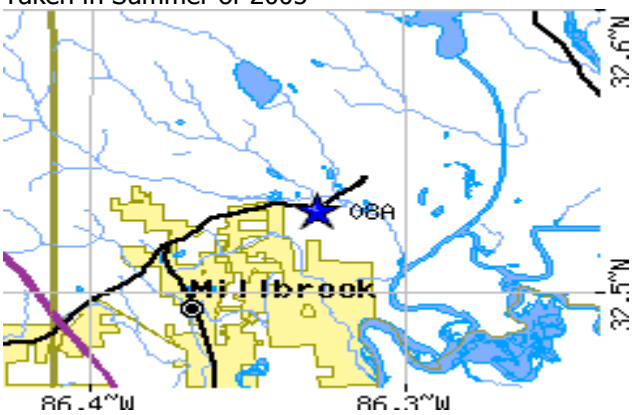
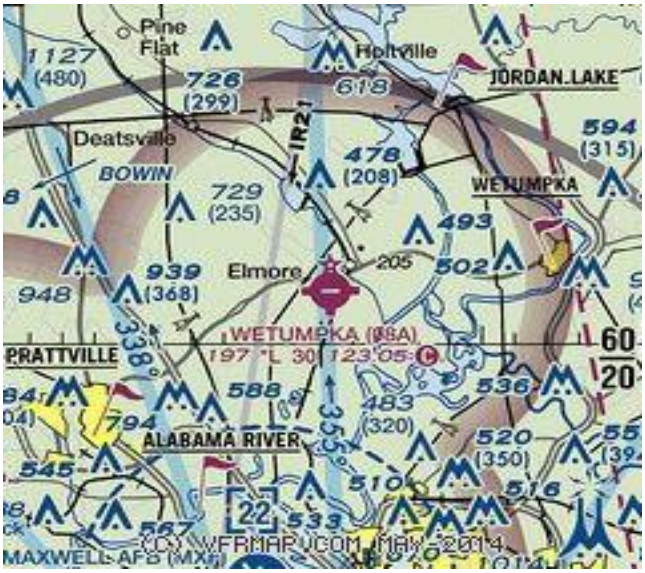
Figure 5.2.18-1 Wetumpka Municipal Airport (As of: 25 June, 2014)

Aerial Photo Courtesy of The Pilot Center Inc.
Taken in Summer of 2005





FAA Identifier: 08A
Location: 6 miles W of Wetumpka, AL
Operations (Not All):
- Open to Public
- No Control Tower
- Attendance: Mon – Fri 0800-1700hrs; Call Aprt Attendant after hrs

Runway Information (Not All): 9/27 & 18/36
- Runway 9:
  -- Dimensions: 3011 x 80 ft
  -- Surface: Asphalt, in good condition
  -- Elevation: 196.3 ft
  Obstructions: None
- Runway 27:
  -- Dimensions: 3011 x 80 ft
  -- Surface: Asphalt, in good condition
  -- Elevation: 196.3 ft
  Obstructions: Yes, 63 ft trees, 1481 ft from runway, 139 ft left of centerline, 20:1 slope to clear
- Runway 18:
  -- Dimensions: 2876 x 130 ft
  -- Surface: Turf, in good condition
  -- Elevation: 195.0 ft
  Obstructions: 35 ft pline, marked, 837 ft from runway, 23:1 slope to clear
- Runway 36:
  -- Dimensions: 2876 x 130 ft
  -- Surface: Turf, in good condition
  -- Elevation: 195.0
  Obstructions: Yes, 42 ft trees, 509 ft from runway, 158 ft of centerline, 7:1 slope to clear
  RY 36 APCH ratio 26:1 from Displaced Threshold

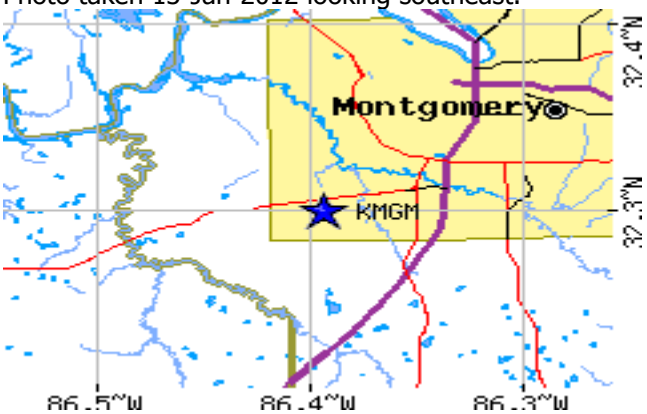
Instrument Approach Procedures: (Not All)
Special Take-Off Minimums/Departure Procedures Apply

Airport Operational Statistics:
Aircraft based on field: 78
Single engine airplanes: 70
Multi-engine airplanes: 6
Helicopters: 1 Gliders: 1
Aircraft Ops: avg 108/day for a 12-month period ending 7 Nov 2012
82% transient general aviation; 18% local general aviation

Other Nearby Airports:
Maxwell Air Force Base: 9 nautical miles S
Prattville Airport – Grouby Field: 11 nm SW
Montgomery Regional Airport (Dannelly Field): 14 nm S
Chilton County Airport: 24 nm NW
Thomas C Russell Field Airport: 30 nm NE
Reeves Airport, Tallassee: 23 nm E

Figure 5.2.18-2 Montgomery Regional Airport (Dannelly Field) (As of: 25 June, 2014)

Photo by Don Neuberg, Outwardbound Photography
Photo taken 13-Jan-2012 looking southeast.



FAA Identifier: MGM
Location: 6 miles SW of Montgomery, AL; 14 nautical miles S of Wetumpka Municipal Airport
Operations (Not All):
- Open to Public
- Control Tower - Yes
- Attendance: Continuous
- International Operations: Customs landing rights Airport
- Includes Air National Guard/Military Operations

Runway Information (Not All): 10/28 & 3/21
- Runway 10:
  -- Dimensions: 9020 x 150 ft
  -- Surface: Asphalt/grooved, in good condition
  -- Elevation: 219.3 ft
  Obstructions: 35 ft tree, 1990 ft from runway, 630 ft left of centerline, 34:1 slope to clear
- Runway 28:
  -- Dimensions: 9020 x 150 ft
  -- Surface: Asphalt, in good condition
  -- Elevation: 195.5 ft
  Obstructions: Yes, 65 ft trees, 2800 ft from runway, 600 ft right of centerline, 40:1 slope to clear
- Runway 3:
  -- Dimensions: 4011 x 150 ft
  -- Surface: Asphalt, in good condition
  -- Elevation: 221.1 ft
  Obstructions: Yes, 22 ft fence, 700 ft from runway, 22:1 slope to clear
- Runway 21:
  -- Dimensions: 4011 x 150 ft
  -- Surface: Asphalt, in good condition
  -- Elevation: 186.5
  Obstructions: Yes, 54 ft trees, 1300 ft from runway, 300 ft left of centerline, 20:1 slope to clear

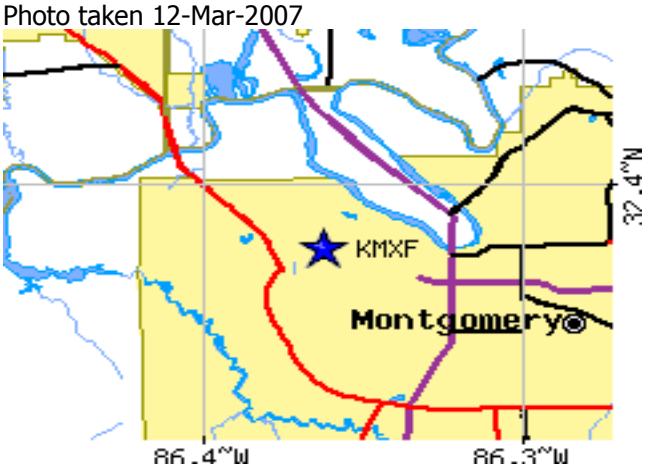
Airport Operational Statistics:
Aircraft based on field: 136
Single engine airplanes: 52
Multi-engine airplanes: 16
Jet Airlines: 9
Helicopters: 2
Military aircraft: 57
Aircraft Ops: avg 167/day for a 12-mon period ending 31 May 2013
52% military; 22% transient general aviation; 18% air taxi; 8% local general aviation; less than 1% commercial

Other Nearby Airports:
Maxwell Air Force Base: 5 nm N
Prattville Airport – Grouby Field: 10 nm NW
Wetumpka Municipal Airport: 14 nm N
Mac Crenshaw Memorial Airport: 29 nm S
Craig Field Airport: 30 nm W

Note: Per MGM: Commercial flights between MGM and Atlanta, on average, daily, consists of 9 departing flights and 9 arriving flights. The majority of these flights utilize airspace over Elmore County, as the normal approach/departure flight routes overfly the Lake Martin area.

Figure 5.2.18-3 Maxwell Air Force Base, Montgomery, Alabama (As of: 25 June, 2014)

Photo courtesy of www.AceAerialPhoto.US
Joe Mazzone - Auburn, AL
Photo taken 12-Mar-2007



FAA Identifier: MXF
Location: 2 miles NW of Montgomery, AL; 9 nautical miles S of Wetumpka Municipal Airport
Operations (Not All):
- Airport Use: Private; Permission required prior to landing; Owned by the United States Air Force
- Control Tower - Yes
- Attendance: M-F1400-0400Z++, all Sat-Sun 1600-0000Z++, Closed Federal Holidays
- Includes Air National Guard/Military Operations

Runway Information (Not All): 15/33 & 7/187
- Runway 15:
  -- Dimensions: 8013 x 150 ft
  -- Surface: Asphalt
  -- Elevation: 170.8 ft
  Obstructions: No information provided
- Runway 33:
  -- Dimensions: 8013 x 150 ft
  -- Surface: Asphalt
  -- Elevation: 165.8 ft
  Obstructions: No information provided
- Runway 7:
  -- Dimensions: 3015 x 60 ft
  -- Surface: Asphalt
  -- Elevation: No information provided
  Obstructions: No information provided
- Runway 187:
  -- Dimensions: 3015 x 60 ft
  -- Surface: Asphalt
  -- Elevation: No information provided
  Obstructions: No information provided

Airport Operational Statistics:
No information provided
Additional Remarks (Not All):
- Caution: Possible hydroplaning during periods of heavy rain on runway 15/33
- Caution: Phase I bird activity April through September. Phase 2 bird activity October through March.

Other Nearby Airports:
Montgomery Regional Airport (Dannelly Field): 5 nm S
Prattville Airport – Grouby Field: 8 nm NW
Wetumpka Municipal Airport: 9 nm N
Chilton County Airport: 31 nm NW
Craig Field Airport: 32 nm W
Reeves Airport, Tallassee: 26 nm E
Notes:

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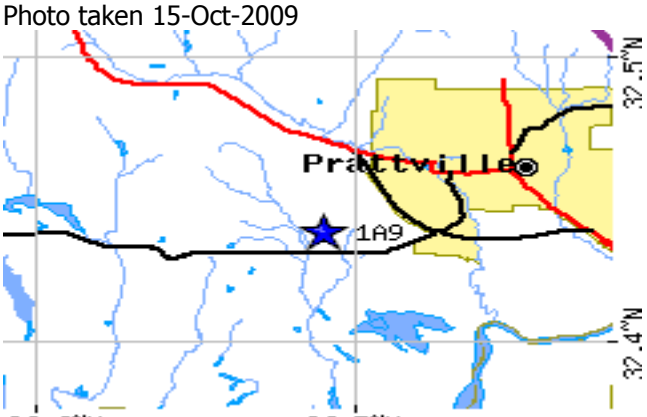
Figure 5.2.18-4 Prattville Airport – Grouby Field (As of: 25 June, 2014)

Photo taken 15-Oct-2009



FAA Identifier: 1A9
Location: 3 miles SW of Prattville, AL; 11 nautical miles SW of Wetumpka Municipal Airport
Operations (Not All):
- Open to the public
- Control Tower - No
- Attendance: Apr – Oct M-Sat 0800-1800, Nov – Mar M-Sat 0800-1700, Nov – Mar Sun 1000-1700, Apr – Oct Sun 1000-1800

Runway Information (Not All): 9/27
- Runway 9:
  -- Dimensions: 5400 x 100 ft
  -- Surface: Asphalt, in good condition
  -- Elevation: 225.0 ft
  Obstructions: Yes, 75 ft trees, 1724 ft from runway, 119 ft right of centerline, 20:1 slope to clear
- Runway 27:
  -- Dimensions: 5400 x 100 ft
  -- Surface: Asphalt, in good condition
  -- Elevation: 198.2 ft
  Obstructions: Yes, 47 ft pline, 1262 ft from runway, 215 ft both sides of centerline, 22:1 slope to clear

Instrument Approach Procedures: (Not All)
Special Take-Off Minimums/Departure Procedures Apply
Airport Operational Statistics:
Aircraft based on field: 32
Single engine airplanes: 27
Multi-engine airplanes: 3
Jet Airplanes: 2
Aircraft Ops: avg 60/day for a 12-mon period ending 4 Jun 2013
70% transient general aviation; 29% local general aviation; less than 1% military; less than 1% air taxi
Other Nearby Airports:
Maxwell Air Force Base: 8 nm SE
Montgomery Regional Airport (Dannelly Field): 10 nm SE
Wetumpka Municipal Airport: 11 nm NE
Chilton County Airport: 25 nm N
Craig Field Airport: 25 nm W

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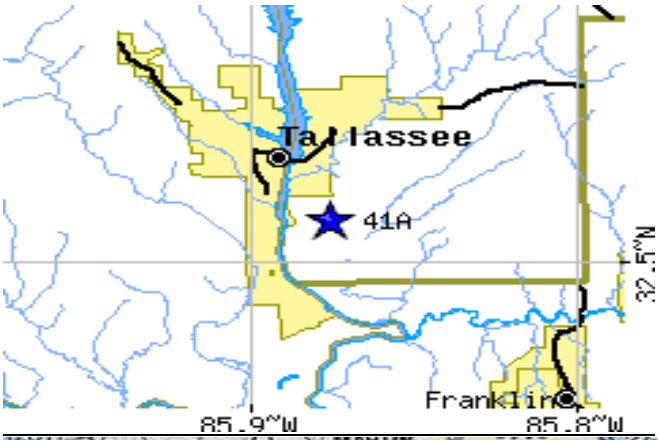
Figure 5.2.18-5 Reeves Airport, Tallassee, Alabama (As of: 24 July, 2014)



FAA Identifier: 41A
Location: 2 miles SE of Tallassee, AL; 23 nautical miles E of Wetumpka Municipal Airport
Operations (Not All):
- Open to the public
- Control Tower - No
- Attendance: Unattended

Runway Information (Not All):13/31
- Runway 13:
  -- Dimensions: 3207 x 75 ft
  -- Surface: Asphalt, in fair condition
  -- Elevation: 320.0 ft
  Obstructions: Yes, 28 ft trees, 1275 ft from runway, 200 ft right of centerline, 38:1 slope to clear
- Runway 31:
  -- Dimensions: 3207 x 75 ft
  -- Surface: Asphalt, in fair condition
  -- Elevation: 326.0 ft
  Obstructions: Yes, 54 ft tree, 1254 ft from runway, 60 ft left of centerline, 19:1 slope to clear

Instrument Approach Procedures: (Not All)
There are no published instrument procedures at 41A.
Airport Operational Statistics:
Aircraft based on field: 4
Single engine airplanes: 3
Multi-engine airplanes: 1
Jet Airplanes: 0
Aircraft Ops: avg 88/week for a 12-mon period ending 03 Dec 2013
76% transient general aviation; 24% local general aviation
Other Nearby Airports:
Maxwell Air Force Base: 26 nm W
Wetumpka Municipal Airport: 23 nm W
Moton Field Municipal Airport: 10 nm E
Thomas C. Russell Field Airport: 24 nm N
Auburn University Regional Airport: 23 nm E

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Figure 5.2.18-6 Chilton County Airport (As of: 25 June, 2014)

Photo by Gary Chambers Photo taken 25-Feb-2005 looking west

Location: 1 mile E of Clanton, AL; 24 nautical miles NW of Wetumpka Municipal Airport

Operations (Not All):
- Open to Public
- Control Tower - No
- Attendance: M-F 0800-1700 After hrs 205-280-4586

Runway Information (Not All): 8/26
- Runway 8:
  -- Dimensions: 4008 x 100 ft
  -- Surface: Asphalt, in fair condition
  -- Elevation: 584.5 ft
  Obstructions: Yes, 92 ft tree, 1368 ft from runway, 27 ft left of centerline, 12:1 slope to clear runway 08 ratio 23:1 to displaced threshold
- Runway 26:
  -- Dimensions: 4008 x 100 ft
  -- Surface: Asphalt, in fair condition
  -- Elevation: 565.9 ft
  Obstructions: Yes, 46 ft gnd, 1137 ft from runway, 20:1 slope to clear

Instrument Approach Procedures: (Not All)
Special Take-Off Minimums/Departure Procedures Apply

Airport Operational Statistics:
Aircraft based on field: 22
Single engine airplanes: 20
Multi-engine airplanes: 2
Aircraft Ops: avg 66/day for a 12-mon period ending 5 Nov 2010, 95% transient general aviation; 5% local general aviation

Other Nearby Airports:
Shelby County Airport: 21 nm NW
Merkel Field Sylacauga Municipal Airport: 25 nm NE
Prattville Airport – Grouby Field: 25 nm S
Wetumpka Municipal Airport: 24 nm SE
Bibb County Airport: 25 nm W

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Figure 5.2.18-7 Thomas C Russell Field Airport, Alexander City, Alabama (As of: 24 July, 2014)

Photo courtesy of Jay Taffet / FBO Capital
Photo taken 24-Oct-2013 looking north.

Location: 2 miles SW of Alexander City, AL; 30 nautical miles NE of Wetumpka Municipal Airport
Operations (Not All):
- Open to Public
- Control Tower - No
- Attendance: M-F 0730-1700

Runway Information (Not All): 18/36
- Runway 18:
  -- Dimensions: 5422 x 96 ft
  -- Surface: Asphalt/grooved, in good condition
  -- Elevation: 685.8.5 ft
  Obstructions: Yes, 47 ft trees, 424 ft from runway,
  111 ft left of centerline, 4:1 slope to clear APCH ratio 22:1 from displaced threshold
- Runway 36:
  -- Dimensions: 5422 x 96 ft
  -- Surface: Asphalt/grooved, in good condition
  -- Elevation: 611.9 ft
  Obstructions: Yes, 24 ft trees, 524 ft from runway,
  192 ft right of centerline, 13:1 slope to clear

Instrument Approach Procedures: (Not All)
Special Take-Off Minimums/Departure Procedures Apply

Airport Operational Statistics:
Aircraft based on field: 28
Single engine airplanes: 20
Multi-engine airplanes: 6
Helicopters: 2
Aircraft Ops: avg 91/day for a 12-mon period ending 9 Dec 2009, 79% transient general aviation; 12% local general aviation, 9% military

Other Nearby Airports:
Merkel Field Sylacauga Municipal Airport: 23 nm NW
Wetumpka Municipal Airport: 24 nm SE
Moton Field Municipal Airport: 31 nm SE
Auburn University Regional Airport: 32 nm SE
Chilton county Airport: 33 nm W
Reeves Airport, Tallassee: 24 nm S

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Air Transportation Accidents – Elmore County, Alabama

Figure 5.2.18-8 April 3, 2015 Crash at Wetumpka Municipal Airport

A piece of the Beechcraft Bonanza's landing gear lies near the plane where it crashed Friday night at the Wetumpka Municipal Airport. (Photo by Kevin Taylor – The Wetumpka Herald.com)

Story published 10:23am Saturday, April 4, 2015. By Kevin Taylor:

A Millbrook businessman is in ICU at a Montgomery hospital recovering from injuries sustained after his Beechcraft Bonanza crashed just inside the Wetumpka Municipal airport around 7:30 p.m. Friday.

The owner of the plane, Dan Power, was the pilot of the plane and lone passenger at the time of the crash.

He was transported to Baptist Medical Center South for treatment.

Power, 77, is a board member of the Elmore County Economic Development Authority and a past president of the Millbrook Chamber of Commerce.

Federal Aviation Administration Investigator John Parks was on scene Saturday morning collecting clues as to what may have caused the plane to crash.

Parks said the plane went through the trees on the north end of the airport and came to rest belly up just inside the fencing of the airport and about 50 yards away from the hangars.

Power is a longtime flyer and tenant at the airport, according to Airport Direcotr Lynn Weldon.

"This crash is the first in a long time and I hope we don't have any more," she said.

On 26 June 2014, a query was conducted in the National Transportation Safety Board (NTSB) Docket Management System of investigations involving aviation accidents that occurred in the State of Alabama. Results revealed a total of 87 aviation accident investigations statewide; the earliest recorded accident in the database occurred on 12 July, 1993. Of the 87 accidents, only one took place that involved Elmore County. According to the published Accident Statement, the accident occurred on 6 March, 2010, and involved an experimental aircraft that departed from Wetumpka but crashed approximately 500-600 feet east of the end of a privately owned airstrip in West Blockton, Bibb County, Alabama. Of the 87 statewide accident investigations listed in the query, no others involved the Wetumpka Municipal Airport or the Chilton County Airport, Maxwell Air Force Base, Montgomery Regional Airport (Dannelly Field), or Prattville Airport – Grouby Field, all included in the previous segment as being located within 30 nautical miles of the Wetumpka Municipal Airport.

Please Note: Additional information regarding aircraft being used as weapons is found later under item 21 of this section.

Land Transportation Accidents
Although these modes of land transportation have an excellent safety record, the combination of large numbers of passengers, unpredictable weather conditions, potential mechanical problems, and human error always leaves open the potential for a transportation accident involving mass casualties. Such an incident could occur with any of the aforementioned transportation modes, in any of the communities served by these systems. Nationally, an average of about six persons die each year in charter and commuter bus crashes, and 11 school children die in school bus accidents. About 8,500 children are injured each year in school bus crashes. Communities served by any of these systems should plan for a land transportation-related mass casualty incident in their emergency preparedness efforts.

Commercial truckers are heavily regulated under provision of the federal Motor Carrier Safety Improvement Act of 1999. Overseen by the U.S. Department of Transportation DOT) and the Alabama DOT, truck companies and truck drivers are required to follow strict rules regarding safe operating procedures on our roads and highways. Yet, every year, the statistics on truck accidents are a sobering reminder of how dangerous these large commercial tractor-trailers can be when they cause an accident.

Truck Accident Statistics in Alabama
Consider the following from the recent Alabama truck accidents statistics* for 2009:

- 81 large trucks and three buses involved in fatal crashes
- 80 fatalities in crashes involving large trucks and three fatalities involving buses
- 1,911 large trucks and 127 buses involved in nonfatal crashes
- 678 large trucks and 50 buses involved in injury crashes
- 973 injuries in crashes involving large trucks and 138 injuries in crashes involving buses
- 1,213 large trucks and 77 buses involved in tow-away crashes
- 21 large trucks involved in hazmat (hazardous material) crashes

Unlike a simple car accident with another, regular-sized motor vehicle, an impact by a fully loaded 85,000 pound truck can generate tremendous forces upon the occupant.

The Alabama Highway Department, 2000-2010, published "Selected Automobile Accident Statistics," using 2009 data, rank-ordered each of Alabama's 67 counties by the total number of accidents, injuries, deaths, and an accident per 100 drivers. Elmore County ranked 29th in the state, based on 1,694 total accidents, 546 injuries, 19 deaths, and a 2.65 accidents per 100 drivers rate.

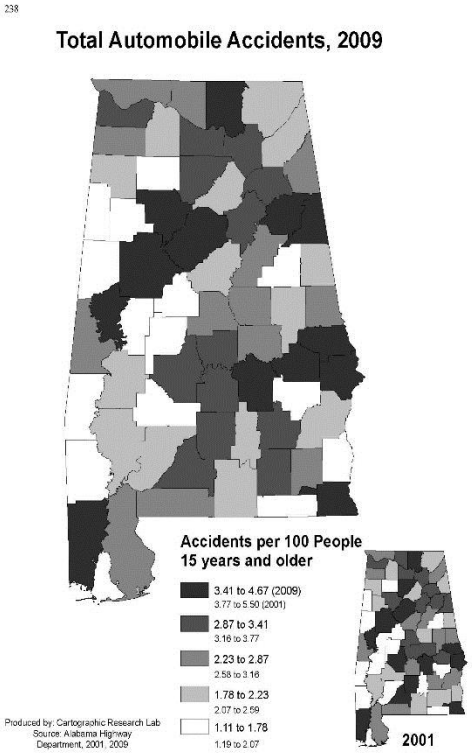

Figure 5.2.18-9

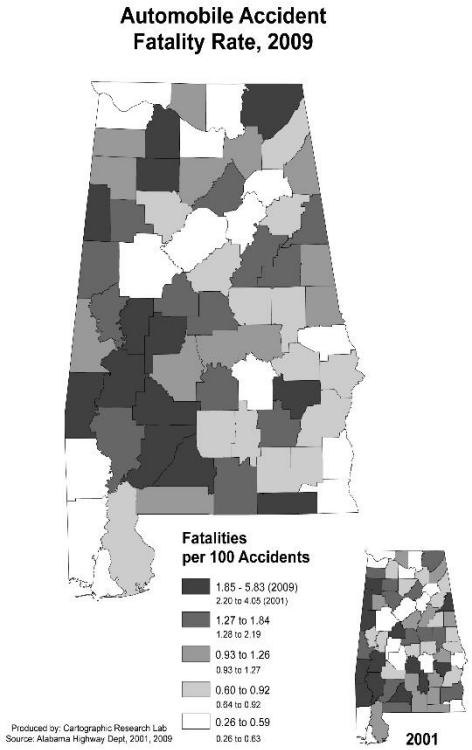

Figure 5.2.18-10

Impact on the Public

Although automobile crashes tragically kill hundreds of Alabama residents each year, this analysis necessarily focuses on the types of accidents that are large enough in scale to potentially cause an emergency or disaster-level situation. Airplane crashes and train derailments pose the largest problems, with the potential to cause mass casualties and significant local property destruction—especially since these modes of transportation pass through densely populated urban areas. On a smaller scale, but still potentially devastating to smaller or rural areas, would be major highway accidents involving passenger buses that result in heavy casualties, with the potential to overwhelm smaller emergency medical systems in those areas. An event that might go almost unnoticed in a large and wealthy metropolitan area might easily overwhelm the resources of a poor or rural community. In certain cases, power equipment or other infrastructure may be

damaged by such accidents, causing additional impacts (please refer to the section on infrastructure failures). Marine accidents have the most direct impact on human life, but may also discourage water-related tourism, if they receive enough negative publicity. Certain types of marine accidents may also involve a release of hazardous or environmentally damaging industrial materials (see hazardous materials section).

Impact on Responders

Routine "fender benders" or personal vehicle accidents are usually handled by law enforcement officers and are not considered to be community-level emergency events (although they may cause traffic jams and delays that impede emergency response). Only when large numbers of vehicles or persons are involved would motor vehicle accidents be considered large-scale events with the need to engage community-wide response efforts. In very small or rural communities, an overturned bus could be considered a major transportation accident, if such an incident caused enough injuries that local emergency medical capabilities could not adequately handle the situation. Thus, in many ways, this sort of incident is an example of a "mass casualty" event that local and state emergency management programs train to handle.

The impact on responders in highway events is usually limited to the risks of being in and around moving traffic streams, and the diversion of limited resources into the handling of a single large incident. Larger-scale and more unusual events involve the crashing or breakdown of large air, rail, or marine transportation vehicles. A bridge or tunnel collapse, or huge interstate pileup involving dozens of vehicles, may also cause an emergency-level event to occur. In the case of large plane crashes or train derailments, responders may be exposed to fires and hazardous materials, and may encounter problems with looters. In cases involving marine transportation accidents, special rescue operations may occur under perilous weather and lake conditions, in a time-sensitive effort to rescue persons stranded in (usually chilly or freezing) lake waters before they drown or suffer harmful effects from hypothermia or exposure. In all major transportation incidents, which take place in the outdoors, responders will be exposed to the elements and may be plagued by extreme temperatures, hail, winds, or lightning for extended periods of time, when managing these events. (Each of these hazards is described more fully in other subsections of this document.)

Impact on Continuity of Operations

Impact unlikely to cause relocation of government operations. Transportation may be affected due to traffic delays and/or detours. There may be a sense that improper regulation, authorization, or oversight was maintained by the state, following an event of significant size or impact involving mass transit providers such as trains, airplanes, ships, buses, or trolley/monorail systems. In the case of major accidents involving the highway system, there is often a perception that roadway capacities are too limited—either by design, lack of sufficient funding, or the effects of annual construction projects. Some may perceive that greater enforcement of laws and regulations (e.g. motor carrier) might have prevented a major incident from taking place.

Impact on the Environment

Transportation accidents on land, in air, or in water may impact the environment if toxins or chemicals are released. The burning of petroleum, in an accident that involves an explosion, will quickly release sulfur dioxide, oxidized nitrates, and carbon monoxide into the air. These gases contribute to climate change, ozone depletion, and acid rain. Accidents involving watercraft may also cause a chemical release to occur. Similarly, an aircraft accident could spread petroleum and debris on land or in water.

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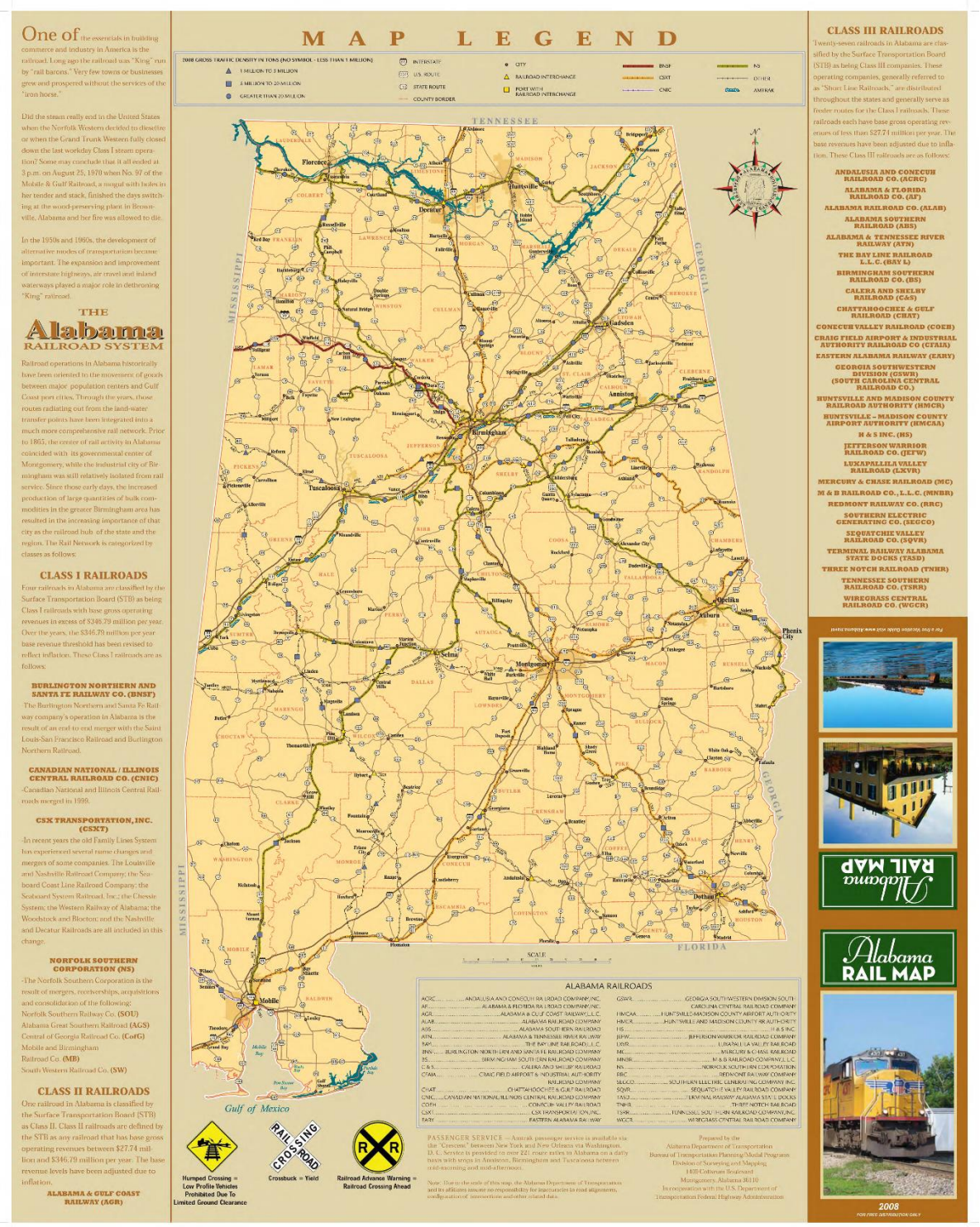
Figure 5.2.18-11



Alabama & United States Interstate Network

Figure 5.2.18-12 Source: Made in Alabama Maps

Area intentionally left blank.

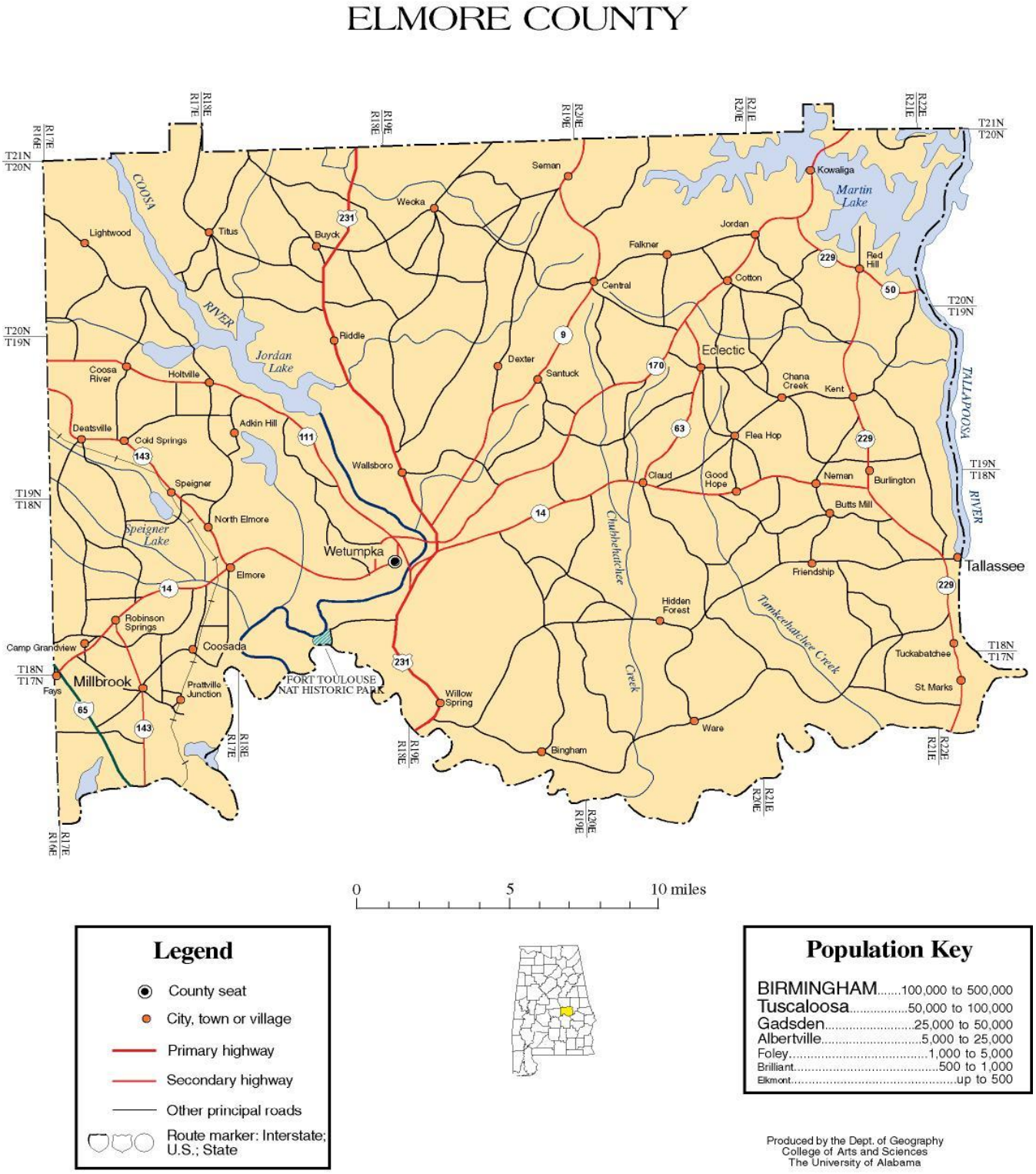


Figure 5.2.18-13

5.2.19 Epidemiological/Public Health (Human Pandemic/Animal Disease)

Source: Michigan's 2012 Threat and Hazard Identification and Risk Assessment
Source: Alabama Department of Public Health (ADPH)
Source: U.S. Center for Disease Control (CDC)

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Human Pandemic

History: Low, 2
Frequency of Occurrence: Very Rare (5)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Low, 2
Impact/Maximum Threat, Population: Low, 2
Property: Low, 4
Economic Impact: Low, 5
Total Points: 41

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3) – Serious (4)
Infrastructure: Substantial (3)
Environment: Low (5)

Jurisdictions	Extent of the Human-Related (Man-Made) Hazard – Human Pandemic
All	A pandemic flu outbreak in Elmore County could be critical with 25-50 percent of the planning area affected. The exact rate of infection is highly dependent on the flu strain. Infants, elderly, and other more vulnerable segments of the population may be more susceptible, depending on the strain.

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to an epidemiological/human pandemic event.
Overall Significance Ranking: Medium

Hazard (Public Health): Animal Disease

History: Low, 2
Frequency of Occurrence: Rare (4)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Very Serious (3)
Infrastructure: Low (5)
Environment: Low (5)

Jurisdictions	Extent of the Human-Related (Man-Made) Hazard –
All	An animal disease outbreak in Elmore County could be critical with 25-50 percent of the animal population within the planning area being affected. The exact rate of infection is highly dependent on the animal disease involoved

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: The entire planning area is susceptible to a public health/animal disease event.
Overall Significance Ranking: Low

PUBLIC HEALTH EMERGENCIES

A widespread and/or severe epidemic, incident of contamination, or other situation that presents a danger to or otherwise negatively impacts the general health and well-being of the public.

Hazard Description

Public health emergencies can take many forms—**disease** epidemics, large-scale incidents of food or water **contamination**, extended periods without adequate water and sewer **services**, harmful exposure to chemical, radiological or biological agents, and large-scale infestations of disease-carrying insects or rodents, to name just a few. Public health emergencies can occur as primary events by themselves, or they may be secondary events to another disaster or emergency such as a flood, tornado, or hazardous material incident. The common characteristic of most public health emergencies is that they adversely impact, or have the potential to adversely impact, a large number of people. Public health emergencies can be statewide, regional, or localized in scope and magnitude.

Perhaps the greatest emerging public health threat would be the intentional release of a radiological, chemical, or biological agent with the potential to adversely impact a large number of people. Such a release would most likely be an act of sabotage aimed at the government or at a specific organization or segment of the population. Fortunately, Alabama has not yet experienced such a release aimed at mass destruction. If it does, the public health implications—under the right set of circumstances—could be staggering.

Hazard Analysis

Alabama has had several large-scale public health emergencies in recent history, but fortunately nothing that caused widespread severe injury or death. These events, though unusual, have heightened awareness of the broad nature of threats that can result in a public health emergency. Such emergencies no longer simply involve the spread of disease, but rather can arise out of a variety of situations and circumstances.

In 2001, Alabama health officials were introduced to the emerging health threats posed by Foot and Mouth Disease (FMD) and the West Nile encephalitis virus. Although Foot and Mouth Disease is a highly contagious disease that only affects animals, a widespread outbreak such as that which occurred in parts of the United Kingdom in the spring of 2001 could have significant public health implications for humans as well, due to the potentially large numbers of dead animal carcasses that would have to be disposed of to prevent disease outbreaks. The Alabama Department of Agriculture and Industries, in conjunction with numerous other federal, state and local agencies and the agriculture industry, continues to monitor the FMD situation and take the necessary steps to prevent the introduction and spread of the disease in the United States.

The West Nile encephalitis virus, which arrived in Alabama in 2001, presents an equally challenging scenario for public health officials. Transmitted to humans by the bite of an infected mosquito, the West Nile virus is commonly found in Africa, West and Central Asia, and the Middle East. Health officials do not know how the virus was introduced to the United States. However, in 1999 and 2000, it caused an outbreak of human encephalitis in and around New York City that created a national stir and raised fears across the country that it would cause a full-blown public health emergency. The virus eventually spread to Alabama in 2001.

Although no area in Alabama (or elsewhere) is immune to public health emergencies, areas with high population concentrations will always be more vulnerable to the threat. In addition,

the more vulnerable members of society—the elderly, children, impoverished individuals, and persons in poor health—are also more at risk than the general population. Alabama is fortunate in that it has an excellent public health system that constantly monitors the threats that could lead to a widespread or significant public health emergency. However, even the best monitoring and surveillance programs cannot always prevent such incidents from occurring. When they do occur, Alabama public health agencies have shown the ability to effectively muster the resources necessary to identify and isolate the problem, and mitigate its effects on the population. In addition, if the problem is such that a multi-agency and multi-jurisdictional response is required, the emergency management system in Alabama can be utilized to enhance coordination and effectiveness of the response and recovery effort.

Impact on the Public

The primary types of public health impacts involve the threat or presence of either disease, contamination, or sanitation problems. Disease epidemics or pandemics have the potential to cause widespread debilitation or loss of life, associated medical expenditures, and decreases in productivity and quality of life. Contamination can at least temporarily lower property values, as well. Sanitation problems require effort and expense to resolve. Contamination and sanitation issues increase the probability and variety of diseases that may affect the population. Facilities may be shut down, as a means of preventing disease transmission or of containing contamination, and thus cause a loss of the services being provided to the public (by schools, for example). Medical resources may become overwhelmed and unable to deal with any additional needs. As traditional medical services become increasingly difficult to access (or if their quality declines due to overwork or understaffing) then increasing numbers may turn to less responsible and effective alternative means of treatment (or may forego treatment entirely).

Impact on Continuity of Operations

Patient surge at medical facilities due to increased illness. May impact standards of care. Food-borne illnesses, including the contamination of products during manufacture, is another type of public health emergency that is likely to be associated in the public mind with the effectiveness of government policies and regulatory agencies. Widespread illness that is associated with public infrastructure (e.g. water, sewer, electrical) or with conditions that are overseen by government inspectors (e.g. air conditioning and ventilation systems) are more likely to cause a loss of public confidence in government when it occurs.

Maintenance-related and environmental issues that may affect public health in an area (such as urban blight and insect/rodent infestations, contaminated brownfield sites, scrap tire piles, industrial or nuclear accidents) are also ones for which some level(s) of government will be held accountable by the media and the public.

Post-disaster conditions that allow the spread of illness (or the breakdown of public health services) will also have a great potential to cause dissatisfaction with and loss of confidence in government. There are also cases (e.g. a cluster of lethal meningitis infections on a large university campus) in which the public is unfamiliar with epidemiological methods and data, and believes that a problem exists despite government assurances that there is not yet sufficient

evidence to reach that conclusion. The result would be that, unless offsetting information is proactively provided to the public, various persons will feel that abstract analysis techniques (or bureaucracy) are preventing government workers from seeing conditions that certain citizens consider to be "obvious." This mismatch in understanding and perception often results in citizen criticism of "government."

Impact on Responders

The primary types of emergency public health concerns involve the threat or presence of either disease, contamination, or sanitation problems. Certain types of contamination issues are similar to hazardous materials (q.v.) in their impact on responders, in that special measures, expertise, and precautions may be required when dealing with an incident. A similar approach may be taken with sanitation issues, in which special crews may need to be called in to deal with the problem, and the measurement and monitoring of the problem may require specialized equipment and expertise. On the other hand, issues of contagious disease tend to call for different response and precaution procedures, since there are many human-related transmission vectors that can seem more diffuse and unclear. Unless special training and equipment is obtained and employed, responders may be found to have an increased risk of succumbing to the contagious illness being responded to. (Even with the use of equipment and training, responders may still be more at risk, due to increased exposures to bacterial and viral threats.)

Impact on the Environment

A public health emergency tends to primarily affect people, but in a severe, large-scale event, decontamination centers, quarantine buildings, or additional medical facilities might need to be developed quickly, disregarding land use laws. This type of development may result in the loss of an area's natural wildlife habitat and could also impact the environment by causing nearby properties to flood.

Human Health Hazards: Pandemic Flu

Source: City of Boulder Multi-Hazard Mitigation Plan October 2012
Source: FLU.gov

Hazard/Problem Description

A pandemic is a global disease outbreak. It is determined by how the disease spreads, not how many deaths it causes. A pandemic flu is a virulent human flu that causes a global outbreak, or pandemic, of serious illness. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity, and for which there is no vaccine. This disease spreads easily person-to-person worldwide, causing serious illness, and can sweep across the country and around the world in very short time. The U.S. Centers for Disease Control and Prevention has been working closely with other countries and the World Health Organization to strengthen systems to detect outbreaks of influenza that might cause a pandemic and to assist with pandemic planning and preparation.

Most recently, health professionals are concerned by the possibility of an avian (or bird) flu pandemic associated with a highly pathogenic avian H5N1 virus. Since 2003, avian influenza has been spreading through Asia. A growing number of human H5N1 cases contracted directly from handling infected poultry have been reported in Asia, Europe, and Africa, and more than half the infected people have died. There has been no sustained human-to-human transmission of the disease, but the concern is that H5N1 will evolve into a virus capable of human-to-human transmission.

An especially severe influenza pandemic could lead to high levels of illness, death, social disruption, and economic loss. Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines.

Past Occurrences
There were three acknowledged pandemics in the twentieth century:

1918-19 Spanish flu (H1N1)—This flu came on quickly and is estimated to have sickened approximately 20-40 percent of the world's population. Some people felt fine in the morning but died by nightfall. An estimated 50 million people died worldwide. Nearly 675,000 people died in the United States. The flu spread rapidly. People who caught the Spanish Flu but did not die often died from complications caused by bacteria, such as pneumonia. The 1918 pandemic flu saw high mortality rates among healthy adults. In fact, the illness and mortality rates were highest among adults 20-50 years old; the reasons for this are uncertain.
1957-58 Asian flu (H2N2)—This virus was quickly identified due to advances in technology, and a vaccine was produced. Infection rates were highest among school children, young adults, and pregnant women. The elderly had the highest rates of death. A second wave developed in 1958. In total, there were about 70,000 deaths in the United States. Worldwide deaths were estimated between 1 and 2 million.
1968-69 Hong Kong flu (H3N2)—This strain caused approximately 34,000 deaths in the United States and more than 700,000 deaths worldwide. It was first detected in Hong Kong in early 1968 and spread to the United States later that year. Those over age 65 were most likely to die. This virus returned in 1970 and 1972 and still circulates today. To date, the 21st century has seen one acknowledged pandemic.
2009 Swine Flu (H1N1)—This strain caused more than 14,700 deaths worldwide to date, according to the WHO. It was first detected in the United States in early 2009 and spread to the world later that year. About 70 percent of people who have been hospitalized with this 2009 H1N1 virus have had one or more medical conditions previously recognized as placing people at ―high risk‖ of serious seasonal flu-related complications. This included pregnancy, diabetes, heart disease, asthma, and kidney disease. Young children were also at high risk of serious complications from 2009 H1N1, just as they are from seasonal flu. And while people 65 and older were the least likely to be infected with 2009 H1N1 flu, if they got sick, they were also at ―high risk‖ of developing serious complications from their illness.

Likelihood of Future Occurrences

Occasional: According to historical data, four influenza pandemics have occurred since 1918. This is an average of a pandemic approximately every 24 years or an approximate 4 percent chance of pandemic in any given year. Although scientists cannot predict when the next influenza pandemic will occur or how severe it will be, wherever and whenever it starts, everyone around the world will be at risk. If an influenza pandemic does occur, it is likely that many age groups would be seriously affected. The greatest risks of hospitalization and death—as seen during the last two pandemics in 1957 and 1968 as well as during annual outbreaks of influenza—will be to infants, the elderly, and those with underlying health conditions. However, in the 1918 pandemic, most deaths occurred in young adults. Few people, if any, would have immunity to the virus.

Human Health Hazards: West Nile Virus (WNV)

Source: City of Boulder Multi-Hazard Mitigation Plan October 2012

Hazard/Problem Description

The impact to human health that wildlife, and more notably, insects, can have on an area can be substantial. Mosquitoes transmit the potentially deadly West Nile virus to livestock and humans alike. West Nile virus first struck the western hemisphere in Queens, New York, in 1999 and killed four people. Since then, the disease has spread across the United States. In 2003, West Nile virus activity occurred in 46 states and caused illness in over 9,800 people.

Most humans infected by the virus have no symptoms. A small proportion develop mild symptoms that include fever, headache, body aches, skin rash, and swollen lymph glands. Less than 1 percent of those infected develop more severe illness such as meningitis or encephalitis, symptoms of which include headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, and paralysis. Of the few people who develop encephalitis, fewer than 1 out of 1,000 infections die as a result.

There is no specific treatment for the infection or a vaccine to prevent it. Treatment of severe illness includes hospitalization, use of intravenous fluids and nutrition, respiratory support, prevention of secondary infections, and good nursing care. Medical care should be sought as soon as possible for persons who have symptoms suggesting severe illness. People over 50 years of age appear to be at high risk for the severe aspects of the disease.

West Nile virus is a fairly recent natural hazard to affect Alabama. Elmore County recognizes the potential for West Nile virus to occur within the area. A public outreach campaign is in place throughout the state and county to educate the public, and efforts have been made to reduce the mosquito population.

Past Occurrences
Source: Alabama Department of Public Health

Information from the Alabama Department of Public Health (ADPH) indicates that West Nile Virus (WNV) was first detected in Alabama in 2001. Historical ADPH data also indicates Elmore County reported its first and only case thus far, of the virus in humans, in 2005. The state saw only a minimal increase in reported cases between 2009 (0) and 2011 (5), then experienced a stark increase in 2012 with a reported 62 cases.

Source: ADPH Publication *Alabama's Heath* September 2012
FIGHT THE BITE - Reduce Your Exposure to Mosquitoes

Why do we need to reduce mosquito exposure?

- Mosquitoes carry and transmit several diseases that infect humans and animals, like birds and horses.
- In Alabama, mosquitoes transmit arboviral diseases including West Nile Virus (WNV) fever and encephalitis, Eastern equine encephalitis (EEE), St. Louis encephalitis (SLE) and LaCrosse encephalitis (LAC).
- Rarely, mosquitoes can transmit malaria, dengue and yellow fever in Alabama.
- Mosquitoes do not transmit AIDS/HIV, leukemia or hepatitis.

Animal Diseases

Source: City of Boulder Multi-Hazard Mitigation Plan October 2012
Source: Alabama Department of Agriculture and Industries

There are many animal diseases that have the potential to impact Alabama. Diseases from outside Alabama or the United States have the potential to cause widespread mortality in livestock, wildlife, and companion animals. They could result in huge economic losses (primarily through trade restrictions), require significant resources to be allocated for response, and in some cases could also threaten public health. Please refer to the U.S. Department of Agriculture, Reportable Animal Diseases documents, for more information.

Examples of Livestock Diseases That Pose Threats to Alabama – Foot and Mouth Disease and Porcine Epidemic Diarrhea (PED)

Foot and Mouth Disease (FMD) is an example of a foreign animal disease that poses a threat to Alabama and that would require a heightened response from Alabama agencies.

FMD is a worldwide concern, as it can spread widely and rapidly and cause significant economic losses. FMD causes production losses and hardships for farmers and ranchers. It also has serious impacts on livestock trade—a single detection of FMD will likely stop international trade completely for a period of time. FMD is one of the animal diseases livestock owners dread most.

While many countries across the globe are dealing with FMD in their livestock populations, the United States eradicated the disease here in 1929. The U.S. Department of Agriculture's (USDA)

Animal and Plant Health Inspection Service (APHIS) works to ensure the continued health of our Nation's livestock. These efforts include preventing FMD from reentering the country.

What Causes FMD? FMD is a severe, highly contagious viral disease. This infectious virus spreads on surfaces and in the air, and causes illness in cows, pigs, sheep, goats, deer, and other animals with divided hooves. It does not affect horses, dogs, or cats. FMD is not a public health or food safety threat. It is also not related to hand, foot and mouth disease, a common childhood illness caused by a different virus. The first signs of illness usually appear within 2 – 14 days. There are 7 known types and more than 60 subtypes of the FMD virus. Immunity to one type does not protect an animal against other types or subtypes.

Signs of Illness: The best known signs of the disease include vesicles, similar to blisters, that quickly pop and cause erosions in the mouth or on the feet, resulting in excessive salivation or lameness. Adult animals may suffer weight loss from which they do not recover for several months, as well as swelling in the testicles of mature males. In cows, milk production can decline significantly. Heart disease and death, especially in newborn animals may also occur with an FMD outbreak.
Damage: Though most animals eventually recover from FMD, the disease can lead to myocarditis (inflammation of the heart muscle) and death, especially in newborn animals. Some infected animals do not suffer from or show signs of the disease, but they are carriers of FMD and can transmit it to others.

Control/Treatment: The Alabama Department of Agriculture and its Animal Industries Division, under the direction of the State Veterinarian, is responsible for the administration of programs to prevent, eradicate and control diseases of livestock and poultry, as well as assuring that all meat and meat food products offered for sale to consumers are not adulterated, are wholesome, and are properly marked, labeled, and packaged.

Other responsibilities include: assuring that all animals imported into Alabama are in compliance with import requirements, administering the National Poultry Improvement Plan, providing diagnostic laboratories, and conducting epidemiological/investigation of disease outbreaks of livestock and poultry.

The duties and responsibilities of this division are administered by three sections: Animal Health/Poultry, Meat Inspection, and Diagnostic Laboratories.

If this disease were discovered in the United States, it would trigger national and state response plans and require rapid and coordinated response in order to control the disease and protect the nation's livestock industry.

Figure 5.2.19-1 Foot and Mouth Disease

Source: Alabama Department of Agriculture and Industries

Porcine Epidemic Diarrhea (PED)

By Carlton Williams | May 09, 2014

Porcine Epidemic Diarrhea (PED)

- PED virus (PEDv) is a TGE-like virus causing diarrhea in a large proportion of all ages of swine when epidemic. If endemic, then diarrhea is observed with lower morbidity in predominantly suckling and recently weaned pigs.
- PED has been endemic in Europe and Asia but has not been present the US until the spring of 2013
- PED has been recently identified in many herds in multiple states in the US
- PEDv only affects pigs; there are no other known carriers, including humans
- Although PEDv is a coronavirus that is related to TGE virus, tests for TGE virus will not detect PEDv

The National Pork Board has put together a great resource with fact sheets about this disease including recommendations for biosecurity and management. This information can be reviewed and downloaded at the website: http://www.pork.org/filelibrary/PEDfsBook3.pdf

Source: www.pork.org

Porcine Epidemic Diarrhea Virus (PEDV) – What Is It?

Background:

• PEDV is caused by a virus (Coronavirus) that is related to transmissible gastroenteritis (TGE) virus.
• PEDV only infects pigs (NOT humans or other livestock).
• This is a new virus to the U.S. and was first confirmed in the country on May 17, 2013.

Clinical signs:

• In previously naïve herds, PEDV is similar to TGE and includes: » Severe diarrhea in pigs of all ages » Vomiting » High mortality - almost 100% in pre-weaned pigs

Transmission: Oral contact with contaminated feces. The most common sources of infected feces are pigs, trucks, boots, clothing or other fomites.

Incubation period: *(time from exposure to clinical signs)* Only 12-24 hours.

Shedding: *(amount of time animals can infect others)* Up to 3 to 4 weeks.

Immunity/Protection:
• No cross-protection with between TGE and PEDV even though both are Coronaviruses.
• Maternal protection through colostrum from previously exposed sows can be quite effective.
• No protection is long lasting (herds can re-break).
• Vaccine studies are in progress.

Treatment: Supportive care through hydration. Provide clean, dry, draft free environment with access to high quality drinking water (electrolytes may be beneficial).
Prevention: Limit cross contamination with any suspected pigs's feces.
• Clearly define and communicate a Line of Separation which marks the separation between your facility, transport vehicles or the outside / inside of your production site.
• Contact your veterinarian and enhance biosecurity procedures.
• Biosecurity of transportation vehicles is important; they should be clean, disinfected and dry.
• Several disinfectants have been demonstrated to effectively inactivate PEDV, such as formalin, sodium carbonate, lipid solvents, and strong iodophors in phosphoric acid.
• Replacement breeding stock should originate from a negative herd.

Challenges to Industry: Infection with PED can create tremendous financial losses to a pork producer.

Examples of Wildlife Diseases that Pose Threats to Alabama – Chronic Wasting Disease and Rabies

Source: City of Boulder Multi-Hazard Mitigation Plan October 2012
Source: Alabama Department of Public Health
Source: Alabama Department of Agriculture and Industries
Source: U.S. Center for Disease Control (CDC)
Chronic Wasting Disease (CWD) is a prion disease of the brain. The infectious agent contaminates the environment and is transmitted from one animal to another.

Hosts: Deer and elk are affected by this brain disease that is present in several western states and in Minnesota and Wisconsin. Mule deer, white-tailed deer, and Rocky Mountain Elk are the only three species of the family Cervidae that are known to be naturally susceptible to CWD. However, it is very likely that other subspecies of C. elaphus are susceptible to the disease. Although no deer in Alabama have tested positive for CWD, it remains a major concern due to the large wild population of deer in the state. In recent years, CWD has been found in areas outside of the disease-endemic zone, including areas east of the Mississippi River. The geographic range of diseased animals currently includes 15 U.S. states and two Canadian provinces and is likely to continue to grow.

Symptoms: Emaciation, wide stance, lowered head, droopy ears and excessive salivation.

Damage: Animal fatalities

Control/Treatment: Chronic wasting disease is both transmissible and infectious, but most details of its transmission remain to be determined. No treatment is available for animals affected with CWD. Once clinical signs develop, CWD is invariably fatal. Affected animals that develop pneumonia may respond temporarily to treatment with antibiotics, but ultimately the outcome is still fatal. Similarly, no vaccine is available to prevent CWD infection in deer or elk.

Figure 5.2.19-2 Chronic Wasting Disease

Rabies is a preventable zoonotic disease caused by a virus that affects the central nervous system (brain and spinal cord). It can be transmitted from animal to animal and from animal to human. Symptoms will not develop right away but once symptoms appear, rabies is considered fatal. When an animal is infected with rabies, the virus is shed in the saliva and can be passed to another animal or a person, usually through a bite, scratch, or through mucous membranes (eyes, nose, or mouth).

Raccoons, bats, foxes and skunks are most often responsible for transmitting the virus to domesticated animals and humans. Immunization of domestic dogs and cats provides the only "buffer" between wildlife and humans. Nocturnal animals, such as raccoons and bats that become active in the daytime, may be suspect. Stray animals pose a continuous public health threat; not only from rabies, but from bite wounds and animal attacks in general.

Source: ADPH Publication *Alabama's Heath* April 2004

Second state oral rabies vaccine distribution held in central Alabama

Distribution of oral rabies vaccine baits began April 5 throughout Autauga County and in portions of Chilton, Dallas, Elmore and Lowndes counties. Baits were dropped from a low-flying airplane and distributed by hand. The department is a cooperator in this federally funded project intended to help stop the westward movement of raccoon rabies by orally vaccinating wild raccoons.

ADPH Investigations and Cases

The Epidemiology Division monitors the incidence and prevalence of communicable, zoonotic, and environmentally-related human diseases. This table summarizes investigations and cases reported over the last 12 months, as of the end of April 2014.

Table 5.2.19-1

Diseases	Investigations	Cases
Anthrax	1	0
Arboviral diseases (includes West Nile virus)	27	12
Brucellosis	7	1
Campylobacteriosis	387	220
Chickenpox (Varicella), Adults > 18yrs	266	16
Cholera	2	2
Cryptosporidiosis	146	138
Dengue	7	0
E. coli, Shiga toxin-producing (includes O157:H7)	72	35
Ehrlichiosis/Anaplasmosis	29	16
Giardiasis	210	178
Haemophilus influenzae, invasive	73	64
Hansen's disease (Leprosy)	1	0
Hemolytic Uremic Syndrome (HUS)	1	1
Hepatitis A, acute	101	13
Hepatitis B, acute	718	98
Hepatitis C, acute	527	33
Hepatitis, other viral	5	1
Histoplasmosis	59	22
Legionellosis	65	45
Leptospirosis	1	0
Listeriosis	8	6
Lyme disease	373	21
Malaria	5	4
Meningococcal disease	7	6
Psittacosis	2	0
Q Fever	7	1

Rabies, human	1	0
SARS-CoV (Severe Acute Respiratory Syndrome-associated Coronavirus)	7	0
Salmonellosis	1,252	1,157
Shigellosis	385	334
Spotted Fever Rickettsiosis	738	267
Streptococcus pneumoniae, invasive disease (IPD)	214	190
Toxic-shock syndrome	1	1
Trichinellosis (Trichinosis)	1	0
Typhoid fever	5	3
Vibriosis (non-cholera)	21	18
Other	1	0
Total 4/28/2013-4/26/2014	5,733	2,903

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5.2.20 Civil Unrest

Source: Michigan's 2012 Threat and Hazard Identification and Risk Assessment

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Civil Unrest (Riot/Demonstration/Violent Protest/Illegal Assembly)

History: Low, 2
Frequency of Occurrence: Rare (4)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Important (5)
Infrastructure: Moderate (4)
Environment: Low (5)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Negligible: At any given time, an outbreak of civil unrest would impact only a negligible portion of the

planning area. An occurrence of civil unrest (riot/demonstration/violent protest/illegal assembly) would most likely be located at one of the correctional facilities located within Elmore County.
Overall Significance Ranking: Low

Hazard: Armed Assault (Including School Violence)
History: Low, 2
Frequency of Occurrence: Rare (4)
Probability: Low, 7; Unlikely Probability of Future Events
Vulnerability, Population: Medium, 15
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 41

Maximum Probable Extent (Magnitude/Strength):
Public: Important (5)
Infrastructure: Very Low (6)
Environment: Very Low (6)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Negligible: At any given time, an occurrence of armed assault would impact only a negligible portion of the planning area.
Overall Significance Ranking: Low

CIVIL DISTURBANCES

Collective behavior that results in a significant level of law-breaking, perceived threat to public order, or disruption of essential functions and quality of life.

Hazard Description

Civil disturbances can be classified within the following four types: (1) acts or demonstrations of protest, (2) hooliganism, (3) riots, or (4) insurrection. Since most of these types of disturbance share similarities with each other, and the classifications presented here are not absolute and mutually exclusive, **it is recommended that this entire section be studied as a whole**. The descriptions that follow, while roughly organized by type of disturbance, provide information of interest in evaluating and understanding all types of civil disturbance, and therefore should not be treated as independent subsections or read in isolation from each other.

The first type, **protest,** usually contains some level of formal organization or shared discontent that allows goal-oriented activities to be collectively pursued. This first category includes political protests and labor disputes. Many protest actions and demonstrations are orderly, lawful, and peaceful, but some may become threatening, disruptive, and even deliberately malicious (on the part of at least some of those involved either in the protest itself or in reaction to the protest). It

is only the latter type of event that should properly be classified as a civil disturbance. The destruction of property, interruption of services, interference with lawful behaviors of ordinary citizens and/or emergency responders, the use of intimidation or civil rights violations, and threats or actual acts of physical violence may all occur during civil disturbance events. Actual Alabama events have included the willful destruction of property and impeded property access during labor strikes, and heated conflicts between opposing participants at political rallies or issue-driven demonstrations. Different risks and forms of disturbance are connected with the nature and perceived importance of the cause, the degree of organization among those who are active in the protest, and the amount of group cohesion among those who are involved.

The second category of civil disturbance, **hooliganism**, is relatively unorganized and involves individual or collective acts of deviance inspired by the presence of crowds, in which the means (and responsibility) for ordinary levels of social control are perceived to have slackened or broken down. Certain types of events, such as sporting events, "block parties," or concerts, become widely publicized and, in addition to normal citizens who merely seek entertainment, tend to also attract certain types of persons who seek situations in which anonymity, confusion, and a degree of social disorder may allow them to behave in unlawful, victimizing, or unusually expressive ways that would normally be considered unacceptable by most ordinary people. Examples include the disorder that has followed various sporting events and college parties. Although the majority of persons present are ordinary citizens (although many may have some level of intoxication), a minority of persons begins making itself known through unlawful or extreme acts of deviance, and it is from this part of the crowd that the hazard primarily stems. This minority may include persons affected by the use of illegal drugs and alcohol, and may include criminals and persons with mental illnesses (such as antisocial personality disorder) who may either be reacting with extreme hostility to the crowding, noise and disorder, or may have deliberately sought out such crowds and disorder so as to gain opportunities to behave in ways that ordinary circumstances would not allow. Common problems include the widespread destruction of property, numerous types of assault and disorderly conduct, and criminal victimization. It should also be noted that many persons who are normally law-abiding may temporarily behave in unusually aggressive ways during these events, often prompted by an understandably defensive anxiety about the disorder and behavior exhibited by the deviant minority, but also possibly exacerbated by a level of alcoholic intoxication as well as the temptation by some to engage in appealing deviant behaviors that under normal circumstances of social control would not be selected. Many citizens remain law-abiding, but may remain in the area of a civil disturbance either because they live in the area, have activities (including social and recreational ones) that they wish to continue engaging in, have legitimate business to conduct, or because they are curious or concerned and wish to observe or witness the situation as it occurs. The majority of such law-abiding citizens will leave the area in an orderly way when given clear instructions by a legally-recognized authority to do so. There are cases in which hooliganism may become combined with protest, and thus complicate the situation for law enforcement personnel. In some circumstances, elements of protest are added only by a small minority of participants after the disturbances have already begun, but in other circumstances, protest activity may arise out of concerns regarding the extent and nature of pre-emptive law enforcement activities that were intended to prevent a civil disturbance.

The third type, **riots**, may stem from motivations of protest, but lacks the organization that formal protests include. Although legitimate and peaceful protests may spontaneously form when people gather publicly with the perception that they already share certain values and beliefs, riots tend to involve violent gatherings of persons whose level of shared values and goals is not sufficiently similar to allow their collective concerns or efforts to coalesce in a relatively organized manner. Instead, there tends to be a diffuse sense of shared discontent, but relatively few norms to shape these strivings into clearly coherent action. For example, widespread discontent within a community that is sufficiently cohesive may quickly take on a set of shared leaders and clear organization, such as a march or chant that is clearly in the form of a protest or demonstration, but in an area that doesn't have the same cohesiveness and shared norms and values, a relatively chaotic form of expression may take place instead, involving assaults, intimidation, and unlawfully destructive expressions of discontent, possibly including the victimization of innocent citizens or businesses who have been selected by part of the crowd to function as scapegoats during their expression of discontent. In addition to the sentiments of discontent that may have sparked the initial activities, however, elements of hooliganism may emerge and even come to predominate, as certain persons may attempt to exploit the social disorder for their own individual ends. In other cases, elements of legitimate protest may also form within this type of civil disturbance, and pockets of organized protest may help to channel and contain the negative elements of hooliganism, looting, etc. that might otherwise threaten all area residents. The complexity of these events for law enforcement can be very great, demanding carefully calculated efforts to analyze the nature of the disturbance, and difficult decisions about how to approach and possibly involve the numerous types of persons, gatherings, groups, and behaviors that may have the potential to either mitigate or exacerbate the situation.

The fourth type of civil disturbance, **insurrection**, involves a deliberate collective effort to disrupt or replace the established authority of a government or its representatives, by persons within a society or under its authority. Some prison uprisings may fall into this category, although others may more properly be classified as riots or protests, depending upon the presence and extent of specific goals and organization, and the type of action used in achieving such goals. The forthcoming county map shows the locations of Correctional Facilities and the Elmore County and City of Tallassee Jails. An insurrection has the deliberate goal of either replacing established authorities with a new distribution of power, or with the destruction of established power structures in favor of (usually temporary) anarchy or a smaller-scale set of recognized criminal (gang), ethnic, or other group networks and power-structures. The latter circumstances tend to involve disturbances that exist on a relatively small scale, such as in a single local area or involving a prison network or "cult compound" (or any other similarly self-aware group or subculture with identified collective interests and a network that allows rapid communication and collective action). However, larger-scale insurrections are also possible, involving issues of class conflict or other widespread social inequalities, highly divisive political issues, or other important large-scale events that disrupt the social equilibrium because they illuminate areas in which cultural values are not sufficiently shared throughout the society or region that is experiencing the conflict, disruption, or strain. In many cases, this kind of large-scale social strain has developed gradually over time, and involves an entire series of compromises, concessions, and migrations that may temporarily relieve the disruptive social and value conflicts, only to reemerge after another period of changes and population growth has caused a breakdown in previous arrangements. This

description of the causes of social discontent applies to many protests and riots, as well as insurrection. In cases involving the formation or emergence of significant sub-cult subcultures or counterculture, such as during the Vietnam era, or when dominant values break down or fail to be established on important key issues or mores, there is the potential for insurrection on a larger scale. The Civil War of 1861-1865 was one such instance, in which the authority of the federal government was either accepted or rejected by various states which then aligned themselves in opposition to each other. Between these two extremes (of a purely localized civil disturbance and a national civil war) are numerous other possibilities for regional, political, class, or ethnic conflicts that may involve one or more categories of citizen in conflict with others. Examples could include prisoners versus law enforcement personnel, a countercultural group versus the establishment, or a violent political activist group in conflict with selected representatives of a contrary viewpoint. (Some such actions may overlap with those of terrorism, q.v.)

Hazard Analysis

Violent protests, disturbances, and riots have occurred throughout our nation's history. The Stamp Act Riots in the American Colonies in the 1760s, the "Boston Tea Party," and the Revolution itself involved riots and insurrection, as discontent escalated into organized international conflict. Though these events have occurred in the past, they are not considered an acceptable part of ordinary modern life.

Although destructive civil disturbances are rare, the potential is always there for an incident to occur. It is possible that risks for future disturbances may be exacerbated today by the ability of modern mass media (television, radio, the Internet, and various wireless communication devices) to instantly relay information (factual or not), in real time, to large numbers of people. That coverage may help to spread awareness of protests, discontent, riots, disorderly "parties," or other incidents to other areas or interested groups and persons, potentially exacerbating an already difficult situation. For example, media coverage of certain events has, in the past, spurred uprisings inside prisons. Real-time media coverage of unfolding events is a fact of modern life that is inescapable. As a result, law enforcement officials must be skilled in monitoring all forms of media coverage to anticipate public and perpetrator actions and event progression.

Civil disturbances might be separated into several sub-categories of disturbance that could affect a community.

1. <u>Disturbances that center around a particular facility</u>: the facility could be a prison, a courthouse or other center of government, a stadium or other public meeting place, where large numbers of people may at some point gather in a disruptive fashion that is threatening to the community, its businesses, residents, or quality of life. Typically, a risk assessment would examine the history of the facility, and similar facilities in other communities. Such historical information might identify particular conditions that may cause collective behavior to get out of hand. The degree to which a community contains facilities and conditions that have been associated with civil disturbances will indicate the amount of risk that it faces from civil disturbances. The map following the table below shows the locations of all the Elmore County Correctional Facilities and the Elmore County and City of Tallassee Jails. The Cities of Millbrook and Wetumpka and the Town of Eclectic have no jail capacity, while the City of Tallassee can house up to 22 inmates at

any given time. All jurisdictions, including the City of Tallassee (under certain circumstances) house their inmates in the Elmore County Jail.

Alabama Department of Corrections – Monthly Statistical Report for February 2014
(Elmore County) Facility Operations

Facility	Designed Capacity[1]	Month End Population	Occupancy Rate[3]
Tutwiler Women's Facility (Close Security)	417	689	165.2%
Tutwiler Women's Annex (Medium Security)	128	250	195.3%
Draper (Medium Security)	656	1207	184.0
Elmore (Medium Security)	600	1184	197.3
Stanton (Medium Security)	508	1385	272.6
Frank Lee Work Center (Minimum Security)	109	139	127.5
Frank Lee Work Release (Minimum Security)	119	160	134.5

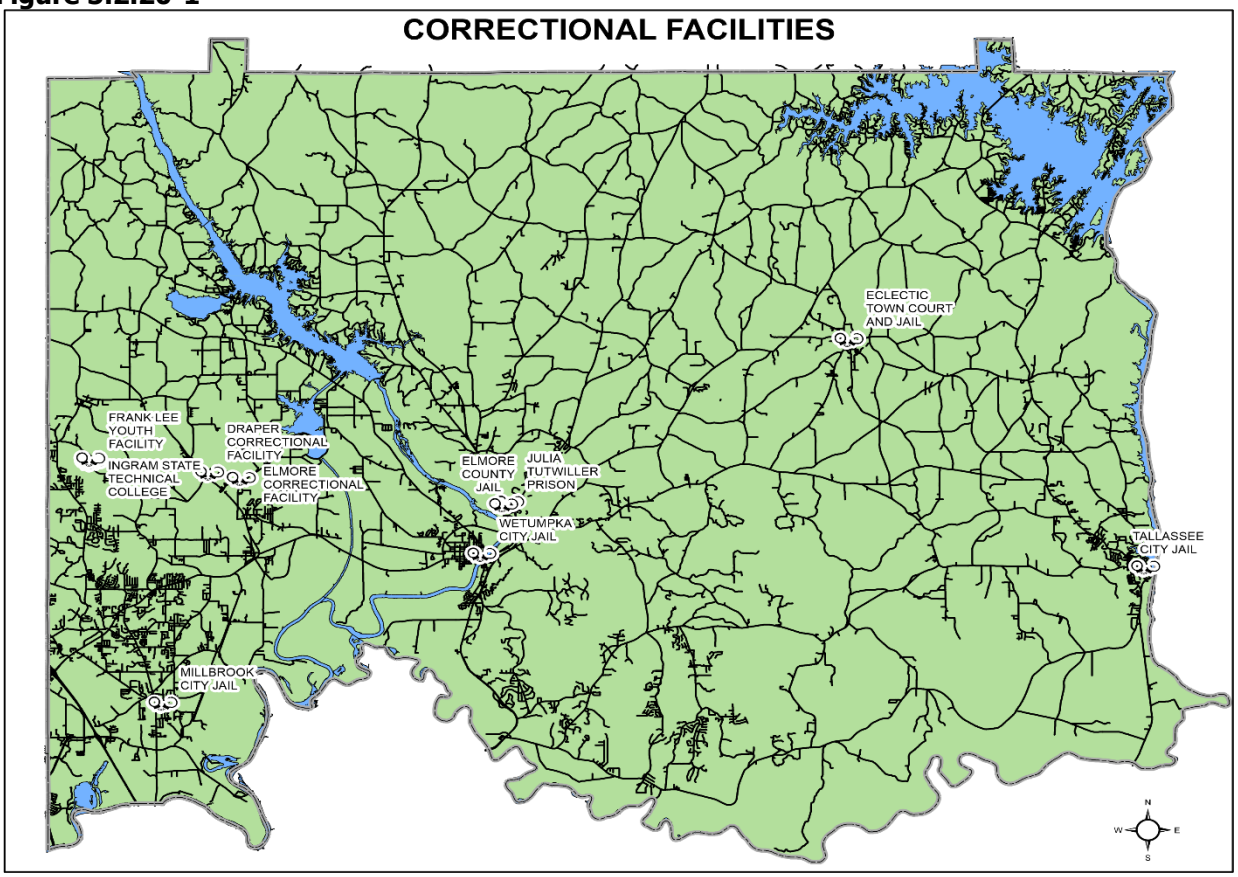
Table 5.2.20-1 1-Original architectural design plus renovations
3-Occupancy Rate is the result of month end population divided by design capacity

Source: Warden, Elmore County Jail; Jail Administrator, City of Tallassee

Facility	Designed Capacity	Population As of: 05/27/2014	Occupancy Rate
Elmore County Jail (Elmore County Sheriff's Dept.)	232	239	103.%
City of Tallassee Jail	22	3	17%

Table 5.2.20-1.1

Figure 5.2.20-1



2. Disturbances that arise in general areas experiencing conflict and hardship: This refers to neighborhoods or regions that have experienced one or more economic, social, or political stresses such as poverty, ethnic intimidation, corruption, and/or the notable presence of illegal activities. These ongoing conflicts and challenges may sometimes flare up into more widespread and blatant conflicts and unrest. The important things to recall about these sorts of civil disturbances is that it is the presence of these conflicts and problems (rather than a particular ethnic or demographic composition) that eventually generates broader disturbances. Care must be taken not to inappropriately "profile" areas based on the characteristics of their residents.

3. Disturbances that interfere with normal business functions: Sometimes, protests are organized in a way that is deliberately designed to disrupt the normal operations of one or more businesses, and may also happen to disrupt surrounding business operations or traffic flows nearby. Many such incidents are political, and eventually addressed through court actions or legislative proceedings. Labor negotiations may have associated employee unrest, including strikes. Protesters may object to the existence of specific facilities or businesses, or their location in a specific area, and while seeking to make such a business or its associated activities illegal, may attempt to take more direct action against its employees or patrons. Typically, the perceived harm from such businesses are either from environmental impacts or injury to persons, or social impacts concerning the image or moral standards associated with an area. In other cases, a political

demonstration may not have anything to do with the sorts of facilities or businesses in an area, but merely seeks the most crowded and inconvenient location so as to maximize the attention that it receives.

There is no specific "formula" recommended here for analyzing civil disturbance hazards, but it is probably helpful to include a historical approach that specifically addresses the social conflicts and political controversies affecting disturbance-prone areas of a community. The various costs of past events (crowd control, vandalism, arson, business disruption and closures, injuries, diverted traffic, negative economic impacts) can be estimated along with their past frequency (e.g. three times in the past hundred years) so as to produce an estimated annual cost. The history of cities with similar conditions can also be analyzed in this way, because the risk of a disturbance may be present even though there have not yet been any historic local events. This is particularly true for communities with newly-developed facilities, in rapidly growing areas, or experiencing significant social and economic changes. Their risk of civil disturbance may be increasing but there is not yet a local history of incidents that can be generalized from.

Impact on the Public

Civil disturbance impacts may include deaths and injuries, disruption of services, and short- and long-term damage to a community's tranquility and reputation (which may also affect its property values). Temporary or permanent business closures may be caused by broken windows, looting, arson, etc. Fear (and its associated security costs) may discourage visitors, shoppers, and tourists, and further cause economic impacts on the area (and associated declines in its property values). Direct property damage can be expected to cause inconvenience, at the very least, to area residents and businesses, and there is a further problem of impeded access to the area's services, and to residents' own personal property.

Impact on Continuity of Operations

Impact unlikely to cause relocation of government operations. Transportation may have limited affects due to detours and /or closures. If discontent underlies a disturbance, some persons may generalize, displace, or attribute the source of their discontent to local or state governments. Some discontent may actually be aimed toward government policies involving the environment, housing, land use, wealth distribution, taxation, military conscription, foreign affairs, labor issues, infrastructure provision, civil rights, or other issues. Although government programs often exist that attempt to address these types of concerns and to ensure that particular values (e.g. civil rights) are respected and supported throughout the jurisdiction, widespread or widely publicized disturbances or demonstrations may undermine the effectiveness of governmental programs and thus weaken public confidence in government. Other types of civil disturbance, such as wild festivities after a sporting event, may undermine public confidence in government if a pattern develops in which illegal behaviors become repetitive and widespread.

Impact on Responders

Frustration and anger may be displaced toward responders, and many citizens may not understand the nature of the motivations, rights, or responsibilities involved in either protest or policing actions. Responders may face unwarranted hostility from citizens, for many reasons, and response activities may be impeded by disruptions taking place. Response, medical facilities,

communications, or transport capabilities may be overwhelmed. Psychological impacts on responders may arise from role conflicts and the nature of some of the participants involved in the disturbance (which has some differences when compared with "ordinary crime").

Impact on the Environment

Civil disturbances that stem from labor unrest (or other problems with industrial relations) may involve sabotage that causes the release of harmful substances or otherwise damages the ecosystem in an area. Civil disturbances that involve disruptive forms of collective behavior may include the lighting of fires that release toxins, especially when non-traditional manufactured items are used as fuels. Damage to property may, accidentally or deliberately, include sites that contain hazardous materials. Unruly crowds may disrupt or prevent needed maintenance activities by utility repairmen or industrial workers and thus inadvertently cause environmental problems to occur because of resulting infrastructure failures.

General Comments about Urban Civil Disturbances

Various racial and ethnic bigotries have been expressed at numerous times and locations throughout Alabama, sometimes exacerbated by major news events (which can be local, state, or national). For example, anti-German sentiments were frequently expressed during World War I. Some of these ethnic and racial antagonisms were institutionalized and enforceable by laws, contracts, or other arrangements. One example of this would be the "restrictive covenants" that prevented the sale of designated properties to those in specified minority groups. The use of restrictive covenants became unconstitutional as a result of a court decision (Shelley vs. Kramer) in 1948, but similar de facto patterns of residential pressures and segregation would still be evident for many decades afterward.

During periods of turmoil, social change, and immigration, the challenges of these large-scale social patterns often correspond with the symptoms of social conflict—in the attitudes, behavior, and policies of individuals, groups, organizations, and institutions. The number of civil rights protection programs and options has increased over time, but it is useful to be aware of the possibility that widely publicized (and sometimes poorly understood or misrepresented) events may cause surges in conflicts and problems. Stereotyping, scapegoating, and discrimination can lead not only to individual crimes, but also to the disruption of neighborhood residents and the escalation of mistrust, fears, and protests into riotous incidents. It is also possible for these tensions and incidents to endure and to form an ongoing pattern of social conflict (see the section on Terrorism and Major Criminal Incidents).

Further complicating the situation, particularly in urban areas, is that certain types of "illegitimate opportunity structures" (criminal organizations) have been known to give preferential treatment to those from particular family or ethnic backgrounds. Within the complexity and dynamics that are present in modern large cities, it has been very common for individuals to mistake or confuse their individual experiences of crime, poverty, etc. with larger-scale patterns of ethnicity, race, and social class, and to draw unwarranted conclusions about "all" persons who are perceived to be members of a particular class or group.

In actuality, social science has shown that within every large descriptive category of persons (age, race, gender, nationality, social class, etc.) there is a great deal of diversity. This diversity becomes apparent as an individual has more experience and interaction with a wide array of persons from a given background (e.g. ancestry or national origin), social situation (e.g. poverty), or socially defined category (e.g. ethnic identity), or with particular physical characteristics (e.g. sex). There usually turns out to be just as much diversity within any such large categories of persons as there is between them (to the extent that it is even valid to try to describe or define "them" collectively as a group). There is no quick shortcut to fairly and validly judge a person's character or motivations, based upon such large-scale classifications as gender, race, or social class—one must instead actually observe and get to know each person as an individual in order to start to make such assessments. (Gang-related clothing or the exhibition of countercultural symbols may be perceived as individual choices, rather than confused with a broader ethnic or other category, but even in such cases, it is often very difficult for a stranger to be able to judge the degree of authenticity and the actual meaning of such symbols for the persons who use them. On the other hand, an individual's decision to adopt a cautious or wary attitude in an unfamiliar setting or when meeting new persons is not quite the same as exhibiting deliberate prejudice, bigotry, or discrimination.)

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5.2.21 Adversarial Threats (Terrorism, Radiological Dispersal Device/Nuclear Attack, Biological Attack-Non-Food, Biological/Chemical Food Contamination, Chemical Attack-Non-Food, Aircraft as Weapons, Explosive Devices, Cyber Attack)

Sources: U.S. Department of Homeland Security, Alabama Fusion Center, Center for Disease Control, Alabama Department of Public Health, *the*WhiteHouse.gov,
Source: Michigan's 2012 Threat and Hazard Identification and Risk Assessment
Source: Michigan Hazard Mitigation Plan (Updated March 2011 edition)
See: Transportation System Failures, Air Transportation for additional details on Aircraft Accidents

Introductory Statement: The *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* identifies 21 categories of threats and hazards that have occurred in the past in Elmore County as well as those that may occur in the future. The Plan addresses threats and hazards beyond the breadth of *Elmore County's Threat Hazard Inventory and Risk Assessment (THIRA)* including landslides; sinkholes and land subsidence; and dense fog. If the threat/hazard was included in the THIRA, information from the referenced Analysis/Profile below is included herein.

As part of the ***Elmore County Vulnerability Analysis and Threat/Hazard Profile*** *(THIRA information as requested by AEMA) November, 2013*, the following threat(s)/hazard(s) was/were identified and evaluated through a process that included studying historical date, empirical data, susceptibility of location to hazards, and input from local stakeholders and the public (Section A). In Section B, as part of the Vulnerability Analysis, the identified threats/hazards were given *vulnerability values* of Low (L), Medium (M), or High (H) for history of an event, probability of an event, vulnerability of people and property, maximum threat and economic impact. Each threat/hazard identified in Section B was also included in Section C. Threat/Hazard Profile, along with its general description, and the extent of the effects on Elmore County. Lastly, threats/hazards identified as being the most severe and/or most likely to occur in Elmore County, along with brief descriptions of how they might impact the county, were addressed in Section D of this document.

Elmore County Vulnerability Analysis and Threat/Hazard Profile

Hazard: Improvised Explosive Devise

History: Low, 2
Frequency of Occurrence: Very Low (6)
Probability: Low, 7; Unlikely Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Disaster (2)
Infrastructure: Substantial (3)
Environment: Very Low (6)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Negligible: At any given time, an attack using an Improvised Explosive Device (IED) would impact only a negligible portion of the planning area.
Overall Significance Ranking: Low

Hazard: Attack - Chemical

History: Low, 2
Frequency of Occurrence: Very Low (6)
Probability: Low, 7; Unlikely Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Disaster (2)
Infrastructure: High (2)
Environment: High (2)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Negligible: At any given time, an attack using a chemical weapon would impact only a negligible portion of the planning area.
Overall Significance Ranking: Low

Hazard: Attack - Biological

History: Low, 2
Frequency of Occurrence: Very Low (6)
Probability: Low, 7; Unlikely Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Disaster (2)
Infrastructure: High (2)
Environment: High (2)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Negligible**:** At any given time, an attack using a biological weapon would impact only a negligible portion of the planning area.
Overall Significance Ranking: Low

Hazard: Attack – Radiological Dispersal Device (RDD)

History: Low, 2
Frequency of Occurrence: Very Low (6)
Probability: Low, 7; Unlikely Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Disaster (2)
Infrastructure: High (2)
Environment: Very High (1)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Limited: At any given time, an attack using a Radiological Dispersal Device (RDD) would impact a limited portion of the planning area.
Overall Significance Ranking: Low

Hazard: Attack – Nuclear

History: Low, 2
Frequency of Occurrence: Very Low (6)
Probability: Low, 7; Unlikely Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29
Maximum Probable Extent (Magnitude/Strength):

Public: Disaster (2)
Infrastructure: High (2)
Environment: Very High (1)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive: At any given time, an attack using a nuclear device would impact the entire planning area.
Overall Significance Ranking: Low

Hazard: Biological/Chemical Food Contamination

History: Low, 2
Frequency of Occurrence: Very Low (6)
Probability: Low, 7; Unlikely Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Disaster (2)
Infrastructure: High (2)
Environment: High (2)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Negligible: At any given time, an attack using biological or chemical agents to contaminate food sources would impact only a negligible portion of the planning area.
Overall Significance Ranking: Low

Hazard: Aircraft As Weapons (See: 5.2.18 for Aircraft Accidents)

History: Low, 2
Frequency of Occurrence: Rare (4)
Probability: Low, 7; Unlikely Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Serious (4)

Infrastructure: Moderate (4) – Low (5)
Environment: Substantial (3)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Extensive to Negligible: While the entire planning area (extensive) is susceptible to an attack by an aircraft used as weapon, only a negligible portion of the planning area has/hosts what may be considered "high-value targets" such as: special events/large public gatherings, critical infrastructure, targets of opportunity, etc..
Overall Significance Ranking: Low

Hazard: Cyber Attack/Incident

History: Low, 2
Frequency of Occurrence: Very Low (6)
Probability: Low, 7; Unlikely/Occasional Probability of Future Events
Vulnerability, Population: Low, 3
Property: Low, 2
Impact/Maximum Threat, Population: Low, 6
Property: Low, 4
Economic Impact: Low, 5
Total Points: 29

Maximum Probable Extent (Magnitude/Strength):
Public: Serious (4) – Important (3)
Infrastructure: Moderate (4)
Environment: Very Low (6)

Geographical Areas of Elmore County Susceptible to this Hazard/Threat: Significant: A significant portion of the planning area is susceptible to cyber attack.
Overall Significance Ranking: Low

TERRORISM AND SIMILAR CRIMINAL ACTIVITIES

Terrorism: "…activities that involve violent…or life-threatening acts…that are a violation of the criminal laws of the United States or of any State and…appear to be intended (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping" Federal criminal code. 18 U.S.C. §2331

Hazard Description

Terrorism is the use of violence by individuals or groups to achieve political goals by creating fear. The political motives of terrorism distinguish it from ordinary crime. Terrorism is carried out for a cause; not for financial gain, personal revenge, or a desire for fame.

Terrorism is a long-established strategy that is practiced by many groups in many nations. The United States is threatened not only by international terrorists such as Al Qaeda, but also by home-grown domestic terrorist groups including racist, ecological, anti-abortion, and anti-government terrorists.

A wide range of techniques can be used by terrorists, including bombings, shootings, arson, and hijacking. Regardless of the specific tactics used, terrorists seek the greatest possible media exposure. The goal of terrorists is to frighten as many people as possible, not necessarily to cause the greatest damage possible. Media coverage allows terrorists to affect a much larger population than those who are directly attacked.

Non-terrorist criminal activity may resemble terrorism, but lacks a political objective. Emergency management is typically not concerned with routine, individual crimes, but does need to prepare for crimes that impact large portions of the population. Such attacks may require resources not available to local law enforcement agencies. Crimes of this sort include mass shootings, random sniper attacks, sabotage of infrastructure, and cyber-attacks. The types of criminal attacks considered in this section are those that resemble terrorism or that may cause widespread immediate disruption to society.

Terrorism in the United States

Terrorists intend to use fear as a weapon to achieve their goals. This approach allows a small, weak group to potentially influence the actions of an entire nation or government. Terrorists lack the power to achieve their ultimate aims through the direct use of force, but by staging relatively small attacks in a spectacular fashion, they hope to have a major political impact. Their goals are effectively summarized by the proverb "Kill one, frighten 10,000."

Terrorism can be an effective strategy for a weak group to use when fighting a strong opponent. Terrorism has been used for thousands of years, but modern terrorism developed in the 19th Century. The United States has suffered from terrorist attacks for more than a century: U.S. President William McKinley was assassinated by an anarchist terrorist in 1901, the Los Angeles Times building was destroyed in 1910, and Wall Street was bombed in 1920. Racial and religiously-motivated terrorism continued throughout the 20th century. A new wave of terrorism was instigated in the 1960s by left-wing radicals. This was followed by right-wing extremist terrorism in the 1980s and 1990s. All of these attacks were conducted by American domestic terrorists against other Americans.

The United States has also been the target of terrorists from other countries. Conflict in the Middle East led to many attacks on American targets overseas, primarily by Palestinian nationalist terrorists, as well as groups supported by Libya and Iran. Hijackings, kidnappings, and bombings of Americans occurred throughout the 1970s and 1980s, and into the 1990s. By the mid-Nineties the danger had shifted toward attacks by violent Islamic extremist groups such as al-Qaeda. Al-Qaeda successfully moved their terrorist campaign inside of the United States homeland with the World Trade Center bombing in 1993 and the devastating 9/11 attacks in 2001.

Types of Terrorists

Terrorists fall into five major categories, based upon the political cause that motivates their actions. These categories are: nationalist, religious extremists, left wing terrorists, right wing terrorists, and single-issue terrorists.

Nationalist terrorists act in support of a cultural or ethnic group. Typically they are fighting on behalf of national populations that wish to have an independent government, but are currently ruled by another country. Nationalist terrorists tend to direct their attacks against the "occupying power" that they wish to drive away, but may also attack other nations that support their enemies. Nationalist terrorists claim to speak for their entire national group, but usually only represent a small minority of extremists. Examples of nationalist terror groups include the Provisional Irish Republican Army (Northern Ireland), the Popular Front for the Liberation of Palestine (Palestine), and the Armed Forces of National Liberation (Puerto Rico).

Religious extremist terrorists are violent adherents of a specific religion. They may be violent extremists within a large, generally peaceful faith such as Islam or Christianity, or members of a small "cult" religion in which the entire group is extremist. These terrorists tend to be especially committed because they believe their violent actions are supported by their deity and because they may expect to be rewarded after death. Religious terrorists see themselves as fighting in a battle of ultimate good against pure evil, in which any action is justified. Examples of religious extremist terrorists include al Qaeda (International), Hezbollah (Lebanon), and the Aum Shinrikyo cult (Japan).

Left wing terrorists attempt to force society to change to match their goals and values. They tend to target the government, powerful institutions, and symbols of authority. Socialist and Communist terrorists of this type were a threat in the late 1960s and 1970s, but have weakened in recent decades. Examples of left-wing terrorist groups include the Weathermen (United States), the Red Army Faction (Western Europe), and Shining Path (Peru).

Right wing terrorists see themselves as fighting for traditional values against an invading group and/or against a tyrannical government. In the United States these terrorists are associated with anti-immigration, white supremacy, anti-government, and Christian Identity movements. Only the most extreme elements of these movements have become terrorists, but they have carried out a substantial portion of the recent attacks in the United States. Right wing groups tend to target members of hated ethnic or religious minorities, or government employees. In recent years, right wing terrorists have usually operated as violent individuals termed "lone wolves" and not in organized groups. Examples of right wing terrorist groups in the United States include "The Covenant, The Sword, and the Arm of the Lord" and "The Order." Examples of right-wing "lone wolf" terrorists include Timothy McVeigh (of the 1995 Oklahoma City bombing) and James von Brunn (of the 2009 National Holocaust Museum shooting in Washington, D.C.).

Single-issue terrorists are not committed to an all-encompassing belief system, but rather are intensely concerned with one particular cause. Frequently these issues are of interest to many members of society, but only small numbers of individuals convert this interest into terrorist action. Common causes for single issue terrorists in the United States include animal-rights,

environmentalism, and opposition to abortion. These terrorists carry out the majority of terrorist attacks within the United States, but tend to target property or individuals rather than attempting to cause massive casualties. Examples of American single issue terrorist groups include the Animal Liberation Front and the Earth Liberation Front, but many single issue terrorists operate as independent lone wolves or in small informal groups.

Terrorists and terrorist groups tend to fall into one of these five categories, but there are examples of terrorists who fit more than one of these categories. For example, nationalist terror groups have often promoted radical left-wing political views while religious extremist terrorists frequently have extreme right-wing views. The most effective terrorists tend to operate in groups of like-minded individuals. Such groups range from a few committed amateurs to sophisticated international paramilitary organizations. Even in the larger organizations, terrorist groups are structured into small "cells" with a handful of members each. This structure, combined with the intense personal commitment of many terrorists, makes these groups difficult to discover, infiltrate, and disrupt.

Non-terrorist Criminals

Terrorism is a crime, but not all criminals are terrorists. Most crimes impact only a small number of victims and are appropriately handled by local law enforcement. Rarely, a criminal event will impact a large number of people. Examples include mass-shootings at schools or workplaces, infrastructure sabotage, and cyber-attacks. Such major criminal events may resemble terrorist attacks, but there are important differences between terrorists and other criminals. The principal difference between terrorism and other types of crime is motivation. Terrorists are motivated by a political cause, not by personal gain. Terrorism is not only defined by what an attacker does, but why he or she does it. This is an important distinction because it explains other characteristic differences between terrorism and non-terrorist crimes.

Non-terrorist criminals may be driven by a wide variety of purposes. These motivations are highly idiosyncratic and difficult to categorize or predict. Most criminals avoid major crimes with widespread impact because the chance of monetary gain is low and the risk of punishment is high. Occasionally a criminal will be willing to take that risk. Major criminal events have been conducted for reasons of personal revenge, monetary gain, desire for fame, and due to mental illness.

There are other important differences between terrorists and criminals, although these are generalizations that do not hold true in all cases. Terrorists tend to prioritize their mission over their personal safety and will often risk capture or death to achieve their goals. Criminals usually seek freedom to enjoy the rewards of their crimes and so plan to escape undetected after their attacks. American criminals, especially those who conduct large-scale attacks, tend to operate as individuals or small groups. The most effective terrorists belong to organizations or networks that coordinate multiple members and share extensive resources.

Criminal and Terrorist Weapons and Techniques

There are a wide variety of harmful weapons and tactics available to terrorists and criminals. The specific effects of a terrorist or criminal attack, as well as the emergency response required, are determined largely by the tools used.

Explosives are by far the most common terrorist tool and have also been used by particularly violent criminals. Bombs have many advantages for an attacker, including flexibility, availability, and ease of use. Explosives can be delivered in many ways, including massive car bombs, hidden suicide vests, assassination devices, and letter bombs sent through the mail. Bombs are effective at both destroying property and harming people.
Explosive attacks also produce dramatic images of destruction guaranteed to receive the media coverage that terrorists seek out.

A wide variety of explosive materials are available. Military explosives are the most powerful, but are difficult for most terrorists and criminals to get. Commercial explosives are widely available for legitimate use by mines, farms, and businesses. With over 2.5 million tons used each year in the United States, commercial explosives are powerful and easy to acquire. Alternatively, terrorists and criminals may choose to make their own explosives. Effective bombs can be built from commonly available materials such as farm fertilizer, diesel fuel, and hydrogen peroxide.

Explosives are also relatively easy to use. This allows even untrained bombers to launch damaging attacks. Common terrorist tactics include anti-personnel bombs, packed with metal objects to increase injuries, and suicide bombs that can be set off at the most harmful possible time and place. For non-suicidal attackers, bombs can be left in place to explode long after the bomber has made an escape. One common explosives technique of particular importance to emergency responders is the secondary device. This tactic uses a pair of bombs, the first of which draws rescuers and bystanders to the scene and a second, hidden bomb is targeted to then kill these emergency responders.

Explosive attacks can be countered by careful law enforcement work to identify and disrupt possible attacks before they occur. Alert and properly educated citizens can provide important assistance by observing and reporting signs of a possible attack, such as an unwarranted purchase of explosive materials, or the presence of a suspicious package in a public place. Some high-risk areas such as airports can be equipped with explosives screening devices. Particularly high-risk facilities, such as government buildings, may be physically hardened to limit the damage from attack by explosives. If a bomb or potential bomb is detected, specially trained law enforcement bomb squads should be contacted to dispose of it.

Case: Bath School Disaster (1927)

On May 18, 1927, the Bath Consolidated School in Bath, Michigan, was the target of an attack with explosives. The bomber was probably motivated by personal revenge against the local school district (stemming from a taxation issue), and so this event is classified as criminal, rather than as a terrorist attack. Although many of the explosives failed to detonate, the bombs in the school killed dozens of students and teachers. The bomber also destroyed his home and farm with explosives. Immediately after the school attack, the bomber approached the rescue operations

scene and detonated an explosive device carried in his vehicle, killing himself, local officials, and several bystanders. The final death toll was 45, with 58 additional persons injured. The Bath Disaster remains the second most deadly
U.S. bombing attack, after the Oklahoma City Bombing, as well as the most lethal attack on an American school. This case also provides early examples of such tactics now in common use by terrorists, including a secondary device, suicide bombing, and car bomb.

Case: Oklahoma City Federal Building Bombing (1995)

On April 19, 1995, the Alfred P. Murrah Federal Building in Oklahoma City, Oklahoma, was attacked by a large truck bomb. The attack killed 168, injured more than 680, destroyed the building, and caused widespread destruction over a sixteen-block area. Although initially suspected of being carried out by international terrorists, the attackers were in fact anti-government domestic terrorists. This attack is an example of right wing anti-government terrorism. It also demonstrates the extensive destruction that can be caused to large buildings which lack adequate target hardening and security measures.

Case: Bali Bombing (2005)

On October 12, 2002 terrorists bombed the tourist district of Kuta on the Indonesian Island of Bali. The targets were several nightclubs frequented by Western tourists. An initial backpack suicide bomb was directed against patrons inside a dance club. Shortly thereafter, a large car bomb detonated on a busy street near the first attack, killing survivors of the initial bomb and would-be rescuers. The second bomb weighed over a ton and devastated several blocks of buildings. In total, 202 persons were killed, with a further 209 injured. The attack was carried out by Jemaah Islamiyah, an Indonesian extremist Islamist organization. This case is an example of the versatility of terrorist explosives, used at Bali as both a small suicide weapon and a massive remotely detonated car bomb. It is also an example of a large secondary device, intended to kill those responding to the initial bomb.

Case: Northwest Airlines Flight 253 Bombing Attempt (2009)

On Christmas Day 2009, Umar Farouk Abdulmutallab attempted to destroy Northwest Airlines Flight 253, approaching Detroit Metropolitan Airport. The weapon used was an explosive device provided by the "al-Qaeda in the Arabian Peninsula" terrorist group and hidden in his underwear. The device was small and easy to conceal, but was capable of damaging or destroying the airliner. The explosive failed to detonate properly and instead ignited and burned Mr. Abdulmutallab, who was then subdued by the plane's passengers and crew. This attack demonstrates the potential effectiveness of even small bombs when used against vulnerable targets such as aircraft.

Suggested cases for readers' further study: (1) 1993 WTC bombing (demonstrates the importance of terrorist planning), (2) London transit bombing (demonstrates the use of small improvised devices), (3) Airline insurance bombing (demonstrates a criminal attack against an airliner), (4) Madrid train bombings (demonstrates political benefits for terrorists).

Incendiaries are similar to explosives and share many characteristics. Incendiaries are used to start fires rather than to destroy through explosion. Generally they are targeted at structures and property rather than directly against people. This makes incendiaries appealing to groups such as animal rights terrorists that seek to minimize casualties. The devices can be as simple as a can of gasoline ignited on a porch, or as sophisticated as a military thermite bomb. The use of fuel-laden jetliners as suicide missiles in the 9/11 attacks can be considered a massive application of *improvised incendiary devices*.

Countermeasures against incendiary attack are very similar to those against explosive attacks. Effective law enforcement, good intelligence on potential attackers, surveillance of critical sites, and hardening of particularly vulnerable targets can all be helpful. Note that the construction of simple incendiary devices can be very difficult to prevent since there are no legal restrictions on incendiary materials such as gasoline and matches. Prompt fire detection and effective firefighting can limit the damage once an attack occurs.

Case: Michigan State University Agriculture Building Arson (1999)

On December 31, 1999, environmental terrorists affiliated with the Earth Liberation Front (ELF) set fire to the Agriculture Biotechnology Support Project, located in a classroom and office building at Michigan State University. The university was targeted because of its work on genetically modified crops. The fire was set when there were few people in the building. Damages to the building and research equipment totaled approximately $1 million. Four domestic terrorists from Michigan and Ohio were later tried and convicted in federal court for carrying out this attack. This attack, a similar attack against Michigan State in 1992, and an attempted attack against the Michigan Technological University Forestry Center in 2001 are all typical of attacks by environmental terrorist groups. These attacks generally are designed to cause property damage but few deaths and injuries. These attacks also demonstrate the vulnerability of universities and research centers to terrorist attack.

Case: 9/11 Airliner Attacks (2001)

On the morning of September 11, 2001, terrorists hijacked four commercial airliners originating from Boston Logan Airport, Newark International Airport, and Washington Dulles International Airport and then deliberately crashed the aircraft into the World Trade Center in New York City, and the Pentagon in Arlington, Virginia (with a fourth crashing in rural Pennsylvania), killing approximately 3,000 persons and causing billions of dollars in property damage. This coordinated attack was the deadliest act of terrorism in history. The attack would have been even worse had the fourth aircraft hit its intended target, which was presumed to be the White House in Washington, D.C. Instead, passengers attacked the hijackers, probably causing them to crash the aircraft into the open field in Pennsylvania.

Although these attacks began as hijackings, they may be classified as incendiary terrorism because most of the damage was caused by large fires started by the crashing airliners and their spilled jet fuel. It was these fires that caused the collapse of the three largest buildings at New York's World Trade Center, and of portions of the Pentagon building.

These attacks caused major disruption to airline travel, including a temporary ban on all civilian flights in the United States. Significant and expensive changes were made to improve security at airports and aboard aircraft. Substantial damage was caused to the overall U.S. economy, due to the direct and indirect costs of the attacks. With the 9/11 attacks as justification, the United States and its allies launched major military campaigns in Afghanistan, Iraq, and Pakistan that have cost tens of thousands of lives and trillions of dollars. This one terrorist operation, conducted by 19 men armed with knives, continues to have global repercussions years after the event.

The 9/11 attacks demonstrate the ability of terrorists to seek out vulnerabilities and to creatively exploit them. The attacks were incredibly effective because the terrorist tactics were unexpected, and terrorists will continue to attempt to surprise their targets with new weapons and techniques.

These attacks also illustrate that a major terrorist attack can have repercussions that extend well beyond the immediate scene of the attack. Suggested case for readers' further study: Alphabet bomber (example of multiple incendiary attacks as part of an individual's terror campaign).

Armed Assault, Including School Violence

Shooting attacks are a popular tactic for both terrorists and criminals. Firearms can be used to target a specific individual or to attack many people in a crowded place. Small arms such as pistols, rifles, and shotguns are easily available in the United States, including semi-automatic weapons with large capacity magazines. Shootings at schools and workplaces are among the most common types of major criminal attack. An important drawback to the use of firearms, particularly in a mass shooting, is that the attacker is not likely to escape. Therefore shootings are usually carried out by suicide attackers, those expecting to be arrested, or criminals who are acting impulsively and without thought to consequences. Countermeasures against shooting attacks are difficult, since attackers usually choose unprotected public areas. Protection against attacks has to be balanced against the public's need to use their schools, shopping malls, government buildings, and workplaces. Appropriate security measures and effective lock-down training can limit casualties in high-risk buildings such as schools. Rapid response by well-trained law enforcement officers and emergency medical personnel is also very important.

Case: Columbine School Shooting (1999)

On April 20, 1999, two students staged an attack at Columbine High School near Denver, Colorado. Although the criminals attempted to use explosives, all of the casualties were inflicted with small arms. Using a variety of handguns and shotguns, the criminals killed 13 teachers and students and wounded 24 others. By targeting crowds of students during lunch, the attackers were able to inflict all of the casualties within 23 minutes. The criminals expected to die during the attack and took their own lives at the end of their assault. This attack demonstrates the vulnerability of facilities, such as schools, where large numbers of victims can be found in close proximity. It also illustrates the short duration of most mass shooting attacks and the need for a very rapid law enforcement response.

Case: Mumbai Attacks (2008)

On November 26, 2008, terrorists attacked the Indian city of Mumbai. The primary weapons employed were rifles and handguns, though small explosives were also used. Ten terrorists attacked six targets across Mumbai's downtown area, including hotels, a railway station, a hospital, a restaurant, and a Jewish community center. There were also shootings on the city streets and several diversionary attacks. In total, more than 160 persons were killed and more than 290 injured. Sixteen of the dead and many of the injured were law enforcement officers. The attack was conducted by Lashkar-e-Taiba, a Pakistani extremist Islamist group. The attackers intended to die during their mission, though one man was taken alive. This case demonstrates the large number of casualties that can be inflicted by firearms in a crowded urban environment. It also demonstrates the significant challenge for law enforcement when suddenly confronted with a number of heavily-armed and suicidal gunmen, and the substantial police casualties which may result.

Case: Fort Hood Shooting (2009)

On November 5, 2009, a single gunman launched a shooting attack at the Fort Hood military post, located near Killeen, Texas. The attacker was Major Nidal Malik Hasan, a U.S. Army psychologist. Using a single handgun, Hasan killed 13 military personnel and wounded 29 others before being subdued. Hasan is accused of terrorism; acting for political reasons related to his extremist Islamist beliefs. It is believed that he was radicalized though the Internet and specifically through contact with Anwar al-Awlaki, a member of the terrorist group "Al Qaeda in the Arabian Peninsula." This case demonstrates the potential lethality of a highly trained and well-equipped gunman. Maj. Hasan made far more effective use of his weapon than other mass shooters, which can be attributed to his high level of training and preparation. It also demonstrates the danger posed by "lone wolf" attackers (self-radicalized and acting outside of the direct control of an established terrorist organization). Finally, it is an alleged example of an American citizen acting on behalf of a cause typically identified with international terrorists. As an American and a member of the military, Maj. Hasan does not fit the expected terrorist profile, which may have enabled him to avoid detection as a deadly threat. Suggested cases for readers' further study: (1) Virginia Tech shooting (an example of heavy casualties caused by a single gunman, and of a university target), (2) D.C. Beltway Sniper (example of random attacks, the effectiveness of a small team, long-range shooting, and widespread public fear), (3) Beslan School attack (an example of massive casualties, terrorist targeting of young children, difficult rescue operations, and a large suicide team with military weapons).

In September 2014, the **Federal Bureau of Investigation (FBI)** released their unclassified study entitled ***A Study of Active Shooter Incidents in the United States Between 2000 and 2013***.

According to a news release dated 09/24/14 on www.fbi.gov the unclassified study provides an in-depth analysis of 160 active shooter incidents that occurred between 2000 and 2013 throughout the United States. The primary purpose of the study is to provide the FBI's law enforcement partners—normally the first responders on the scene of these dangerous and fast-moving events—with data that will help them to better prepare for and respond to these incidents, saving more lives and keeping themselves safer in the process. The information in the study can benefit anyone who could potentially be in an active shooter situation.

Some of the characteristics of the 160 active shooter incidents are:

- 160 incidents occurred between 2000 and 2013
- An average of 11.4 incidents occurred annually; with an increasing trend from 2000 to 2013
- 1,043 Casualties, including killed and wounded (shooters were not included in this total)
- 486 were killed in 160 incidents
- 557 were wounded in 160 incidents

Findings (of the Study found on Page 6)

In this study, the FBI identified 160 active shooter incidents, noting they occurred in small and large towns, in urban and rural areas, and in 40 of 50 states and the District of Columbia.

Though incidents occurred primarily in commerce and educational environments (70.0%), they also occurred on city streets, on military and other government properties, and in private residences, health care facilities, and houses of worship. The shooters victimized young and old, male and female, family members, and people of all races, cultures, and religions.

The findings establish an increasing frequency of incidents annually. During the first 7 years included in the study, an average of 6.4 incidents occurred annually. In the last 7 years of the study, that average increased to 16.4 incidents annually. This trend reinforces the need to remain vigilant regarding prevention efforts and for law enforcement to aggressively train to better respond to—and help communities recover from—active shooter incidents.

The findings also reflect the damage that can occur in a matter of minutes. In 64 incidents where the duration of the incident could be ascertained, 44 (69.0%) of 64 incidents ended in 5 minutes or less, with 23 ending in 2 minutes or less. Even when law enforcement was present or able to respond within minutes, civilians often had to make life and death decisions, and, therefore, should be engaged in training and discussions on decisions they may face.[17] END

Active Shooter Information

Source: Alabama Fusion Center

DISCLAIMER: An individual must use his/her own discretion during an active shooter event as to whether he/she chooses to run to safety or remain in place. However, best practices for surviving an active shooter event are listed below.
REMEMBER: Law Enforcement's first priority is to confront and disable the threat.

DEVELOP A SURVIVAL MINDSET

- **Awareness and Preparation:** Take time to understand your surroundings and environment before an emergency occurs.
  Ask yourself, "What if?" questions and develop a plan.

IN AN ACTIVE SHOOTER EMERGENCY

Make a decision, trusting your instincts, to take action to protect yourself to survive the situation. You generally will have three options:

- **Run:** Can you safely escape?
- **Hide:** Is there a good place to hide?
- **Fight:** Will you take out the shooter?

RUN FOR SAFETY

- If you can and you deem it safe, get out and get to a safe place.
- You will have to rely partially on instinct.
- Leave belongings behind, but take your cell phone if it is handy.

HIDING IN A SAFE PLACE

- Find a hidden location.
- Find protection behind furniture if possible.
- Find a room that locks if you can.
- If possible, close and lock the outside door to the room. Blockade the door with furniture or other heavy objects.
- Close the blinds, turn off the lights, remain quiet, silence cell phones, spread out away from other individuals, and move behind available cover.
  Stay on the floor, away from doors or windows, and do not peek out to see what may be happening.
- Make a plan with others in the room about what you will do if the shooter enters. Make a total commitment to action and act as a team with others.
- Do whatever is necessary to survive the situation.
- If possible and safe to do so, report the location of the assailant.

IF OUTSIDE WHEN A SHOOTING OCCURS

- Drop to the ground immediately, face down as flat as possible. If within 15-20 feet of a safe place or cover, duck and run to it.
- Move or crawl away from gunfire, trying to utilize any obstructions between you and the gunfire. Remember that many objects of cover may conceal you from sight, but may not be bulletproof.
- When you reach a place of relative safety, stay down and do not move. Do not peek or raise your head in an effort to see what may be happening.
- Wait and listen for directions from Public Safety and/law enforcement personnel.

IF SUSPECT IS IN CLOSE PROXIMITY

- An individual must use his/her own discretion about when he or she must engage a shooter for survival.
- Make a plan as to how you will survive the situation.
- Make a total commitment to action and act as a team with others if possible.
- Do whatever is necessary to survive the situation.

HELP OUT

- Warn others.
- Help others escape.
- Keep others away from the danger area.
- Help the injured.
- Help others stay calm.

CALLING FOR HELP

- Call 9-1-1 to report the appropriate authorities. Do not assume that someone else has reported the incident. Be persistent; phones may be jammed.
- Calmly identify yourself and your exact location. Remain calm and answer the dispatcher's questions. The dispatcher is trained to obtain the necessary and required information for an appropriate emergency response.

- If safe to do so, stop and take time to get a good description of the criminal. Note height, weight, sex, race, approximate age, clothing, method and direction of travel, and his/her name, if known.
  If the suspect is entering a vehicle, note the license plate number, make and model, color, and outstanding characteristics. All of this takes only a few seconds and is of the utmost help to the responding officers.

WHEN LAW ENFORCEMENT ARRIVES

- When law enforcement reaches you, do not run at them or make sudden movements.
- ***The priority of the first responders will be to identify the shooter.*** Law enforcement will need to ensure that you are not the shooter.
- Do not scream, yell, point, or wave your arms.
- Do not hold anything in your hands that could be mistaken for a weapon (including cell phones).
- Be quiet and compliant.
- Show the officers your empty hands and follow their instructions.
- Give the number of shooters.
- Give the location and physical description of the shooter.
- Give the number and types of weapons.
- When it is safe to do so, you will be given instructions as to how to safely exit your location.

**Credit to Pepperdine University*

Chemical Attack

Chemical weapons attacks involve the use of poisonous materials, usually toxic gases. This is a potentially dangerous type of weapon, but is difficult to use effectively. Poison gas tends to disperse quickly and unpredictably, which reduces casualties even when used on an unsuspecting target. Chemical weapons attacks are very similar in effect to the accidental release of hazardous materials.

As with explosives, there are many possible types of chemical weapons. Military gases such as nerve gases can be deadly, but are difficult to acquire or manufacture. Commercial gases such as chlorine and hydrogen cyanide are produced in massive quantities and easier to find, but they are less effective. One possible terrorist tactic is to attack chemical storage facilities in order to harm the surrounding communities. Chemical attacks have been rare in practice. Despite their theoretical effectiveness, few terrorists or criminals have attempted to use chemical weapons and most of their attacks have failed.

Case: Tokyo Sarin Attack (1995)

On March 20, 1995, Japanese domestic terrorists launched a poison gas attack on the Tokyo subway system. The perpetrators were members of Aum Shinrikyo, a religious cult with extensive financial and scientific resources. The terrorists manufactured their own supply of the military

nerve gas Sarin. This attack demonstrates that while it is difficult to create mass casualties with terrorist chemical weapons, it is comparatively easy to cause mass panic.

Although the nerve gases used in Tokyo were highly lethal, and the attackers intended to cause many casualties, the terrorists had difficulty in spreading the gas effectively. Twelve people died in the attack, approximately fifty were severely injured, and more than a thousand suffered more limited health effects. The attacks did cause considerable alarm, and medical facilities were overwhelmed by uninjured but frightened citizens. One lesson learned from this attack was the importance of preparing first responders and emergency room personnel to deal with chemically contaminated victims. Suggested case for readers' additional study: Afghan girls' school attacks (an example of non-fatal uses of toxic gas, recent attacks, and schools as targets).

Biological Terrorism

Source: U.S. Center for Disease Control

What is Bioterrorism?

A bioterrorism attack is the deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people, animals, or plants. These agents are typically found in nature, but it is possible that they could be changed to increase their ability to cause disease, make them resistant to current medicines, or to increase their ability to be spread into the environment. Biological agents can be spread through the air, through water, or in food. Terrorists may use biological agents because they can be extremely difficult to detect and do not cause illness for several hours to several days. Some bioterrorism agents, like the smallpox virus, can be spread from person to person and some, like anthrax, cannot.

Bioterrorism Agent Categories

Bioterrorism agents can be separated into three categories, depending on how easily they can be spread and the severity of illness or death they cause. Category A agents are considered the highest risk and Category C agents are those that are considered emerging threats for disease.

Category A

These high-priority agents include organisms or toxins that pose the highest risk to the public and national security because:

- They can be easily spread or transmitted from person to person
- They result in high death rates and have the potential for major public health impact
- They might cause public panic and social disruption
- They require special action for public health preparedness.

Category B

These agents are the second highest priority because:

- They are moderately easy to spread
- They result in moderate illness rates and low death rates
- They require specific enhancements of CDC's laboratory capacity and enhanced disease monitoring.

Category C

These third highest priority agents include emerging pathogens that could be engineered for mass spread in the future because:

- They are easily available
- They are easily produced and spread
- They have potential for high morbidity and mortality rates and major health impact.

Biological weapons use disease organisms to cause illness and death. This type of attack is sometimes referred to as "germ warfare." Some biological weapon organisms, such as anthrax, will sicken victims that come in contact with weapon materials, but the victims cannot easily spread their disease to others. This type of attack resembles the use of a chemical weapon. Other germ warfare organisms, such as smallpox and plague, can pass from one victim to another, allowing an initially small attack to eventually infect a large number of victims.

Biological weapons may be attractive to terrorists and criminals because some varieties are relatively easy to produce. A widespread disease outbreak could potentially sicken many people and cause widespread panic. In addition, biological terrorism can be targeted against crops or livestock if the attacker wishes to causes significant economic damage instead of human casualties.

Biological weapons also possess drawbacks for potential attackers. The effects are hard to control and a disease released against a terrorist's enemies might very well spread to infect the attacker's friends and allies. Another problem is that the most deadly germ warfare agents, such as smallpox and breathable anthrax, are quite difficult to manufacture. In addition, standard infectious disease control techniques, such as patient isolation, antiseptics, hand washing, and antibiotics, can be very effective countermeasures against biological attacks, just as they are against natural disease outbreaks.

One major consideration for potential biological attacks is that germ warfare is often not recognized as an attack. Victims often do not show symptoms for several days and unlike a bomb explosion or mass-shooting, biological attacks are often mistaken for naturally occurring diseases. This may be an advantage for certain criminals who want their attacks to go unrecognized, but may be a major drawback for a terrorist who wants to use a biological attack to achieve political goals.

Case: Rajneeshee Salmonella Attack (1984)

During September and October 1984, followers of the fringe religious leader Bhagwan Shree Rajneesh deliberately attacked residents of The Dalles, Oregon, with the salmonella organism. Salmonella was spread by means of contaminated glasses of water and by spraying the organism on restaurant salad bars. A total of 751 people were sickened and 45 were hospitalized. None of the victims died. The attack was an attempt to reduce voter turnout in a local election, allowing the Rajneeshee religious community to gain control of the Wasco County Circuit Court. The perpetrators did not intend for their attack to be recognized. They hoped that it would be mistaken for an accidental outbreak of food poisoning. Only after the group was investigated for other

crimes was the outbreak recognized as a deliberate biological attack. This attack is a creative example of the criminal use of biological agents. It demonstrates the difficulty in identifying a biological event as a deliberate attack.

Case: Amerithrax Anthrax Attack (2001)

In October 2001, several letters contaminated with anthrax were mailed to locations in Florida, New York, and Washington, DC. The intended targets were politicians and members of the media, but most of the victims were accidentally exposed. Twenty-two victims suffered a confirmed anthrax infection and five died. Several structures, including government office buildings and postal facilities, were contaminated by anthrax and required expensive decontamination before they could be reoccupied. Fortunately, anthrax does not spread easily from person to person and the disease outbreak was quickly contained. The content of the contaminated letters had initially suggested that Islamic terrorists were responsible for the attack. Following shortly after the 9/11 terrorist disaster, the Amerithrax attack was the subject of considerable media coverage and caused great national concern. Public fear was heightened by a large number of "copycat" incidents which followed over the next several months, though fortunately all of these proved to be mere hoaxes. Eventually federal investigations determined that the attack was conducted by a domestic criminal posing as a foreign terrorist. In 2008, a U.S. government anthrax researcher was identified as the likely source of the attacks. An indictment was sought by the United States Attorney's Office, but the suspect committed suicide before his arrest. The likely motive was personal and professional gain, as the attacks increased funding for the researcher's anthrax vaccine project. This incident is an example of a criminal use of biological weapons. It demonstrates that it can sometimes be difficult to determine whether an attack is criminal or terrorist in nature. It also shows that attackers are not all foreigners or members of the radical political fringe; in this case the criminal was a highly trusted government employee.

Radiological Dispersive Device (RDD)/Nuclear Attack:

Radiological weapons, sometimes called Radiological Dispersal Devices (RDDs) or "dirty bombs," are weapons designed to spread hazardous radiological materials. These devices do not create a nuclear explosion. The most standard design for a radiological bomb surrounds conventional explosives, such as dynamite or gunpowder, with radioactive materials in the form of powder or scraps of metal. Such a bomb would do the same damage as a normal (non-radiological) explosive and in addition would spread radioactive materials around the area near the explosion. No radiological weapon has even been used in an actual attack. However, based on U.S. government tests of dirty bomb designs, the health effects of this type of weapon would likely be quite limited. It is difficult to create enough contamination to make victims seriously ill and even more difficult to cause deaths through radiation. It is likely that more people would be killed by the normal explosives in a dirty bomb than would be seriously hurt by the effects of radiation. However, cleaning up an area once it has been contaminated by radioactive materials would be extremely difficult and expensive. In addition, radioactive threats tend to cause a great deal of fear in the general public. This makes radiological weapons potentially very useful for terrorists: they create little actual destruction, but considerable terror and disruption.

Radiological weapons are considered a serious threat because the components for a dirty bomb have legitimate civilian uses and can easily be stolen by terrorists or criminals. Hospitals, food processing plants, and research centers all possess radioactive materials that would be of use in making a weapon. There is a proven black market in radioactive materials, particularly involving sources stolen from Eastern European countries. Plans for radiological weapons have been discovered in the hands of several potential terrorists, including U.S. domestic terrorists.

Case: Goiânia accident (1987)

No actual radiological weapon has ever been used in a criminal or terrorist attack. However, one radiological hazardous material incident demonstrates the possible health effects of a major successful attack. On September 13, 1987, medical equipment was stolen from an abandoned hospital in Goiânia, Brazil. The thieves were seeking metal for salvage and were unaware that they had taken a powerful radioactive source. The protective casing for the equipment's caesium chloride source was cracked open with a hammer and the deadly material dispersed through homes and businesses. The victims, some of whom were children, and none of whom were aware of the danger, handled the radioactive caesium and in some cases painted it on their bodies or ate it. The danger was not recognized for more than two weeks, when doctors identified the radioactive material. When the incident was made public, local medical facilities were then overwhelmed by approximately 130,000 persons seeking medical care. Eventually, 249 victims were found to be contaminated, four of whom died. Extensive clean-up work required widespread radioactive monitoring, demolition of a number of buildings, excavation of contaminated soil, and disposal of large amounts of radioactive waste. The Goiânia accident represents nearly a worst case example of radioactive contamination. The material involved was especially dangerous and the danger was undetected for several weeks. Victims had ongoing close contact with the radioactive material, including ingestion. A dirty bomb attack would likely be detected immediately, and a much timelier and more effective response conducted. Despite the seriousness of this incident, there were only four deaths, although cleanup was difficult and expensive. Public fear of radiation led to large numbers of unexposed but concerned persons demanding medical treatment.

Source: Michigan's 2012 Threat and Hazard Identification and Risk Assessment

NUCLEAR ATTACK

A hostile action taken against the United States which involves nuclear weapons and results in destruction of property and/or loss of life

Nuclear weapons are potentially the deadliest terrorist tools. Unlike the radiological "dirty bombs" described above, nuclear weapons create very large explosions capable of creating widespread damage and many casualties over a large area. The great destructive potential of these devices make them very desirable for terrorist groups that wish to cause massive and indiscriminate casualties. Fortunately, nuclear weapons are difficult to build, especially because they require the use of rare and carefully guarded materials. Although several terrorist groups have actively sought to acquire nuclear weapons, no terrorist organization is known to have succeeded in doing so.

The importance of the terrorist nuclear threat is not that such an attack is likely, but that it is possible, and that the damage caused by such an attack would be immense. Nuclear weapons cause damage by releasing enormous amounts of heat, by creating powerful explosive shock waves, by releasing damaging radiation, by disrupting electronic devices, and in some cases, by creating radioactive dust, called fallout, that drifts downwind from nuclear explosions.

Nuclear weapons vary greatly in their power and effects: the weapons most likely to be used by terrorists are very dangerous, but are still far less powerful than the strategic nuclear weapons possessed by nations such as the United States, Russia, and China.

Case: Bombings of Hiroshima and Nagasaki (1945)

Although the nuclear attacks against Japan at the end of World War II were military strikes rather than terrorism or criminal activity, these cases are included because these are the only examples of nuclear weapons used against populated areas. The attacks, each using one nuclear bomb, destroyed the centers of the cities of Hiroshima and Nagasaki, though not their outskirts. At Hiroshima, 4.7 square miles of the city were destroyed and approximately 100,000 residents were killed. At Nagasaki, 1.8 square miles were destroyed and approximately 60,000 died. In both cases, the greatest cause of damage and destruction was intense heat and fire. The weapons used against the cities of Hiroshima and Nagasaki were weak by modern military standards, but were approximately the strength of the most likely types of terrorist nuclear weapons. These attacks provide a very rough guide as to the damage and casualties to be expected from a terrorist nuclear attack against a medium-sized city.

Case: Byron Center Meat Tampering (2003)

In January 2003, a disgruntled employee intentionally contaminated 250 pounds of ground beef sold at a local supermarket in Byron Center (Kent County), Michigan. The meat was poisoned with insecticide containing harmful amounts of nicotine. The attacker was seeking revenge on his supervisor, whom he hoped would be blamed for the illnesses. Although the ground beef contained potentially lethal doses of toxin, there were no fatalities resulting from the attack. Investigation did identify 92 individuals sickened by the poison. The attacker was convicted and sentenced to seven years in prison. This incident demonstrates the willingness of some saboteurs to endanger the lives of numerous bystanders in pursuit of their goals. In this case, the attacker had no specific interest in harming the poisoning victims, except to use them to embarrass a personal enemy.

Case: Pontiac School Bus Bombings (1971)

On August 30, 1971, ten Pontiac school buses were bombed and destroyed in response to a controversial, court-ordered busing plan to integrate Pontiac schools. Authorities believe that several individuals slipped through a hole cut in the wire fence that surrounded the Pontiac bus depot, and placed dynamite under the buses. The explosion and fire destroyed the buses and focused national attention on Pontiac and the school busing issue. Subsequent attempts to overturn the Pontiac busing plan failed, and eventually 70 other school districts across the country were ordered to implement similar busing plans to achieve racial integration in schools. The Pontiac bombers, later apprehended and convicted of the attack, were identified as members of the Ku Klux Klan. Suggested case for readers' further study: Tylenol cyanide poisonings (an

example of a major impact on industry, and an unknown perpetrator with an undetermined motive).

Hazard Description

Nuclear weapons are explosive devices that manipulate atoms to release enormous amounts of energy. Compared to normal chemical explosives such as TNT or gunpowder, nuclear weapons are far more powerful and create harmful effects not seen with conventional bombs. A single nuclear weapon is able to devastate an area several miles across and inflict thousands of casualties. Although nuclear attack is an unlikely threat, the severe damage that would be caused by even one weapon requires the danger to be taken seriously.

The threat of nuclear attack has primarily been associated with the Cold War between the United States and the Soviet Union in the last half of the 20th Century. Although the Cold War is over, there remains a threat of nuclear attack. More nations have developed nuclear weapons and there is also the possibility that terrorists could use a nuclear weapon against the United States.

Understanding Nuclear Weapons

The following information about nuclear weapons is important for understanding the threat of nuclear attack: (1) types of nuclear weapons, (2) measures of weapon power, (3) forms of attack, and (4) types of delivery systems.

Nuclear weapons have been built in a wide variety of types for several different purposes. The first weapons relied on nuclear **fission**, or the splitting of heavy atoms to release energy and create an explosion. Later, new weapons were invented that used a combination of fission and **fusion**, which involves the creation of heavier atoms from lighter ones. Fusion bombs are also referred to as **hydrogen bombs** or **H-bombs**. For emergency planning purposes, the important differences are that (1) fusion bombs are more difficult to build and (2) that they can be much more powerful. Otherwise, all types of nuclear weapons create the same types of effects.

The power of nuclear weapons is measured by comparing the energy released by the weapon to the energy released by large amounts of conventional high explosive. The strengths of smaller weapons are measured in **kilotons** (or thousands of tons) of TNT explosive. A twenty-kiloton bomb produces as much energy as twenty thousand tons of TNT exploded all at once. The strength of larger weapons is measured in **megatons**, or millions of tons of TNT. A two-megaton bomb produces as much energy as two million tons of high explosive.

Smaller nuclear weapons are generally designed to be used against military targets on the battlefield. These are called **tactical** nuclear weapons. Larger devices designed to attack cities, infrastructure, and military bases are called **strategic** nuclear weapons.

Bombs can be set off at varying heights above the target. If the bomb is set off high in the air, its effects are spread out over a wider area and generally more damage is done. This is called an **air burst**. A bomb that is set off at or near the Earth's surface level wastes much of its energy against the ground. This is called a **ground burst**. Ground bursts have some specific military

uses and terrorists may use ground bursts because they are unable to lift their weapons high enough to create an air burst.

Like any weapon, a nuclear device must be carried to its target by a **delivery system**. The first nuclear weapons were bombs dropped out of aircraft. Later, tactical weapons were made small enough to fire out of cannons or carry in large backpacks. **Intercontinental ballistic missiles** (**ICBMs**) are rockets that can carry one or more nuclear weapons across thousands of miles in less than an hour. Terrorists may lack sophisticated missiles, but they could create effective delivery systems by transporting a nuclear weapon in the back of a truck, aboard a cargo plane, or within a shipping container.

Effects of Nuclear Weapons

The effects of nuclear weapons are more complicated than those of conventional explosives. Nuclear devices cause damage through six major effects: (1) thermal pulse, (2) blast, (3) prompt radiation, (4) electromagnetic effects, (5) mass fire, and (6) residual radiation.

THERMAL PULSE is an intense flash of light and heat released within the first few seconds of a nuclear explosion. The damage from thermal pulse is almost instantaneous and covers a wide area. People and animals exposed to the pulse can be badly burned. Flammable objects such as buildings, vehicles, and trees may be set on fire. The flash is strongest close to the bomb and becomes weaker with distance. Even people located far away from the explosion may still be blinded by the intense light of the pulse.

BLAST is a powerful wave of force that moves out from the center of the explosion through the air and the ground. The farther the blast travels, the weaker it becomes. Very close to the bomb, the blast will destroy even the most strongly built buildings and will kill everyone not hidden deep underground. Farther away, buildings may survive, but with severe damage, and people will be injured by being picked up and smashed against objects.

At still greater ranges, buildings will be less damaged and injuries will largely result from shattered glass and thrown debris. At all distances, a powerful wind follows the initial blast wave and adds to the destruction. The blast from a ground burst will dig a large crater into the ground, but this cratering will not occur with an air burst.

PROMPT RADIATION is the harmful blast of high energy radiation given off at the same time as the thermal pulse. Prompt radiation includes gamma rays and neutron radiation. This radiation is capable of killing or injuring living beings by damaging tissues and organs. Prompt radiation is quickly absorbed by the atmosphere and does not impact as wide an area as other nuclear weapons effects. In most instances, a person close enough to receive a harmful dose of prompt radiation is also close enough to be immediately killed by the explosion's thermal pulse or blast. However in unusual cases, some people who survive the immediate effects of the bomb may sicken or die days later, from radiation poisoning.

ELECTROMAGNETIC EFFECTS occur immediately after a nuclear explosion and may damage communications equipment, computers, and electronics. Radios, cell phones, and power lines are especially vulnerable. In most cases, the effects are limited to an area near to the explosion. Some equipment may recover after a period of time, while other devices will need to be replaced.

One special type of nuclear attack might cause more widespread electromagnetic effects: a very large nuclear weapon carried high into the atmosphere by a missile is capable of damaging communications and electronics over a very large area.

MASS FIRE results from the ignition of thousands of individual fires by a bomb's thermal pulse, combined with widespread destruction from its blast. Over a period of hours, small fires merge and feed on damaged buildings and debris. Controlling these fires would be very difficult, due to damaged water mains, destroyed fire-fighting equipment, and blocked roads. The result is an extremely intense fire that can spread quickly and reach very high temperatures. Mass fire may significantly expand the area devastated by a bomb, destroying areas that might otherwise be only lightly damaged by other types of effects.

RESIDUAL RADIATION is unlike prompt radiation in that it lasts well after the nuclear explosion has ended. The ground immediately underneath the center of the explosion will be dangerously radioactive for several days due to "induced radiation." There will also be some radioactive dust and debris that will drift downwind of the explosion. This radioactive dust is called "fallout." Fallout will be a minor problem in the case of an air burst explosion, but will be very intense in the case of a ground burst attack. Regardless of the type of attack, the danger from fallout will tend to be greatest close to the site of the attack. The cloud of fallout will weaken the longer it lasts and the farther it travels.

Note that the effects of a nuclear attack will depend on the size of the weapon. A larger bomb will cause damage over a wider area. The importance of different types of damage will also vary with the weapon. Large strategic nuclear weapons will create most of their damage though thermal pulse and mass fires, while with small tactical bombs the blast effect and prompt radiation will be relatively more important.

The Nuclear Attack Threat

Nuclear attack against the United States would originate either as a strike by an enemy military or as a terrorist attack. Fortunately, nuclear devices are very difficult to build and this limits the availability of the weapons. A nuclear weapon more closely resembles a precisely built scientific tool then a simple, rugged bomb. Careful engineering and extremely rare materials are needed to make a working nuclear weapon.

At the end of World War II only the United States possessed nuclear weapons, but over time more nations have developed the necessary technology. At least eight countries now possess nuclear devices, while several more have secret nuclear weapons programs and may therefore be building bombs. While some of these "nuclear powers" are allies of the United States, others remain potential enemies. While unlikely, it is possible that an international crisis in areas such as the Persian Gulf, the Taiwan Straits, or the Korean Peninsula could escalate into an exchange of nuclear weapons. American cities are not invulnerable to attack.

There also remains a risk from accidental, mistaken, or unauthorized launch of nuclear weapons. Even the most sophisticated technology may malfunction and even the best-trained personnel may make tragic mistakes. Once a missile has been launched there is no way call it back, and a nuclear warhead fired in error will do just as much damage as one launched in anger.

A strike by a nuclear power could consist of a single weapon or thousands, depending on the strength and intentions of the attacker. The most likely form of military attack would be the launch of intercontinental ballistic missiles fired from thousands of miles away. Although the United States now has a limited ability to shoot down incoming missiles, there are fewer than 30 interceptor missiles, of doubtful reliability. A very small attack or an accidental launch might possibly be stopped, but a larger attack would certainly strike the United States.

A nuclear power would have the ability to attack several locations at the same time. Multiple attacks across the United States would overwhelm national assets, forcing individual states or regions to rely on local resources. These attacks would probably be targeted on large cities and military bases and would use strategic nuclear weapons—each with a power of 100 kilotons or more. Cities would usually be attacked with air bursts, and military bases by the use of ground bursts.

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The following **four maps** illustrate the effects of a typical military nuclear missile warhead. This example shows the effects of a 750 kiloton air-burst detonation at an altitude of 8,000 feet on a clear day above a mid-sized American city. For the purpose of these map illustrations, the City of Tallassee City Hall, located at 3 Freeman Ave, was used as "ground zero." The rings in the illustrations show distances from the center of the nuclear explosion and the areas impacted.

<u>Outer Ring: Radius of 6.3 miles</u>
At this distance, the exposed skin of persons outdoors will suffer immediate 3rd degree burns (8 kcal/cm2). With medical services destroyed or overwhelmed, almost all severely burned victims will die. Within this ring, mass fires can be expected to develop within hours. Eventually, most of this area will be destroyed by fire.

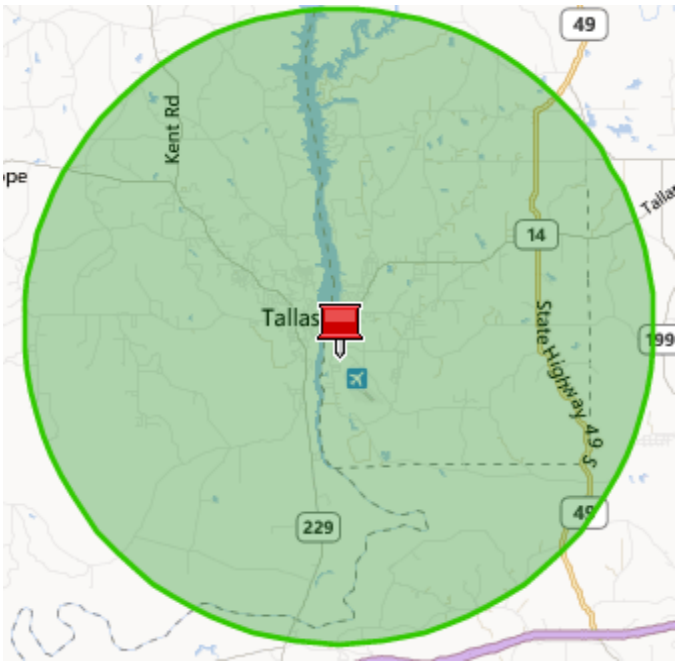


Figure 5.2.21-1 Map Source: *SWIFTREACH SWIFT911 Radial 6.3 miles*

<u>Second Ring: Radius of 3.3 miles</u>

At this distance, the blast wave will totally destroy light frame structures, such as most homes (5psi). Sturdier buildings will be severely damaged, with their interiors destroyed. Winds of 160mph would then follow the blast wave.

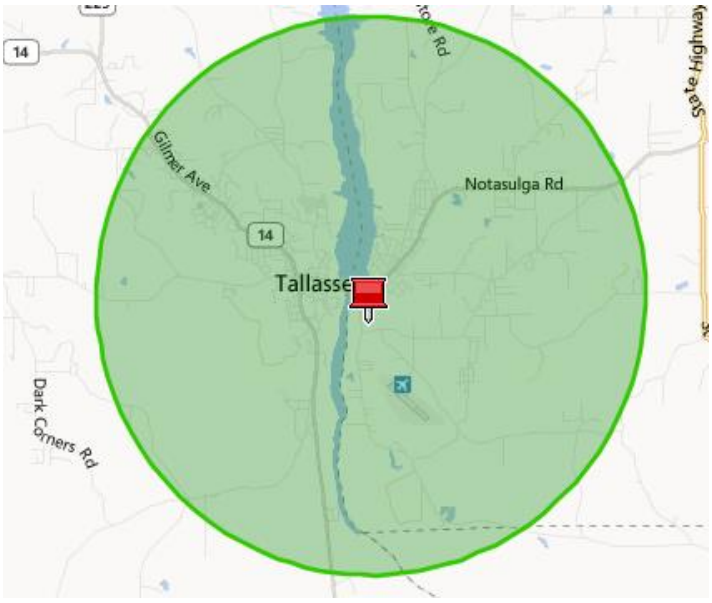


Figure 5.2.21-2 Map Source: *SWIFTREACH SWIFT911 Radial 3.3 miles*

Third Ring: Radius of 3.0 miles

At this distance, exposed persons will be affected by intense prompt radiation (5Gy). Between 50% and 80% of victims will eventually die from this exposure, unless first killed by blast or thermal effects.

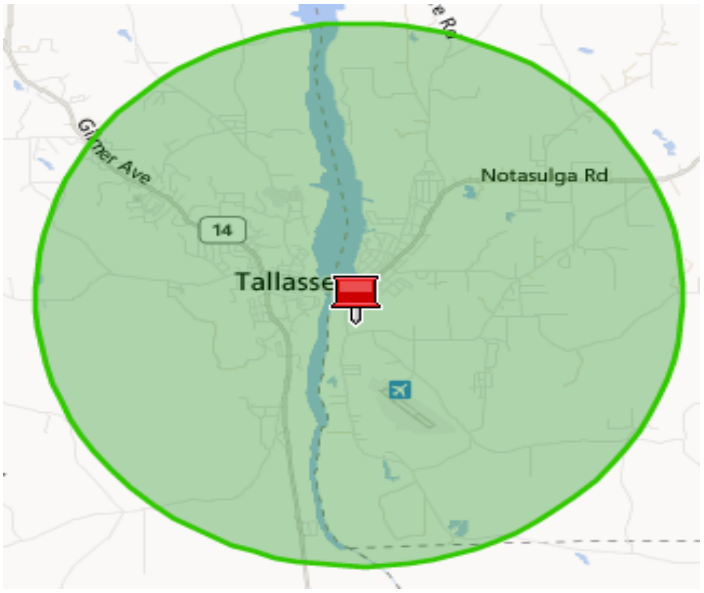
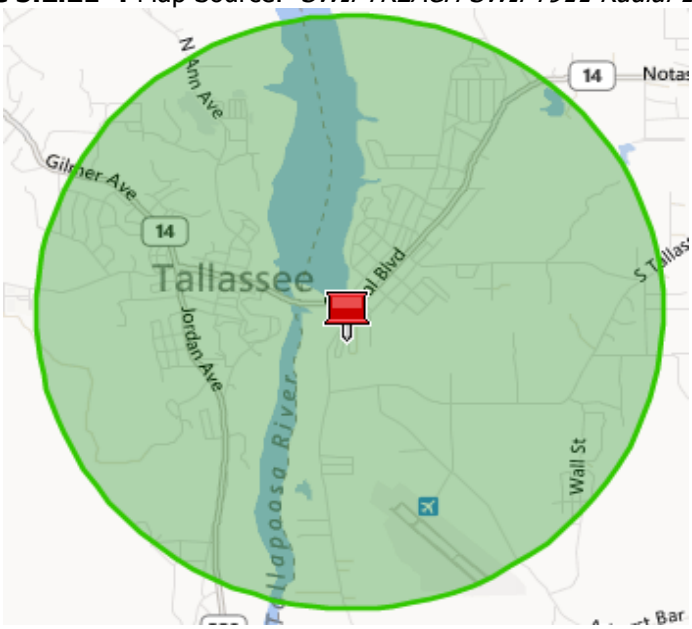


Figure 5.2.21-3 Map Source: *SWIFTREACH SWIFT911 Radial 3.0 miles*

Inner Ring: Radius of 1.6 miles

At this distance, the blast wave will totally destroy even reinforced concrete buildings (20psi). Winds of 230 mph will follow the blast wave. Essentially everyone within this ring will be killed immediately.

Figure 5.2.21-4 Map Source: *SWIFTREACH SWIFT911 Radial 1.6 miles*



Lighter damage will extend well beyond the area depicted in this map, mostly due to the effects of the thermal pulse.

Nuclear Terrorism

As far as is known, no terrorist organization has ever managed to gain access to nuclear weapons. However, the great destructive potential of these devices make them very desirable for terrorist groups that wish to cause massive and indiscriminate casualties. It is known that several terrorist groups have actively pursued nuclear weapons capability.

Terrorists could acquire nuclear weapons as gifts from friendly governments, by stealing them from military stockpiles, or by building a crude device on their own. Each of these approaches is considered unlikely, but not impossible. A determined and well-financed terrorist group such as Al Qaeda may eventually be able to acquire a working nuclear weapon.

A nuclear attack by a terrorist organization would likely involve only a single weapon. An attack by only a single weapon would still be a major disaster, but resources could gradually be sent from the entire United States to aid the devastated area.

Because powerful strategic bombs are more difficult to steal or build, it is likely that a terrorist device would be of the less powerful tactical type. A rough estimate for the strength of this kind of nuclear weapon would be 25 kilotons or less. Even such a 'small' device would be approximately as powerful as the bombs that destroyed the Japanese cites of Hiroshima and Nagasaki at the end of World War II.

A terrorist nuclear weapon would be unlikely to arrive aboard a missile. It is much more probable that the bomb would be smuggled to the target, hidden inside the back of a truck or within a cargo container. Even a bulky improvised nuclear weapon could easily be carried in this way. The bomb could be detonated from inside its hiding place, creating a nuclear ground burst. There is a lesser possibility that terrorists could use a cargo plane to deliver a nuclear weapon as an air burst.

The following maps illustrate the effects of a possible terrorist nuclear bomb. These examples show the effects of a 25 kiloton nuclear weapon detonated at ground level on a clear day in a mid-sized American city. For the purpose of these map illustrations, the City of Tallassee City Hall, located at 3 Freeman Ave, was used as "ground zero". The rings in the illustrations show distances from the center of the nuclear explosion.

Area intentionally left blank.

Outer Ring: Radius of 1.0

At this distance, exposed skin will suffer immediate 3rd degree burns (8 kcal/cm2). With medical services destroyed or overwhelmed, most severely burned victims will die. Within this ring, mass fires can be expected to develop within hours. Eventually, most of this area will be destroyed by fire.

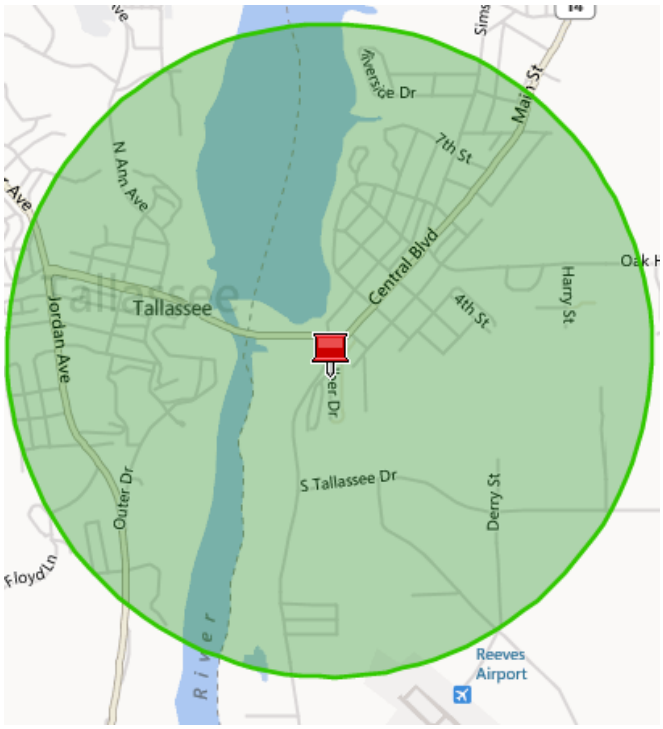


Figure 5.2.21-5 Map Source: *SWIFTREACH SWIFT911 Radial 1.0 miles*

Area intentionally left blank.

<u>Second Ring: Radius 0.9 miles</u>
At this distance, the blast wave will totally destroy light frame structures, including most homes (5psi). Sturdier buildings will be severely damaged, with their interiors destroyed. Winds of 160mph would then follow the blast wave.

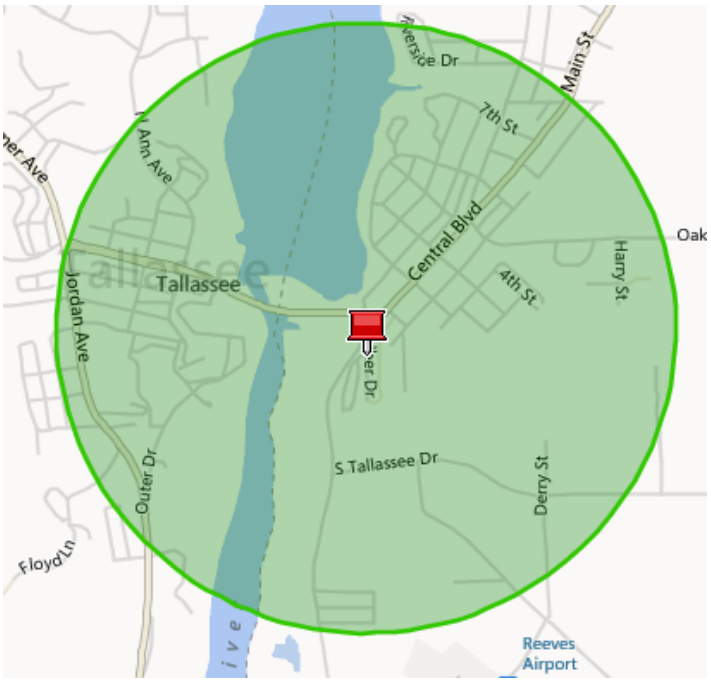


Figure 5.2.21-6 Map Source: *SWIFTREACH SWIFT911 Radial 0.9 miles*

Area intentionally left blank.

Third Ring: Radius of 0.8 miles

At this distance, exposed persons will be affected by intense prompt radiation (5Gy). Between 50% and 80% of victims will eventually die from this exposure, unless first killed by blast or thermal effects.

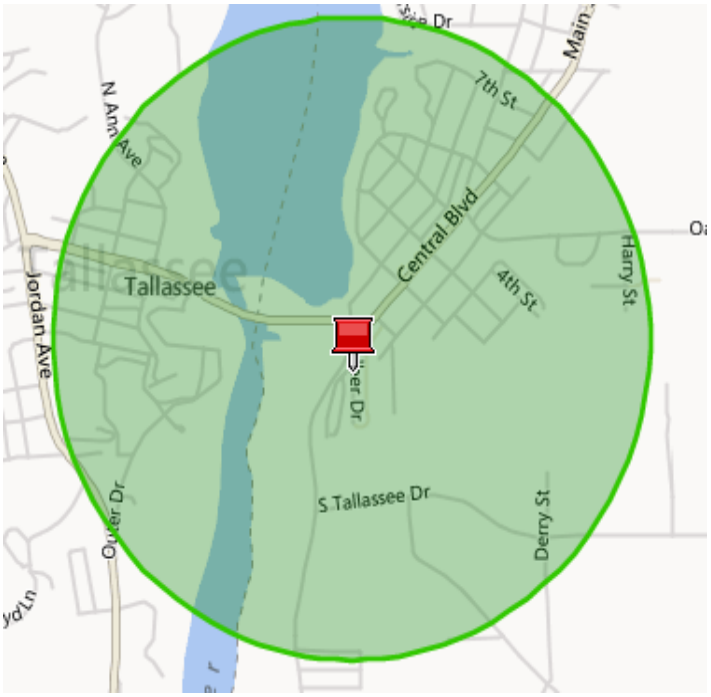


Figure 5.2.21-7 Map Source: *SWIFTREACH SWIFT911 Radial 0.8 miles*

Area intentionally left blank.

Inner Ring: Radius of 0.2 miles

At this distance, the blast wave will totally destroy even reinforced concrete buildings (20psi). Winds of 230 mph will follow the blast wave. Essentially everyone within this ring will be killed immediately.

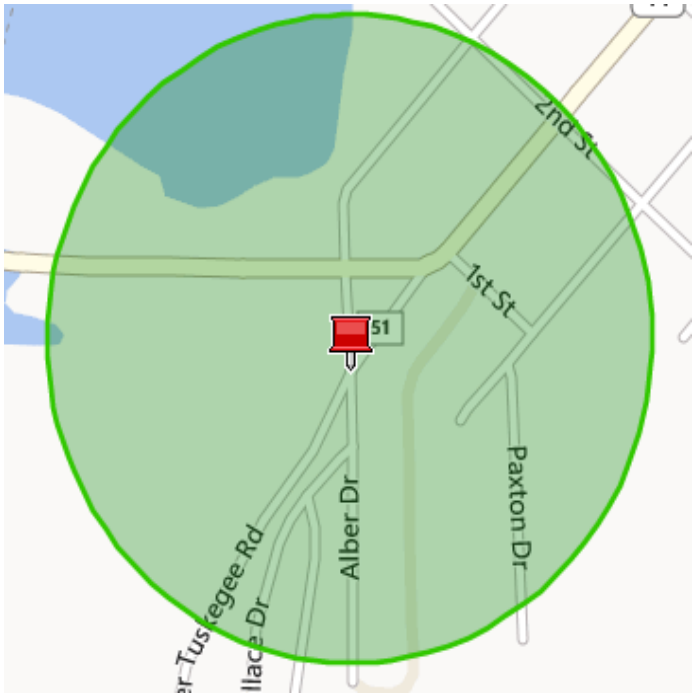


Figure 5.2.21-8 Map Source: *SWIFTREACH SWIFT911 Radial 0.2 miles*

Lighter damage will occur out to a distance of approximately two miles. This damage will be caused by a combination of blast and thermal pulse effects.

The arrows in the diagram represent the area covered by a moving cloud of radioactive fallout. This cloud will drift downwind from the site of the explosion, but the size and direction of the area affected by the fallout will depend considerably on wind and weather conditions. For example, in clear weather with winds blowing at 15 miles per hour, lethal levels of radiation will be encountered several miles downwind from the site of the explosion and harmful levels will occur for up to six miles downwind. Fatalities are expected in persons continuously exposed for four days in the contaminated area. People finding shelter or evacuated immediately will suffer substantially less harmful effects.

Note the significant differences between the two examples. The terrorist bomb directly impacts a much smaller area, but it creates a dangerous cloud of radioactive fallout. The lethal thermal pulse from the air burst missile explosion covers an area much greater than the area of heavy blast damage, while in the case of the terrorist bomb those two effects are more equal. In the case of the missile explosion, the area of effect for prompt radiation is much smaller than that for blast and thermal effects, but in the case of the terrorist bomb, lethal radiation extends almost as far as the other effects.

Global Consequences of Nuclear Attack

A final consideration for the nuclear attack hazard is the impact of a nuclear attack outside of Alabama's borders. An attack elsewhere in the United States or elsewhere in the world would have serious negative economic consequences. Such an attack would also result in a global call for emergency response resources, including those in Alabama. Finally, a large scale nuclear war involving many nuclear weapons could have damaging effects on climate worldwide. A nuclear attack would have serious consequences for Alabama, regardless of where that attack occurred.

Impacts of Nuclear Attack

Impact on the Public

A nuclear attack would cause catastrophic damage over a wide area. Attacks on populated areas would inflict massive loss of life, destruction of property, environmental damage, infrastructure failure, and public health impacts. In the case of a ground burst weapon, some areas would remain uninhabitable for an extended period of time. A nuclear war, even if occurring far from the United States, would have serious economic and environmental consequences, resulting in additional harm to the public. Although unlikely to occur, nuclear attack potentially poses a very great threat in terms of fatalities, property damage, and size of impact area.

Impact on Continuity of Operations

Substantial impact may likely cause relocation of government operations. Infrastructure may be affected due to location of incident. Delays/closures of certain government functions due to the event. Public confidence in local, state, and federal government following a nuclear attack is difficult to predict. It is likely that public reaction would depend on the perceived effectiveness of government response to the disaster. Given the extensive damage caused by nuclear weapons, and the limited available resources, it is very likely that government services would be overwhelmed. An especially serious problem would be insufficient medical resources for the treatment of injured victims. It is conceivable that the unmet needs of survivors could result in a significant loss of confidence in all levels of government. On the other hand, anger at the perpetrators of the attack and feeling of patriotic solidarity might increase popular support of government, at least in the short term.

Impact on Responders

A nuclear attack would pose extensive risks and challenges for responders. In any attack on a populated area, many responders would be immediately killed or injured in firehouses, police stations, hospitals, etc. affected by the explosion. Surviving responders would face serious and unfamiliar challenges, including widespread infrastructure failure, high levels of radiation, mass urban fires, and the disruption of command and communications systems. Responders would also face an unprecedented level of need from thousands of injured or dying citizens. In the short term, emergency resources would unavoidably fall far short of requirements. Help could only be provided to a limited percentage of the total number of victims. Extensive casualties would be expected among responders. In the long term, responders and emergency managers would face massive challenges in sheltering, evacuation, medical care, and public order.

Impact on the Environment

A nuclear attack would cause significant environmental damage. In addition to the immediate destruction from blast and thermal effects, continuing damage would be expected due to toxic smoke clouds from mass urban fires, hazardous materials released from damaged storage facilities, and waste from wrecked water treatment systems. Radioactive contamination would occur, with the extent depending on the specific details of the attack. At worst, large areas would be poisoned by fallout, and a crater at the site of an explosion could remain heavily contaminated for years. Use of numerous nuclear weapons might cause environmental damage on a regional or global scale, far beyond the effects created by a single weapon or small number of weapons. Such damage could occur during an extensive nuclear war. Specific effects would depend on the size and number of weapons used, as well as their specific targets. Global environmental impacts might include a drop in global temperature, reductions in food production, damage to the Earth's protective ozone layer, and an increase in background radiation levels.

Additional Nuclear Attack Guidance Information

During the Cold War, the nuclear attack hazard was not customarily analyzed at the local level. The large numbers of weapons available to the United States and Soviet Union threatened destruction on an enormous scale, and few plans could attempt to adequately address the hazard. Even communities not directly attacked would have been profoundly or fatally impacted by the effects of a superpower exchange.

Today, the threat of nuclear attack is very different, and local planning may again be appropriate for this hazard. The possibility of attack still exists, but the principal threat is the use of an individual nuclear weapon or a small number of weapons. Cold War planning scenarios may need to be updated to reflect the fact that the nature of the threat has changed. Not only are there far fewer nuclear weapons than in past decades, but the individual weapons are, for the most part, far less powerful.

When considering the hazard of nuclear attack by a foreign power, local vulnerabilities would be assessed in terms of proximity to possible high-priority targets. These might include military bases, large power plants, oil refineries, and major population centers. Targets identified in Cold War plans may no longer be relevant, as closed military bases and shut-down power plants are no longer likely targets. Since there is no way to accurately assess the probability of nuclear war, most mitigation strategies would be prompted by, and originate from, federal initiatives and defense priorities. The "risk" part of a local hazard analysis on this topic would therefore probably be missing, due to lack of information, but the "vulnerability" portion can still be assessed in terms of the presence of potential targets.

Also worthy of consideration is the possibility that one or more nuclear weapons might be used in an attack by a terrorist organization, especially in light of the ongoing threat posed by international terrorist groups. The section of this plan dealing with Terrorism and Similar Criminal Activities should be freely referred to, particularly in regards to potential terrorist targets. When planning for a terrorist nuclear attack, consider that the effects of a terrorist weapon are likely to be very different than those caused by a nuclear missile attack.

For any nuclear attack planning, the presence of fallout shelters, or makeshift substitute shelters, might be a key factor of analysis. When considering mitigation and response strategies, the ability to shelter or evacuate people would clearly be important. The ability to maintain government functions and social services would be similarly important. Protection of critical computer and communications systems from the effects of electromagnetic pulse would also be worth considering. The presence of redundancies (backup systems) in an area's infrastructure and critical services would be another means to assess local vulnerability to a nuclear attack.

Summary
Nuclear attack is an unlikely hazard, but even a single weapon could cause death and destruction on a massive scale. Nuclear weapons inflict damage over a wide area and through a variety of effects, including thermal pulse, blast, fire, and radiation. Despite the end of the Cold War, nuclear attack by foreign nations remains a real possibility, and this danger has been joined by the threat of terrorist nuclear attack. It makes sense to continue to prepare for the nuclear attack hazard as part of an overall emergency management strategy.

Sabotage is the destruction of property or the disruption of operations in an attempt to harm a business, government, or other entity. Attackers who use sabotage are called saboteurs. Sabotage often overlaps with, and can be difficult to distinguish from, other terrorist or criminal tactics. For example, explosives can be used to destroy vehicles or infrastructure, or chemical poisons can be used to contaminate food and medicine. The principal identifying characteristic of sabotage is that the attack is unusually not intended to harm large numbers of people, but rather to cause economic harm or embarrassment to the target. Where deaths or injuries do occur, they are usually incidental, rather than the purpose of the attack. Past sabotage tactics have included the toppling of electrical power pylons, the burning of vehicles, destruction of railroads and bridges, and contamination of food and medicine. Many single-issue terrorists, including ecological extremists and anti-abortion radicals, have used sabotage widely. These groups have usually preferred to destroy property rather than to kill people. Most other terrorists tend to avoid sabotage as they seek the media coverage that results from numerous casualties. Sabotage by non-terrorist criminals is difficult to characterize, as it ranges from planned campaigns by organized labor groups, to one-time extortion plots, to attacks by mentally disturbed individuals.

Source: *the*WhiteHouse.gov; The National Strategy for Counterterrorism, Excerpts

NATIONAL STRATEGY FOR COUNTERTERRORISM

June 2011

Building a Culture of Resilience (Page 8)

To pursue our CT [Counterterrorism] objectives, we must also create a culture of preparedness and resilience[2] that will allow the United States to prevent or—if necessary—respond to and recover successfully from any potential act of terror directed at our nation.

- Building Essential Components of Resilience. Al-Qa`ida believes that it can cause the United States to change course in its foreign and national security policies by inflicting

economic and psychological damage through terrorist attacks. Denying success to al-Qa'ida therefore means, in part, demonstrating that the United States has and will continue to construct effective defenses to protect our vital assets, whether they are critical infrastructure, iconic national landmarks, or—most importantly—our population. Presenting the United States as a "hardened" target is unlikely to cause al-Qa'ida and its affiliates and adherents to abandon terrorism, but it can deter them from attacking particular targets or persuade them that their efforts are unlikely to succeed. The United States also contributes to its collective resilience by demonstrating to al-Qa'ida that we have the individual, community, and economic strength to absorb, rebuild, and recover from any catastrophic event, whether manmade or naturally occurring.

2. Our principle of creating a culture of resilience is reflected in more detail in Presidential Policy Directive-8, released in May 2011.This PPD is aimed at strengthening the security and resilience of the United States through systematic preparation for the threats that pose the greatest risk to the security of the Nation, including acts of terrorism, cyber attacks, pandemics, and catastrophic natural disasters.

The Homeland (Page 11)

For the past decade, the preponderance of the United States' CT effort has been aimed at preventing the recurrence of an attack on the Homeland directed by al-Qa'ida. That includes disrupting plots as well as working to constrain al-Qa'ida's ability to plan and train for attacks by shrinking the size and security of its safehavens. Offensive efforts to protect the Homeland have been complemented by equally robust defensive efforts to prevent terrorists from entering the United States or from operating freely inside U.S. borders. To support the defensive side of this equation, we have made massive investments in our aviation, maritime, and border-security capabilities and information sharing to make the United States a hardened and increasingly difficult target for terrorists to penetrate.

These efforts must continue. We know al-Qa'ida and its affiliates continue to try to identify operatives overseas and develop new methods of attack that can evade U.S. defensive measures. At the same time, plots directed and planned from overseas are not the only sort of terrorist threat we face. Individuals inspired by but not directly connected to al-Qa'ida have engaged in terrorism in the U.S. Homeland. Others are likely to try to follow their example, and so we must remain vigilant.

We recognize that the operating environment in the Homeland is quite different from any other country or region. First, the United States exercises sovereign control and can apply the full strength of the U.S. legal system, drawing on the capabilities of U.S. law enforcement and homeland security communities to detect, disrupt, and defeat terrorist threats. Second, in the Homeland, the capabilities and resources of state, local, and tribal entities serve as a powerful force multiplier for the Federal government's CT efforts.

Integrating and harmonizing the efforts of Federal, state, local and tribal entities remains a challenge. As the threat continues to evolve, our efforts to protect against those threats must evolve as well.

The United States will rely extensively on a broad range of tools and capabilities that are essential to our ability to detect, disrupt, and defeat plots to attack the Homeland even though not all of these tools and capabilities have been developed exclusively for CT purposes. **Such tools include capabilities related to border protection and security; aviation security and screening; aerospace control; maritime/port security; cargo security; cyber security; nuclear, radiological, biological, and chemical materials and the ability to detect their illicit use; biometrics; critical infrastructure protection; force protection; all hazards preparedness; community engagement; and information sharing among law enforcement organizations at all levels.**

We are working to bring to bear many of these capabilities to build resilience within our communities here at home against al-Qa'ida inspired radicalization, recruitment, and mobilization to violence. Although increasing our engagement and partnership with communities can help protect them from the influence of al- Qa'ida and its affiliates and adherents, we must ensure that we remain engaged in the full range of community concerns and interests. Just as the terrorist threat we face in the United States is multifaceted and cannot be boiled down to a single group or community, so must our efforts to counter it not be reduced to a one-size-fits-all approach. Supporting community leaders and influential local stakeholders as they develop solutions tailored to their own particular circumstances is a critical part of our whole-of-government approach that contributes to our counterterrorism goals. As we refine our efforts in support of communities, state and local governments, and across the Federal government, we will continue to institutionalize successful practices and provide advice and guidance where appropriate, with the goal of preventing al-Qa'ida inspired radicalization.

Source: Country Reports on Terrorism 2013

Country Reports on Terrorism 2013
Executive Summary
April 2014

United States Department of State Publication
Bureau of Counterterrorism
Released April 2014

Definitions used in *Country Reports on Terrorism 2013*:
Section 2656f(d) of Title 22 of the United States Code defines certain key terms used in Section 2656f(a) as follows: (1) the term "international terrorism" means terrorism involving citizens or the territory of more than one country; (2) the term "terrorism" means premeditated, politically motivated violence perpetrated against non-combatant targets by subnational groups or clandestine agents; and (3) the term "terrorist group" means any group practicing, or which has significant subgroups which practice, international terrorism.

Key Terrorism Trends in 2013

--The terrorist threat continued to evolve rapidly in 2013, with an increasing number of groups around the world – including both AQ affiliates and other terrorist organizations – posing a threat to the United States, our allies, and our interests.

--As a result of both ongoing worldwide efforts against the organization and senior leadership losses, AQ core's leadership has been degraded, limiting its ability to conduct attacks and direct its followers. Subsequently, 2013 saw the rise of increasingly aggressive and autonomous AQ affiliates and like-minded groups in the Middle East and Africa who took advantage of the weak governance and instability in the region to broaden and deepen their operations.

--AQ leader Ayman al-Zawahiri experienced difficulty in maintaining influence throughout the AQ organization and was rebuffed in his attempts to mediate a dispute among AQ affiliates operating in Syria, with ISIL publicly dissociating its group from AQ. Guidance issued by Zawahiri in 2013 for AQ affiliates to avoid collateral damage was routinely disobeyed, notably in increasingly violent attacks by these affiliates against civilian populations.

--Syria continued to be a major battleground for terrorism on both sides of the conflict and remains a key area of longer-term concern. Thousands of foreign fighters traveled to Syria to join the fight against the Asad regime – with some joining violent extremist groups – while Iran, Hizballah, and other Shia militias provided a broad range of critical support to the regime. The Syrian conflict also empowered ISIL to expand its cross-border operations in Syria, and dramatically increase attacks against Iraqi civilians and government targets in 2013.
--Terrorist violence in 2013 was increasingly fueled by sectarian motives, marking a worrisome trend, particularly in Syria, but also in Lebanon and Pakistan.

--Terrorist groups engaged in a range of criminal activity to raise needed funds, with kidnapping for ransom remaining the most frequent and profitable source of illicit financing. Private donations from the Gulf also remained a major source of funding for Sunni terrorist groups, particularly for those operating in Syria.

--"Lone offender" violent extremists also continued to pose a serious threat, as illustrated by the April 15, 2013, attacks near the Boston Marathon finish line, which killed three and injured approximately 264 others.

--Many other terrorist groups not tied to AQ were responsible for attacks in 2013, including the People's Liberation Party/Front (DHKP/C), which carried out a number of high-profile attacks last year, including a February 1 suicide plot targeting the U.S. Embassy in Ankara, Turkey.

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Source: FoxNews.com

Al Qaeda calls for car bombs in US cities, other 'crusader' countries

Published March 19, 2014 FoxNews.com

REQUIRED COMPONENTS

- Cooking Gas Cylinders (6 or more)
- Oxygen Gas Cylinder (full)
- Barometer (suiting the Cooking Gas Cylinder)
- Connecting nut and pipe
- 6 Decoration lamps
- Match
- Epoxy
- Tissue
- Battery (12v or more)
- Wire

OSJ BOMB SCHOOL

CAR BOMBS INSIDE AMERICA

w/ AQ Chef

Inspire Magazine's goal is to empower Muslim youth. And what is empowerment without being strong, powerful and intelligent? In this section, we give you strength, power and intelligence. Believe me, using car bombs gives you all that.

It is absolutely simple. And we will make it simpler for you, *biidhnillāh*, so that every Muslim, who loves Allāh and His Messenger, and wants to accelerate Islam's victory, becomes prepare to make, even if this is the first military material his eyes has set on.

This recipe gives you the ability to make a car bomb even in countries with tight security and surveillance. The reason is: primary materials easily available and they do not raise suspicion. These materials are not explosives in nature. But after you have assemble and prepare them, they become a bomb ready for destruction, *biidhnillāh*.

The spring 2014 edition of Inspire magazine, seen above, urges jihadists to target specific U.S. locations using car bombs. Detailed instructions and simple diagrams on every step are provided.

Al Qaeda is calling on terrorist affiliates to detonate car bombs in major U.S. cities, including New York, Washington, D.C., and Los Angeles, in the latest edition of its Inspire magazine.

The issue comes nearly a year after the Boston Marathon bombing, and as the city readies new security measures for this year's race, being held next month. Inspire is the same magazine that included instructions for how to make pressure cooker bombs, which were used in last year's Boston attack.

The magazine's Spring 2014 issue urges jihadists to target heavily populated events such as political rallies and sporting events, both in the United States and abroad -- including in Great Britain, France and other "crusading" countries.

"Choosing the place and time is a crucial factor to success in any operation," the magazine reads. "Choose targets in your own country. You know the enemy better, you are within … The important thing is that you target people and not buildings."

Would-be bombers also are urged to consider launching attacks during "election seasons" and between Christmas and New Year's Eve. Specific targets are also cited, including Chicago's "Sears Tower" (now called the Willis Tower), military bases in northern Virginia and soccer stadiums in Great Britain, particularly during Premier League matches.

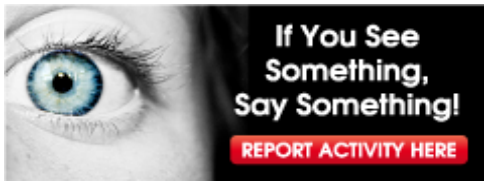
"Disguise yourself during the operation, appear fat (add some clothes on you), change your complexion, be a 'clone', use any mask (believe me embarrassment is the last thing you will think about), wear a mask suitable for the festival, white beards on 25th Dec," it reads. "All in all, be creative brother. The most important part to hide is your eyes and around."

This issue also contains extremely detailed, "absolutely simple" instructions on how to build such a bomb.

"My Muslim brother, before you start reading the instructions, remember that this type of operation, if prepared well and an appropriate target is chosen, and Allah decrees success for you, history will never forget it," the magazine reads. "It will be recorded as a crushing defeat on the enemies of Islam."

Source: Alabama Fusion Center

Public Awareness



See Something, Say Something

Figure 5.2.21-9

Alabama citizens should provide criminal or terrorist related tips to their local law enforcement agencies. These tips will be investigated locally and then reported by law enforcement to the Alabama Fusion Center. If you prefer, you may submit a tip directly to the Fusion Center.

Most people will not run into terrorists or extremists in their daily routine but some have and will. Even if the unusual turns out to be criminal conduct, it probably is not terrorist related, but once again, it could be. Law enforcement needs citizens to report suspicious activity even if it ultimately turns out to be innocent or normal criminal activity. Without leads, there are no investigations and only Investigations lead to convictions.

The indicators listed below are not fool-proof. There is no checklist that will tell you when you have reached the level of suspicious activity. However, if you encounter an increasing number of indicators, commonsense would tell you that increased attention should be paid and more thought should be given to reporting your observations. The possibility that you may run across these indicators will depend on your alertness as well as where you work, live, commute, what you do, etc.

1. Unusual requests for information may be an attempt to gather information prior to an attack. Inquiries about security & safety procedures, habits of key personnel, personal information, and in-depth information on operating systems, mail handling procedures, communications, facility structures, etc. These inquiries could be verbal, mail, FAX, or other electronic forms.

2. Unusual interest in high risk or symbolic targets. Specifically if that interest is more oriented towards security procedures, access points, and structural layout rather than the more tourist type views. Surveillance, photographs, videos, taking notes, drawing diagrams, annotating on maps or mapping out locations, using binoculars, night vision, listening devices, and requests for information should cause a heightened sense of concern.

3. Unusual activities. This could be people acting furtively and suspiciously. Avoiding eye contact or departing quickly when seen. Someone who appears to be concealing something, attempts to gain access or are someplace they don't belong. People in places where there isn't a reasonable explanation why they are there or doing some activity that doesn't fit the area. Pouring 50 gallon drums into a lake, unloading multiple propane bottles into a garage, inappropriate use of cameras, videos, night vision scopes, carrying or wearing unusual items for the setting, location or season such as bulky clothes when it is hot. It could be the presence of military type weapons, equipment, or uniforms that are obviously not part of military or police activity. Explosions or automatic weapons fire, particularly in rural areas, may indicate practice runs, testing, or training.

4. Unusually strong smells, particularly ammonia, fuel oil, or propane, near buildings or vehicles may indicated bomb making. Leaks from storage areas on vehicles, especially when obviously not engine or gas tank related.

5. Other suspicious events or activities such as unexplained false burglar or fire alarms, prank calls for bomb threats etc., may indicate someone testing security or emergency response. Fake license plates, inflammatory bumper stickers, posted notices, literature; mailed, handed out, or placed in mailboxes or on cars can all be indicators of activity in your area. Someone asking you to watch, hold, transport, or deliver luggage and packages for them.

Source: Alabama Fusion Center

7 Signs of Terrorism

1. **Surveillance:** Recording or monitoring activities. May include drawing diagrams, note taking, use of cameras, binoculars or other vision-enhancing devices or possessing floor plans or blueprints of key facilities.

2. **Elicitation:** Attempts to obtain operation, security and personnel-related information regarding a key facility. May be made by mail, fax, e-mail, telephone or in person.

3. **Tests of Security:** Attempts to measure reaction times to security breaches or to penetrate physical security barriers or procedures in order to assess strengths and weaknesses.

4. **Acquiring Supplies:** Attempts to improperly acquire items that could be used in a terrorist act. May include the acquisition of explosives, weapons, harmful chemicals, flight manuals, law enforcement or military equipment, uniforms, identification badges or the equipment to manufacture false identification.

5. **Suspicious Persons:** Someone who does not appear to belong in a workplace, neighborhood or business establishment due to their behavior, including unusual questions or statements they make.

6. **Dry Runs/Trial Runs:** Behavior that appears to be preparation for a terrorist act without actually committing the act. Activity could include mapping out routes and determining the timing of traffic lights and flow.

7. **Deploying Assets:** Placing people, equipment and supplies into position to commit the act. This is the last opportunity to alert authorities before the terrorist act occurs.

Aircraft as Weapons

See: 5.2.18. Transportation System Failures for general/localized aviation information
Source: Wikipedia
Note: Research conducted during the Plan's update yielded limited information to support this topic.

Criminal acts and military action
Aircrew are normally trained to handle hijack situations. Since the September 11, 2001 attacks, stricter airport and airline security measures are in place to prevent terrorism.

Deliberate aircrew action
Although most aircrews are screened for psychological fitness, some may take suicidal actions. In the case of EygptAir Flight 990, it appears that the first officer deliberately dived his aircraft into the Atlantic Ocean while the captain was away from his station, in 1999 off Nantucket, Massachusetts. Motivations are unclear, but recorded inputs from the black boxes showed no

mechanical problem, no other aircraft in the area, and was corroborated by the cockpit voice recorder.

1n 1982, Japan Airlines Flight 350 crashed while on approach to the Tokyo Haneda Airport, killing 24 of the 174 on board. The official investigation found the mentally ill captain had attempted suicide by placing the inboard engines into reverse thrust, while the plane was close to the runway. The first officer did not have enough time to countermand his hactions, before the planed stalled and crashed.

In 1997, SilkAir Flight 185 suddenly went in to a high dive from its cruising altitude. The speed of the dive was so high that the plane began to break apart before it finally crashed near Palembang, Sumatra. After three years of investigation, the Indonesian authorities declared that the cause of the accident can not be determined. However, the US NTSB concluded that deliberate suicde by the Captain, was the only reasonable explanation for the cause of that crash.

Cyber Attack

Source: Michigan's 2012 Threat and Hazard Identification and Risk Assessment
Source: U.S. Dept of Homeland Security, Office of Cybersecurity and Communications

Cyber-attack is a new category of terrorist and criminal threat. Cyber-attacks involve the use of computers, electronic devices, and/or the Internet to attack computer systems. Examples of some types of cyber-attacks include computer viruses, which damage many infected computers, denial-of-service attacks, which shut down a targeted website, and hacking attacks, which damage sensitive information. These attacks may be used as part of extortion schemes, to undermine public confidence in the target's security, as a form of technological vandalism, or as military sabotage.

Early cyber-attacks were primarily conducted by amateur computer "hackers" operating individually or in small teams. More recently, well organized groups of profit-driven professional cyber-attackers have developed. These teams of cyber-saboteurs can operate globally, attacking targets anywhere in the world through the Internet. Their customers include organized crime, national governments, and possibly terrorist organizations. These professional cyber-attackers can be very effective because they control large networks of "zombie" computers called "botnets." These are computers taken over without their owners' knowledge and controlled remotely, often for criminal purposes.

Another possible source of cyber-attacks are "hacktivists," computer criminals motivated by a political cause rather than by a profit motive. Several global networks of hacktivists have been created, including "Anonymous" and "Lutzsec." These loosely organized groups include members in multiple countries who coordinate their efforts online. There are also a number of nationalist hacktivist organizations, some of which may be sponsored by national intelligence services. Hacktivists groups are difficult to disrupt, both because of the challenge in

determining the real identity of group members, and because they may be located in countries which refuse to cooperate with international law enforcement. Hacktivists have generally confined their cyber attacks to vandalism of websites, denial of service attacks, and theft of personal information. There is however, the potential for extremist members of these politically-motivated groups to shift their activities to more destructive cyber-terrorism.

National governments are also developing sophisticated cyber-attack capabilities, both to support espionage programs and to damage the computer networks of enemies. Cyber-attacks backed by extensive national military and intelligence resources could be especially destructive and difficult to counter. One new cyber-attack capability which appears to have been deployed by government-sponsored programmers is the ability to cripple or destroy industrial machinery by taking over the software that controls the machines. Cyber-attacks on these "industrial control systems" could be used to damage critical infrastructure such as electrical grids, water treatment systems, and fuel pipelines as well as to attack industrial targets. National cyber-attack capabilities are also expected to include efforts to disrupt secure national networks such as those used for banking and by law enforcement. A cyber war between nations with sophisticated cyber-attack capabilities could be very damaging, even to innocent bystanders in the conflict.

Here are some examples of information that may be noted and reported about cyber-attacks:

- What type of activity occurred?
    - Data exfiltration
      - If data was exfiltrated, how much and what type?
      - To what IP address?
    - Malicious file infiltration
    - Malware detection
    - Botnet activity
    - Spear Phishing
- What attack vector was used?
- What vulnerability did the threat actors exploit/attempt to exploit?
    - Known vulnerability for which a patch exists (include Common Vulnerabilities and Exposures [CVE] number if known)
- Upon gaining access, what did the threat actors do?
    - Scan for vulnerabilities and attempt to move laterally across the network
    - Host malware on a system
    - Compromise Active Directory server / Domain controller
    - Create additional accounts
    - Exfiltrate username and password hashes
    - Exfiltrate specific types of documents (either by name/subject or file type)
    - Exfiltrate whatever files and information they could get access to
- IP addresses involved in malicious activity?
    - The number of times the IP was involved in an event on that given day
    - The country associated with the IPs
- What malicious websites or domains were involved?
    - Indicate what IP address the domain resolved to at the time of the incident
    - Domain/IP registration information if available, including country of origin

  - Other domains hosted by malicious IPs
- When did the activity occur?
  - In addition to the date, include the period of time (the hours) from when the activity was detected to when it stopped
  - Each day the IP was involved, if across multiple days
- Phishing and Spear Phishing
  - E-mail header information
    - Sending IP
    - Mail relays involved
    - True email address (if message was spoofed)
  - Subject line
  - Attachments (more information in the next bullet section for malicious attachments)
  - Hyperlinks in the email, including the actual destination for any spoofed links
  - Text from the body
  - For spear phished individuals, include how the malicious actor attempted to bait their target
- What malicious code/software was detected or what indicators were associated with malicious files?
  - File name
  - File size
  - Hash values (e.g. MD5, SHA-1, ssdeep)
  - Timestamps
  - Additional malware information
- What botnet(s) were associated with the incident?

Case: July 2009 Cyber-Attacks (2009)

On the 4th of July, 2009, a series of cyber-attacks were directed against computer systems in the United States and in South Korea. Targets included the websites of the U.S. State Department, the U.S. Department of Defense, the White House, numerous South Korea government agencies, a large bank, and a major South Korean media company. The attacks were designed to shut down the targeted websites by overloading them with traffic. This was accomplished with a "botnet" of computers infected by a computer virus. Thousands of computers were hijacked and used in these attacks without their owners' knowledge. The cyber-attack software was also designed to damage the computers in the botnet several days after the start of the attack. Some experts believe that the attack was sponsored by the government of North Korea, perhaps with the help of criminal networks operating outside of that country. As with many cyber-attacks, it has been impossible to definitively prove who was responsible for the attacks. This case demonstrates the significant economic and governmental disruption which can be caused by even primitive cyberattacks. It also demonstrates that the geographic locations of the cyber-attackers and of their targets are largely irrelevant. Attacks can be launched from anywhere, to anywhere, through the use of the Internet.

Case: Stuxnet (2010-Present)

First discovered in June of 2010, Stuxnet is a highly sophisticated cyber-attack program. This "computer worm" software has been designed to infect industrial control systems created by the Siemens Corporation. On most computers, the Stuxnet worm stays hidden and does no damage.

However, if the Siemens control software is connected to certain types of motors, the worm conducts a cyber-attack on the infected system. The targeted motor is ordered to rapidly change speeds, which will destroy certain types of connected industrial equipment. Meanwhile the safety mechanisms on the equipment are disabled, and monitors will show motor performance as completely normal, even as the equipment is being destroyed. It is believed that Stuxnet was designed specifically to damage uranium processing equipment operated by the government of Iran. Substantial harm was apparently inflicted on its processing facility at Natanz. The creators of Stuxnet are unidentified, but given the sophistication of the software, and the care with which only Iranian government systems were targeted, it is considered likely that at least one national intelligence service was involved in creating the worm. Several governments have expressed an interest in damaging Iran's nuclear industry in order to stall the creation of Iranian nuclear weapons. The case provides an example of the sophisticated cyber-attack tools which may be deployed by national governments. It also provides the first example of cyber-attack software capable of causing physical damage, not merely theft or destruction of data.

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5.3 Risk Assessment Methodology for Identifying Natural Hazards for Additional Analysis

Source: Alabama State Hazard Mitigation Plan Update, April 2013
Source: Ouray County Colorado Multi-Hazard Mitigation Plan, Comprehensive Update, September 2013

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 the 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.

As defined by the Federal Emergency Management Agency (FEMA), risk is a combination of hazard, vulnerability, and exposure. "It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage."

The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards. The process allows for a better understanding of a jurisdiction's potential risk to natural hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

This risk assessment followed the methodology described in the FEMA publication *Understanding Your Risks—Identifying Hazards and Estimating Losses* (2002), which breaks the assessment down to a four-step process:

1) Identify Hazards
2) Profile Hazard Events
3) Inventory Assets
4) Estimate Losses

Data collected through this process has been incorporated into the following sections of this chapter:

- **Section 5.1 Hazard Identification** identifies the hazards that threaten the planning area and describes why some hazards have been omitted from further consideration.
- **Section 5.2 Hazard Profiles** discusses the threat to the planning area and describes previous occurrences of hazard events and the likelihood of future occurrences.
- **Section 5.3 Risk Assessment Methodology** assesses Elmore County's total exposure to natural hazards, considering assets at risk, critical facilities, and future development trends.
- **Section 5.4 Vulnerability Assessment and Loss Estimation**

While not required by FEMA, the Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group also conducted a mitigation capability assessment, which inventoried existing mitigation activities and existing policies, regulations, and plans that pertain to mitigation and can affect net vulnerability.

Although the Final Rule (see **Appendix B**) requires that all natural hazards affecting the state/county must be included in a detailed overview, it is not practical or desirable to perform detailed state-wide/county-wide risk assessments on all these hazards. This is because many of the hazards have little probability of affecting the state/county, limited data is available for analysis, and/or it is difficult to mitigate their effects. Because of this, the State Hazard Mitigation Team (SHMT) and FEMA determined that it would be desirable to reduce the initial list of hazards to those that have the most potential for damaging the state or its citizens in the future. Elmore County EMA agrees with this determination and proceeded in like manner with this update.

To reduce the overall number of hazards that will be given detailed risk assessments, the Elmore County HMPC/MAC Group endeavored to mirror the SHMT on the rating system that uses the following five criteria to rate each hazard in two categories: relative probability of occurrence, and capacity for mitigation. The term "relative" probability of occurrence is used here because the determination is less rigorous than the one used in the full risk assessment. The purpose of this ranking methodology is to rate Elmore County risks relative to each other, in order to identify the most significant ones, and concentrate the risk assessment on these. As did the SHMT, the hazards are given low, medium, or high ratings in the two categories. This method was initially suggested to AEMA by FEMA Region IV on February 26, 2004, though minor changes were made during the 2013 plan update to the probability of occurrence ranking. The SHMT clarified that hazard occurrences are addressed in terms of significant occurrences.

The criteria used were:

1. History - High rating indicates that the hazard has affected the state [Elmore County] often in the past, and that the hazard has occurred often and/or with widespread or severe consequences.
2. Presence of susceptible areas - High rating indicates that the state [Elmore County] has numerous facilities, operations, or populations that may be subjected to damage from the hazard.
3. Data availability - High rating indicates that sufficient quality data is available to permit an accurate and comprehensive risk assessment.
4. Federal disaster declarations - High rating indicates that the state [Elmore County] has received numerous disaster declarations for the particular hazard.
5. Potential for mitigation - High rating indicates that there are ways to address the hazard, and that the methods are technically feasible and have the potential to be cost-effective (i.e., mitigation measures are available at a reasonable cost, and damages to property, lives, and/or community functions would be reduced or eliminated).

In the Alabama State HMP, the SHMT determined that hazards with "high" ratings in both the probability and ease of mitigation categories are provided detailed and comprehensive risk

assessments. Those that received medium or low ratings in either category are not provided detailed risk assessments, but are in some cases included as risks to county-owned facilities, and are also included in mitigation goals, objectives, strategies, and actions. Further, as data and future plans permit, these hazards may be assessed. The hazards that received high ratings in each category in the State Plan were floods (which includes storm surge, riverine and flash flooding) and high wind (which includes hurricanes and tornadoes). In future updates to the State Plan it may be desirable to undertake detailed risk assessments of some of the other hazards (those that did not receive high/high ratings in this analysis).

This same risk assessment methodology, in conjunction with the results of the **Elmore County Vulnerability Analysis and Threat/Hazard Profile**, was used by the Elmore County HMPC/MAC Group to determine the rankings of 14 of the 16 natural hazards identified by the SHMT in **Table 5.3-1** below. Where the SHMT determined to conduct detailed risk assessments on only those hazards with "high" ratings in both the probability and ease of mitigation categories, Elmore County's assessment surfaced no hazards with "high" ratings and instead had to move on to those hazards with "medium" ratings in both categories for their detailed risk assessments. Like the State, the natural hazards that received highest ratings—medium--in each category in the County were flood (riverine and flash flooding) and high wind (which includes hurricanes, tornadoes, and windstorms).

As a reminder, the SHMT did not include technological or human-caused hazards in the State's 2013 plan update. For the purpose of synchronizing this section of the local plan with the corresponding section of the State's Plan, and due to a lack of available detailed risk assessment data on the technological and human-caused hazards identified in Section 5.2, only natural hazards are addressed in **Table 5.3-1** to follow.

Table 5.3-1 below is an adaptation of **Table 5.3-1 found in the Alabama State Hazard Mitigation Plan Update, 2013.** The State Plan includes 16 hazards, while the table below includes the 14 natural hazards relevant to Elmore County. Tsunamis and sea level rise have been deleted from the table since these two hazards do not apply to Elmore County.

Table 5.3-1
Qualitative Rankings of 14 Initial Hazards, based on Probability of Occurrence and Mitigation Potential

Hazard	Data Sources	Probability Rating	Mitigation Potential Rating	Disposition in Plan
Flooding (includes storm surge, riverine, and flash flooding	• NOAA Storm Events Database • NOAA Alabama Coastal Hazards Assessment	H (SHMT) M (Elmore)	H (SHMT) M (Elmore)	Profile and risk assessment

Note: storm surge was not included in the Elmore County hazard profile	• National Weather Service • Flood Insurance Rate Maps (FIRMs)			
High Winds (includes hurricanes, tornadoes and windstorms)	• NOAA Storm Events Database and Alabama Coastal Hazards Assessment • National Weather Service • Alabama Disaster Center	H (SHMT) M (Elmore)	H (SHMT) M (Elmore)	Profile and risk assessment
Winter storms	• NOAA Storm Events Database and Alabama Coastal Hazards Assessment • Alabama Disaster Center	H (SHMT) L (Elmore)	M (SHMT) L (Elmore)	Profiled, but not part of detailed risk assessment
Landslides	• Geological Survey of Alabama • USGS	L (SHMT) L (Elmore)	L (SHMT) L (Elmore)	Profiled, but not part of detailed risk assessment
Sinkholes and Land Subsidence	• Geological Survey of Alabama • USGS	L (SHMT) L (Elmore)	L (SHMT) L (Elmore)	Profiled, but not part of detailed risk assessment
Earthquakes	• NOAA Alabama Coastal Hazards Assessment • National Seismic Hazard Mapping Project map, USGS • Geological Survey of Alabama	M (SHMT) L (Elmore)	M (SHMT) L (Elmore)	Profile and risk assessment
Drought	• NOAA	M (SHMT) M (Elmore)	L (SHMT) L (Elmore)	Profiled, but not part of detailed risk assessment
Hail	• NOAA	M (SHMT) M (Elmore)	L (SHMT) L (Elmore)	Profiled, but not part of detailed risk assessment

Wildfire	• Alabama Forestry Commission	M (SHMT) L (Elmore)	L (SHMT) L (Elmore)	Profiled, but not part of detailed risk assessment
Extreme Temperatures	• NOAA	M (SHMT) L (Elmore)	L (SHMT) L (Elmore)	Profiled, but not part of detailed risk assessment
Lightning	• NOAA • National Weather Service	M (SHMT) M (Elmore)	L (SHMT) L (Elmore)	Profiled, but not part of detailed risk assessment
Dam Failures	• Alabama Department of Economic and Community Affairs (ADECA) • NOAA	L (SHMT) L (Elmore)	L (SHMT) L (Elmore)	Profiled, but not part of detailed risk assessment

As expected, the classification process provided a clear stratification of the hazards based on these criteria. Floods and high winds present the highest risk to the state and Elmore County based on this limited assessment, as in previous version. Therefore, floods and high winds are afforded more detailed risk assessments in **Section 5.5.**

Table 5.3-2

The below NCDC Storm Events Database includes all *recorded* Events impacting Elmore County, Alabama, between 01/01/1950 and 02/28/2014:

All Available Event Types

482 events were reported between 01/01/1950 and 02/28/2014 (23435 days)

Summary Info:

Number of County/Zone areas affected:	2
Number of Days with Event:	321
Number of Days with Event and Death:	4
Number of Days with Event and Death or Injury:	13
Number of Days with Event and Property Damage:	152

Number of Days with Event and Crop Damage:	10
Number of Event Types reported:	21

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								9	59	71.732M	1.223M
ELMORE CO.	ELMORE CO.	AL	12/23/1956	00:50	CST	Tornado	F2	0	0	0.25K	0.00K
ELMORE CO.	ELMORE CO.	AL	10/19/1960	15:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/30/1966	20:30	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/07/1970	19:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/28/1973	17:50	CST	Hail	1.00 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/26/1973	06:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	02/21/1974	20:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/21/1974	02:45	CST	Thunderstorm Wind	75 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/29/1974	03:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/12/1976	21:20	CST	Tornado	F3	0	15	2.500M	0.00K
ELMORE CO.	ELMORE CO.	AL	03/29/1977	15:20	CST	Tornado	F2	0	2	250.00K	0.00K

ELMORE CO.	ELMORE CO.	AL	04/18/1978	06:05	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/18/1978	06:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/18/1978	22:21	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/04/1979	13:51	CST	Tornado	F0	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/11/1979	17:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/11/1979	17:40	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/25/1979	13:00	CST	Tornado	F3	0	0	2.500M	0.00K
ELMORE CO.	ELMORE CO.	AL	11/25/1979	13:50	CST	Tornado	F2	0	0	250.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/06/1980	18:07	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/17/1980	21:30	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/07/1980	18:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/30/1981	03:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/30/1981	03:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/05/1981	02:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/21/1982	14:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/26/1982	15:25	CST	Tornado	F1	0	0	250.00K	0.00K

ELMORE CO.	ELMORE CO.	AL	04/26/1982	15:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/26/1982	15:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/12/1982	13:30	CST	Tornado	F0	0	0	2.50K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/23/1983	14:10	CST	Tornado	F1	0	0	0.25K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/16/1983	01:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/03/1983	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/03/1983	19:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/06/1983	03:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/06/1983	04:00	CST	Thunderstorm Wind	0 kts.	0	2	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/06/1983	04:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/19/1984	18:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/19/1984	18:15	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/03/1984	06:12	CST	Tornado	F3	0	0	2.500M	0.00K
ELMORE CO.	ELMORE CO.	AL	05/03/1984	06:15	CST	Hail	0.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/03/1984	17:25	CST	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/10/1984	15:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K

ELMORE CO.	ELMORE CO.	AL	06/07/1985	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	10/15/1985	14:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/31/1986	17:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/31/1986	17:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/18/1987	14:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/26/1987	11:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/16/1987	23:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/15/1987	04:10	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/15/1987	04:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/18/1988	17:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/18/1988	22:00	CST	Hail	1.00 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/10/1988	12:35	CST	Hail	1.00 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/10/1988	13:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/10/1988	13:40	CST	Hail	1.25 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/24/1988	11:00	CST	Hail	1.00 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/15/1988	14:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K

ELMORE CO.	ELMORE CO.	AL	03/15/1989	21:55	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/15/1989	22:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/04/1989	14:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/04/1989	14:44	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	11/15/1989	15:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	02/10/1990	03:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	02/16/1990	07:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	02/16/1990	08:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/01/1990	16:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/20/1990	12:55	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/08/1990	18:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/08/1990	19:07	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/19/1990	15:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/29/1991	07:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/12/1991	17:55	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/12/1991	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K

ELMORE CO.	ELMORE CO.	AL	05/05/1991	14:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	05/05/1991	14:20	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	03/18/1992	19:00	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	04/20/1992	15:28	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	07/05/1992	14:30	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/26/1992	15:00	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/26/1992	15:15	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/27/1992	13:13	CST	Tornado	F1	0	0	250.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	08/27/1992	13:15	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	12/04/1993	14:10	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Elmore	ELMORE CO.	AL	04/11/1995	10:15	CST	Tornado	F1	0	0	25.00K	0.00K
Eclectic	ELMORE CO.	AL	05/15/1995	14:45	CST	Thunderstorm Wind	0 kts.	0	0	2.00K	0.00K
Tallassee	ELMORE CO.	AL	07/03/1995	13:40	CST	Thunderstorm Wind	0 kts.	0	0	3.00K	0.00K
Tallassee	ELMORE CO.	AL	07/04/1995	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Wetumpka	ELMORE CO.	AL	07/17/1995	17:25	CST	Thunderstorm Wind	0 kts.	0	0	7.00K	0.00K
Wetumpka	ELMORE CO.	AL	07/18/1995	18:00	CST	Thunderstorm Wind	0 kts.	0	0	4.00K	0.00K

Central section	ELMORE CO.	AL	07/29/1995	18:20	CST	Thunderstorm Wind	0 kts.	0	0	3.00K	0.00K
Red Hill	ELMORE CO.	AL	08/19/1995	21:30	CST	Thunderstorm Wind	0 kts.	0	0	85.00K	0.00K
Wetumpka	ELMORE CO.	AL	08/19/1995	21:50	CST	Thunderstorm Wind	0 kts.	0	0	22.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/24/1996	03:40	CST	Thunderstorm Wind	50 kts.	0	0	8.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/03/1996	18:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/23/1996	08:00	CST	Heat		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/07/1996	08:00	CST	Cold/wind Chill		0	0	0.00K	1.000M
WETUMPKA	ELMORE CO.	AL	03/16/1996	16:35	CST	Hail	0.75 in.	0	0	10.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/18/1996	18:24	CST	Hail	0.75 in.	0	0	10.00K	10.00K
ECLECTIC	ELMORE CO.	AL	03/18/1996	18:52	CST	Tornado	F1	0	0	500.00K	50.00K
ECLECTIC	ELMORE CO.	AL	03/18/1996	18:53	CST	Hail	1.75 in.	0	0	15.00K	10.00K
MILLBROOK	ELMORE CO.	AL	03/18/1996	19:50	CST	Hail	1.00 in.	0	0	10.00K	5.00K
WETUMPKA	ELMORE CO.	AL	03/18/1996	20:05	CST	Tornado	F1	0	0	150.00K	0.00K
ECLECTIC	ELMORE CO.	AL	03/18/1996	20:18	CST	Hail	1.75 in.	0	0	10.00K	10.00K
ECLECTIC	ELMORE CO.	AL	03/18/1996	20:23	CST	Tornado	F3	0	0	700.00K	50.00K
ECLECTIC	ELMORE CO.	AL	04/29/1996	13:45	CST	Thunderstorm Wind	55 kts.	0	0	20.00K	2.00K

WETUMPKA	ELMORE CO.	AL	05/28/1996	06:00	CST	Thunderstorm Wind	50 kts.	0	0	10.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/13/1996	17:45	CST	Hail	0.75 in.	0	0	10.00K	1.00K
JORDAN LAKE RES.	ELMORE CO.	AL	09/16/1996	17:23	CST	Funnel Cloud		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	12/01/1996	01:43	CST	Flash Flood		0	0	10.00K	0.00K
TALLASSEE	ELMORE CO.	AL	12/01/1996	01:56	CST	Thunderstorm Wind	50 kts.	0	0	40.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/18/1996	14:00	CST	Winter Storm		0	0	15.00K	20.00K
ECLECTIC	ELMORE CO.	AL	01/08/1997	09:45	CST	Hail	0.75 in.	0	0	3.00K	0.00K
MILLBROOK	ELMORE CO.	AL	01/24/1997	07:30	CST	Thunderstorm Wind	55 kts.	0	0	15.00K	1.00K
ELMORE	ELMORE CO.	AL	01/24/1997	07:37	CST	Tornado	F1	0	0	45.00K	0.00K
SANTUCK	ELMORE CO.	AL	01/24/1997	07:52	CST	Thunderstorm Wind	50 kts.	0	0	18.00K	2.00K
ELMORE	ELMORE CO.	AL	02/28/1997	12:00	CST	Flash Flood		0	0	10.00K	0.00K
ELMORE	ELMORE CO.	AL	03/13/1997	15:35	CST	Hail	0.75 in.	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/05/1997	15:25	CST	Thunderstorm Wind	50 kts.	0	0	5.00K	0.00K
PRATTVILLE	ELMORE CO.	AL	04/22/1997	14:30	CST	Lightning		0	0	18.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/22/1997	14:59	CST	Hail	1.00 in.	0	0	4.00K	0.00K
TALLASSEE	ELMORE CO.	AL	04/22/1997	15:24	CST	Hail	1.75 in.	0	0	8.00K	0.00K

MILLBROOK	ELMORE CO.	AL	08/18/1997	14:12	CST	Hail	0.88 in.	0	0	2.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	01/07/1998	09:30	CST	Flash Flood		0	0	25.00K	5.00K
HOLTVILLE	ELMORE CO.	AL	01/07/1998	11:15	CST	Thunderstorm Wind	70 kts.	0	1	50.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/08/1998	17:40	CST	Hail	0.88 in.	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/08/1998	21:00	CST	Flood		0	0	5.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/20/1998	01:00	CST	Thunderstorm Wind	55 kts.	0	0	5.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	04/08/1998	16:10	CST	Hail	0.88 in.	0	0	0.00K	0.00K
KENT	ELMORE CO.	AL	04/08/1998	17:50	CST	Hail	1.75 in.	0	0	9.00K	4.00K
WETUMPKA	ELMORE CO.	AL	05/03/1998	14:20	CST	Hail	1.75 in.	0	0	10.00K	3.00K
TALLASSEE	ELMORE CO.	AL	05/03/1998	14:33	CST	Hail	1.00 in.	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/03/1998	15:47	CST	Hail	0.75 in.	0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/05/1998	15:04	CST	Hail	1.00 in.	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/05/1998	15:15	CST	Thunderstorm Wind	50 kts.	0	0	5.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/15/1998	20:57	CST	Thunderstorm Wind	50 kts.	0	0	45.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/19/1998	14:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/20/1998	15:00	CST	Thunderstorm Wind	50 kts.	0	0	5.00K	0.00K

DEATSVILLE	ELMORE CO.	AL	07/20/1998	15:45	CST	Thunderstorm Wind	55 kts.	0	0	20.00K	0.00K
WETUMPKA	ELMORE CO.	AL	09/28/1998	16:19	CST	Tornado	F0	0	0	18.00K	0.00K
MILLBROOK	ELMORE CO.	AL	02/27/1999	20:28	CST	Thunderstorm Wind	55 kts.	0	0	15.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/03/1999	01:11	CST	Thunderstorm Wind	70 kts.	1	0	135.00K	0.00K
KENT	ELMORE CO.	AL	05/07/1999	14:28	CST	Tornado	F0	0	0	0.00K	0.00K
KENT	ELMORE CO.	AL	05/07/1999	14:30	CST	Tornado	F0	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/13/1999	13:37	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/13/1999	13:37	CST	Funnel Cloud		0	0	0.00K	0.00K
RIDDLE	ELMORE CO.	AL	05/23/1999	13:25	CST	Hail	0.75 in.	0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	05/23/1999	13:30	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	06/05/1999	19:10	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	06/15/1999	15:00	CST	Flash Flood		0	0	3.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	06/27/1999	12:00	CST	Flash Flood		0	0	20.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	06/30/1999	16:30	CST	Flash Flood		0	0	0.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	08/20/1999	16:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	01/09/2000	14:55	CST	Hail	0.75 in.	0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	01/28/2000	00:00	CST	Winter Storm		0	0	10.00K	0.00K
TALLASSEE	ELMORE CO.	AL	02/17/2000	18:00	CST	Thunderstorm Wind	60 kts. E	0	0	20.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/10/2000	18:45	CST	Hail	1.75 in.	0	0	5.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	03/10/2000	19:03	CST	Hail	1.00 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/19/2000	17:15	CST	Thunderstorm Wind	55 kts. E	0	0	3.00K	0.00K
WARE	ELMORE CO.	AL	04/02/2000	18:10	CST	Hail	1.00 in.	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/12/2000	10:00	CST	Thunderstorm Wind	55 kts. E	0	0	30.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/20/2000	16:05	CST	Thunderstorm Wind	55 kts. E	0	0	2.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/20/2000	16:05	CST	Hail	0.75 in.	0	0	0.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	07/20/2000	17:20	CST	Thunderstorm Wind	55 kts. E	0	0	3.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	08/10/2000	19:45	CST	Thunderstorm Wind	50 kts. E	0	0	2.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	09/01/2000	07:30	CST	Flash Flood		0	0	20.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	10/06/2000	07:55	CST	High Wind	48 kts. E	0	0	2.00K	0.00K
ECLECTIC	ELMORE CO.	AL	01/19/2001	09:30	CST	Thunderstorm Wind	50 kts. E	0	0	3.00K	0.00K

WARE	ELMORE CO.	AL	01/19/2001	09:30	CST	Thunderstorm Wind	50 kts. E	0	0	1.00K	0.00K
MILLBROOK	ELMORE CO.	AL	02/16/2001	19:30	CST	Thunderstorm Wind	50 kts. E	0	0	3.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	03/03/2001	18:00	CST	Flash Flood		0	0	14.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/12/2001	12:45	CST	Flash Flood		0	0	5.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/15/2001	01:42	CST	Thunderstorm Wind	55 kts. E	0	0	5.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	04/03/2001	19:00	CST	Flash Flood		0	0	5.00K	0.00K
TALLASSEE	ELMORE CO.	AL	05/28/2001	15:40	CST	Thunderstorm Wind	50 kts. E	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/03/2001	16:15	CST	Hail	1.75 in.	0	0	2.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/03/2001	16:15	CST	Thunderstorm Wind	50 kts. E	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/04/2001	14:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/04/2001	14:30	CST	Thunderstorm Wind	50 kts. E	0	0	1.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	08/06/2001	09:00	CST	Heavy Rain		0	0	0.00K	0.00K
KENT	ELMORE CO.	AL	12/14/2001	03:48	CST	Tornado	F0	0	0	12.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/02/2002	07:30	CST	Heavy Snow		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/04/2002	12:05	CST	Hail	0.75 in.	0	0	0.00K	0.00K

WETUMPKA	ELMORE CO.	AL	05/30/2002	12:50	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/04/2002	16:59	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	08/19/2002	10:58	CST	Lightning		0	0	6.00K	0.00K
TITUS	ELMORE CO.	AL	11/11/2002	03:15	CST	Thunderstorm Wind	60 kts. E	0	0	20.00K	0.00K
CENTRAL	ELMORE CO.	AL	12/19/2002	16:14	CST	Funnel Cloud		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/24/2003	00:00	CST	Extreme Cold/wind Chill		0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	03/06/2003	05:45	CST	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/13/2003	15:15	CST	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/13/2003	15:30	CST	Thunderstorm Wind	55 kts. EG	0	0	18.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	04/07/2003	08:00	CST	Flash Flood		0	0	80.00K	0.00K
ECLECTIC	ELMORE CO.	AL	04/24/2003	14:29	CST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
TITUS	ELMORE CO.	AL	04/25/2003	14:40	CST	Thunderstorm Wind	60 kts. EG	0	0	600.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	04/25/2003	15:00	CST	Hail	2.00 in.	0	0	500.00K	0.00K
TALLASSEE	ELMORE CO.	AL	04/25/2003	15:24	CST	Tornado	F0	0	0	45.00K	0.00K

MILLBROOK	ELMORE CO.	AL	04/25/2003	15:39	CST	Hail	2.75 in.	0	0	50.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	07/01/2003	06:00	CST	Flash Flood		0	0	12.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/13/2003	18:15	CST	Lightning		0	0	12.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/07/2004	22:28	CST	Hail	1.00 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/26/2004	14:30	CST	Flash Flood		0	0	10.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/07/2004	05:00	CST	Strong Wind	35 kts. EG	0	1	11.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/16/2004	05:30	CST	High Wind	62 kts. EG	0	0	2.000M	50.00K
COUNTYWIDE	ELMORE CO.	AL	09/16/2004	09:15	CST	Flash Flood		0	0	5.00K	0.00K
MILLBROOK	ELMORE CO.	AL	11/24/2004	06:48	CST	Tornado	F0	0	0	122.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	11/24/2004	06:50	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	11/24/2004	07:07	CST	Thunderstorm Wind	50 kts. EG	0	0	8.00K	0.00K
TALLASSEE	ELMORE CO.	AL	11/24/2004	07:29	CST	Thunderstorm Wind	55 kts. EG	0	1	85.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	03/07/2005	19:28	CST	Thunderstorm Wind	53 kts. EG	0	0	17.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/27/2005	11:25	CST	Hail	1.75 in.	0	0	18.00K	0.00K
ECLECTIC	ELMORE CO.	AL	03/27/2005	14:26	CST	Hail	0.75 in.	0	0	0.00K	0.00K

KENT	ELMORE CO.	AL	03/27/2005	15:04	CST	Hail	1.75 in.	0	0	9.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/30/2005	23:07	CST	Hail	0.88 in.	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/30/2005	23:59	CST	Hail	0.75 in.	0	0	0.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	03/31/2005	00:12	CST	Flash Flood		0	0	15.00K	0.00K
KENT	ELMORE CO.	AL	03/31/2005	00:35	CST	Hail	1.75 in.	0	0	6.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/01/2005	00:00	CST	Flood		0	0	5.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/12/2005	02:00	CST	Strong Wind	40 kts. EG	0	0	1.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/22/2005	14:05	CST	Hail	1.00 in.	0	0	1.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/22/2005	14:24	CST	Hail	1.00 in.	0	0	1.00K	0.00K
ECLECTIC	ELMORE CO.	AL	04/22/2005	14:35	CST	Hail	1.75 in.	0	0	11.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/22/2005	18:06	CST	Hail	1.00 in.	0	0	1.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	04/30/2005	05:22	CST	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/20/2005	14:10	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/08/2005	18:00	CST	Flash Flood		0	0	8.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/06/2005	13:01	CST	Tornado	F0	0	0	8.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/06/2005	13:17	CST	Tornado	F0	0	0	38.00K	0.00K

TALLASSEE	ELMORE CO.	AL	07/06/2005	13:18	CST	Lightning		0	0	4.00K	0.00K
COUNTYWIDE	ELMORE CO.	AL	07/06/2005	13:25	CST	Thunderstorm Wind	50 kts. EG	0	0	22.00K	0.00K
KENT	ELMORE CO.	AL	07/06/2005	14:00	CST	Flash Flood		0	0	1.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/10/2005	15:00	CST	Tropical Storm		0	0	200.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/10/2005	16:30	CST	Flash Flood		0	0	6.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/14/2005	13:52	CST	Flash Flood		0	0	22.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	08/29/2005	18:00	CST	Tropical Storm		0	0	35.00K	0.00K
WETUMPKA	ELMORE CO.	AL	11/28/2005	19:30	CST	Tornado	F0	0	0	11.00K	0.00K
MILLBROOK	ELMORE CO.	AL	12/28/2005	14:14	CST	Hail	0.88 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	12/28/2005	14:24	CST	Hail	0.88 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/20/2006	17:55	CST	Funnel Cloud		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/20/2006	18:00	CST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/20/2006	18:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/19/2006	21:16	CST	Hail	1.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/19/2006	21:27	CST	Hail	0.88 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/10/2006	15:15	CST	Flash Flood		0	0	0.00K	0.00K

WETUMPKA	ELMORE CO.	AL	05/10/2006	16:00	CST	Lightning		0	0	20.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/18/2006	07:00	CST	Drought		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/22/2006	13:36	CST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	08/01/2006	00:00	CST	Drought		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	08/11/2006	17:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	08/15/2006	16:45	CST	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
TITUS	ELMORE CO.	AL	08/30/2006	16:50	CST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
TITUS	ELMORE CO.	AL	08/30/2006	16:55	CST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/01/2006	00:00	CST	Drought		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	09/28/2006	16:26	CST	Hail	1.50 in.	0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	11/15/2006	10:40	CST-6	Tornado	F1	0	0	25.00K	0.00K
KENT	ELMORE CO.	AL	11/15/2006	11:02	CST-6	Tornado	F1	0	0	30.00K	0.00K
WETUMPKA	ELMORE CO.	AL	11/15/2006	11:45	CST-6	Flash Flood		0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	11/15/2006	11:45	CST-6	Flash Flood		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/07/2007	17:00	CST-6	Flash Flood		0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	04/07/2007	00:00	CST-6	Frost/freeze		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/08/2007	00:00	CST-6	Frost/freeze		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2007	15:47	CST-6	Hail	1.25 in.	0	0	0.00K	0.00K
COOSADA	ELMORE CO.	AL	04/11/2007	15:50	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/11/2007	15:51	CST-6	Hail	2.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/11/2007	15:58	CST-6	Funnel Cloud		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2007	15:58	CST-6	Hail	2.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2007	16:00	CST-6	Hail	1.75 in.	0	0	5.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2007	16:00	CST-6	Lightning		0	1	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/11/2007	16:05	CST-6	Tornado	EF0	0	0	5.00K	0.00K
TALLASSEE	ELMORE CO.	AL	04/11/2007	16:26	CST-6	Hail	2.75 in.	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	05/22/2007	06:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	06/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	06/18/2007	18:12	CST-6	Thunderstorm Wind	30 kts. EG	0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	08/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	08/08/2007	12:00	CST-6	Heat		1	14	0.00K	0.00K
WALLSBURG	ELMORE CO.	AL	08/17/2007	16:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
SANTUCK	ELMORE CO.	AL	08/17/2007	16:59	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	10/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	11/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/19/2008	06:00	CST-6	Winter Weather		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	02/17/2008	15:06	CST-6	Tornado	EF1	0	0	100.00K	0.00K
WARE	ELMORE CO.	AL	02/26/2008	06:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	04/04/2008	16:55	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	04/04/2008	17:05	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K

MAN	ELMORE CO.	AL	04/04/2008	17:10	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	04/04/2008	17:14	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
TUCKABATCHIE	ELMORE CO.	AL	04/04/2008	17:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/11/2008	21:35	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
CLAUD	ELMORE CO.	AL	04/25/2008	16:55	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	05/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	05/08/2008	18:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/15/2008	11:22	CST-6	Lightning		0	0	50.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	06/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
JORDAN LAKE	ELMORE CO.	AL	06/09/2008	18:26	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	06/28/2008	20:00	CST-6	Thunderstorm Wind	39 kts. EG	0	0	0.50K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
KENT	ELMORE CO.	AL	07/05/2008	17:07	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ECLECTIC	ELMORE CO.	AL	07/11/2008	16:25	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K

CLAUD	ELMORE CO.	AL	07/12/2008	13:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
COTTON	ELMORE CO.	AL	07/13/2008	12:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
SANTUCK	ELMORE CO.	AL	07/13/2008	12:48	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
WETUMPKA	ELMORE CO.	AL	07/22/2008	17:29	CST-6	Thunderstorm Wind	40 kts. EG	0	0	1.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	08/01/2008	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	08/23/2008	12:00	CST-6	Tropical Depression		1	0	5.00K	0.00K
WARE	ELMORE CO.	AL	08/24/2008	13:07	CST-6	Tornado	EF0	0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	08/31/2008	17:45	CST-6	Thunderstorm Wind	40 kts. EG	0	0	10.00K	0.00K
MILLBROOK	ELMORE CO.	AL	09/08/2008	16:25	CST-6	Thunderstorm Wind	30 kts. EG	0	0	1.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2009	03:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/13/2009	03:30	CST-6	Strong Wind	35 kts. EG	0	0	10.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/03/2009	14:08	CST-6	Thunderstorm Wind	50 kts. EG	0	0	6.00K	0.00K
COBBS FORD	ELMORE CO.	AL	05/03/2009	14:08	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/03/2009	14:20	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K

MILLBROOK	ELMORE CO.	AL	05/07/2009	07:00	CST-6	Flash Flood		0	0	4.900M	0.00K
SANTUCK	ELMORE CO.	AL	06/14/2009	12:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	20.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/14/2009	12:09	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
COOSADA	ELMORE CO.	AL	06/14/2009	12:12	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
TUCKABATCHIE	ELMORE CO.	AL	06/15/2009	23:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
SYKES MILL	ELMORE CO.	AL	06/28/2009	17:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
NORTH ELMORE	ELMORE CO.	AL	07/05/2009	11:40	CST-6	Lightning		0	1	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/05/2009	17:11	CST-6	Thunderstorm Wind	39 kts. EG	0	0	1.00K	0.00K
SANTUCK	ELMORE CO.	AL	07/05/2009	17:16	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	07/05/2009	17:22	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	07/08/2009	14:20	CST-6	Hail	1.25 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/26/2009	16:48	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/26/2009	16:48	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
WETUMPKA	ELMORE CO.	AL	08/04/2009	15:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K

WETUMPKA	ELMORE CO.	AL	08/05/2009	13:22	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
MAN	ELMORE CO.	AL	08/05/2009	13:40	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
WETUMPKA	ELMORE CO.	AL	08/11/2009	18:05	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	09/19/2009	01:00	CST-6	Flash Flood		0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	11/09/2009	14:00	CST-6	Tropical Depression		0	0	5.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/24/2010	11:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/12/2010	10:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/10/2010	15:58	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	03/10/2010	16:10	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/30/2010	14:25	CST-6	Flash Flood		0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	06/15/2010	15:40	CST-6	Thunderstorm Wind	45 kts. EG	0	0	3.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/15/2010	15:43	CST-6	Lightning		0	0	5.00K	0.00K
DEXTER	ELMORE CO.	AL	06/19/2010	14:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
TALLASSEE	ELMORE CO.	AL	06/19/2010	14:22	CST-6	Thunderstorm Wind	39 kts. EG	0	0	1.00K	0.00K

MARTIN LAKE SOUTH	ELMORE CO.	AL	06/21/2010	13:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/21/2010	13:46	CST-6	Thunderstorm Wind	60 kts. EG	0	0	20.00K	0.00K
COTTON	ELMORE CO.	AL	06/21/2010	13:47	CST-6	Lightning		0	0	10.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/21/2010	13:50	CST-6	Lightning		0	0	10.00K	0.00K
ECLECTIC	ELMORE CO.	AL	07/09/2010	13:45	CST-6	Thunderstorm Wind	40 kts. EG	0	0	10.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/09/2010	18:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
WALLSBURG	ELMORE CO.	AL	07/09/2010	19:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
WARE	ELMORE CO.	AL	07/23/2010	17:35	CST-6	Thunderstorm Wind	60 kts. EG	0	0	3.00K	0.00K
DEXTER	ELMORE CO.	AL	07/30/2010	16:20	CST-6	Thunderstorm Wind	55 kts. EG	0	0	1.00K	0.00K
NORTH ELMORE	ELMORE CO.	AL	08/04/2010	13:20	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.50K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/14/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/21/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	10/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	11/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K

MILLBROOK	ELMORE CO.	AL	11/30/2010	10:13	CST-6	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
WETUMPKA	ELMORE CO.	AL	11/30/2010	10:23	CST-6	Tornado	EF0	0	0	35.00K	0.00K
ECLECTIC	ELMORE CO.	AL	11/30/2010	10:45	CST-6	Thunderstorm Wind	45 kts. EG	0	0	5.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/15/2010	08:00	CST-6	Winter Weather		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/09/2011	13:15	CST-6	Ice Storm		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	02/01/2011	18:45	CST-6	Heavy Rain		0	0	0.00K	0.00K
WEOKA	ELMORE CO.	AL	02/01/2011	18:45	CST-6	Heavy Rain		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/04/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/09/2011	21:30	CST-6	Winter Weather		0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	02/28/2011	17:10	CST-6	Tornado	EF0	0	0	55.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/26/2011	14:50	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/26/2011	14:53	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/27/2011	21:19	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	04/04/2011	20:18	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/04/2011	20:31	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/04/2011	20:37	CST-6	Thunderstorm Wind	50 kts. EG	0	0	7.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/05/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/05/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
COOSADA	ELMORE CO.	AL	04/11/2011	20:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
TITUS	ELMORE CO.	AL	04/15/2011	20:27	CST-6	Tornado	EF0	0	0	12.90K	0.00K
WEOKA	ELMORE CO.	AL	04/15/2011	22:17	CST-6	Tornado	EF2	0	0	1.330M	0.00K
WALLSBURG	ELMORE CO.	AL	04/27/2011	19:12	CST-6	Tornado	EF3	6	20	50.000M	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	05/10/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/26/2011	13:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K

ROBINSON SPGS	ELMORE CO.	AL	05/26/2011	13:21	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
SYKES MILL	ELMORE CO.	AL	05/26/2011	13:41	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	06/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/11/2011	13:45	CST-6	Thunderstorm Wind	40 kts. EG	0	0	0.50K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/11/2011	14:04	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/11/2011	14:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/17/2011	12:49	CST-6	Thunderstorm Wind	45 kts. EG	0	0	1.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/17/2011	13:00	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/26/2011	16:44	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/02/2011	15:30	CST-6	Thunderstorm Wind	35 kts. EG	0	0	1.00K	0.00K
CLAUD	ELMORE CO.	AL	07/03/2011	15:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	07/03/2011	15:30	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	08/02/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	08/13/2011	16:20	CST-6	Thunderstorm Wind	43 kts. EG	0	0	5.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/05/2011	15:18	CST-6	Strong Wind	39 kts. EG	0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/05/2011	17:19	CST-6	Strong Wind	35 kts. EG	0	0	2.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	09/20/2011	14:30	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	10/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	11/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	11/16/2011	11:27	CST-6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	12/22/2011	14:14	CST-6	Tornado	EF0	0	0	5.00K	0.00K
TITUS	ELMORE CO.	AL	12/22/2011	14:16	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
TITUS	ELMORE CO.	AL	12/22/2011	14:23	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
SYKES MILL	ELMORE CO.	AL	12/22/2011	14:24	CST-6	Tornado	EF0	0	0	15.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	01/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	01/23/2012	07:48	CST-6	Tornado	EF1	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/23/2012	15:05	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/23/2012	15:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	05/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	06/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
SPEIGENER	ELMORE CO.	AL	06/05/2012	08:53	CST-6	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/11/2012	21:08	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MAN	ELMORE CO.	AL	06/11/2012	21:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLAUD	ELMORE CO.	AL	06/14/2012	17:00	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/14/2012	17:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLAUD	ELMORE CO.	AL	06/14/2012	17:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K

FLOYD	ELMORE CO.	AL	06/14/2012	17:02	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2012	12:00	CST-6	Heat		0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	07/03/2012	14:48	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/10/2012	15:08	CST-6	Thunderstorm Wind	39 kts. EG	0	1	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/10/2012	15:54	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	07/10/2012	16:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COTTON	ELMORE CO.	AL	07/17/2012	13:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	07/17/2012	14:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	08/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	10/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	11/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
SYKES MILL	ELMORE CO.	AL	12/20/2012	10:33	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K

WETUMPKA	ELMORE CO.	AL	12/20/2012	10:44	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
PRATTVILLE JCT	ELMORE CO.	AL	12/25/2012	21:05	CST-6	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/01/2013	00:00	CST-6	Drought		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/30/2013	10:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	01/30/2013	11:48	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/01/2013	00:00	CST-6	Drought		0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	03/05/2013	14:52	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	03/18/2013	15:58	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	03/18/2013	16:00	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/18/2013	16:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/17/2013	15:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
SEMAN	ELMORE CO.	AL	06/27/2013	17:05	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COTTON	ELMORE CO.	AL	06/27/2013	17:18	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
RED HILL	ELMORE CO.	AL	06/27/2013	17:22	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K

ROBINSON SPGS	ELMORE CO.	AL	06/28/2013	11:53	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/28/2013	12:00	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/28/2013	12:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	06/28/2013	12:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COBBS FORD	ELMORE CO.	AL	07/23/2013	14:39	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
JORDAN LAKE	ELMORE CO.	AL	07/23/2013	14:39	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	07/23/2013	14:40	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	07/23/2013	14:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/23/2013	14:50	CST-6	Thunderstorm Wind	54 kts. MG	0	0	0.00K	0.00K
COOSADA	ELMORE CO.	AL	07/23/2013	15:10	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/23/2013	15:20	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WEOKA	ELMORE CO.	AL	07/24/2013	17:45	CST-6	Flash Flood		0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	08/14/2013	14:54	CST-6	Flash Flood		0	0	0.00K	0.00K

MAN	ELMORE CO.	AL	12/22/2013	17:50	CST-6	Flood		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/06/2014	23:00	CST-6	Cold/wind Chill		0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	01/11/2014	06:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WALLSBURG	ELMORE CO.	AL	01/11/2014	07:08	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/28/2014	06:57	CST-6	Winter Storm		0	0	0.00K	0.00K
Totals:								9	59	71.732M	1.223M

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5.4.1 Critical Facilities and Infrastructure

Facilities critical to government response and recovery activities (i.e., life safety and property and environmental protection) include: dispatch centers, emergency operations centers, police and fire stations, public works facilities, sewer facilities, water facilities, hospitals, bridges and roads, and shelters. Facilities that, if damaged, could cause serious secondary impacts may also be considered "critical." A facility housing hazardous materials is one example of this type of critical facility. The facilities housing hazardous materials are not included in this plan. Critical and essential facilities are those facilities that are vital to the continued delivery of key government services or that may significantly impact the public's ability to recover from an emergency or disaster. These facilities may include buildings such as: the county jail, judicial complex, public services buildings, the courthouse, city halls and other public facilities such as schools. The maps on the following pages illustrate the critical facilities, essential facilities, public infrastructure, and major transportation routes within Elmore County. **Table 5.4.1-1** is a detailed listing of facilities that are considered critical facilities for the county and municipal jurisdictions in Elmore County.

Critical Facilities

Government Buildings

- Elmore County Courthouse
- Elmore County Judicial Complex: E-911, Courts, Sheriff's Department
- County Engineer: Offices and Shop
- City Halls: Millbrook, Tallassee and Wetumpka
- Town Halls: Coosada, Deatsville, Eclectic, and Elmore
- Police Departments: Coosada, Eclectic, Millbrook, Tallassee and Wetumpka
- Elmore County Schools: Airport Road Intermediate School, Coosada Elementary School, Eclectic Elementary School, Elmore County High School, Eclectic Middle School, Holtville Elementary, Holtville High School, Holtville Middle School, Millbrook Middle School, Redland Road Elementary School, Stanhope-Elmore High School, Redland Elementary School, Robinson Springs Elementary School, Wetumpka Elementary School, Wetumpka Middle School, Wetumpka High School, and Tallassee School System – Tallassee Elementary, Tallassee Middle School and Tallassee High School
- Municipal Public Works Departments – Eclectic, Tallassee, Millbrook, and Wetumpka
- Community Centers/Senior Centers – Wetumpka, Coosada, Eclectic, Tallassee, and Elmore
- Water Treatment and Sewer Treatment Facilities – Wetumpka, Millbrook, Eclectic, Tallassee and all in the unincorporated areas

Fire Departments

Buyck VFD	Coosada VFD	Deatsville VFD
Eclectic VFD	Elmore VFD	Emerald Mountain VFD
Friendship VFD	Holtville/Slapout VFD	Kowaliga VFD
Lightwood VFD	Millbrook VFD	Real Island VFD
Red Hill VFD	Redland VFD	Santuck VFD
Seman VFD	Tallassee VFD	Titus VFD
Wetumpka VFD	Windermere VFD	

Bridges
I-65 Bridges: Alabama River
US HWY 231 Bridges: Tallapoosa River, Lake Jordan
State HWY Bridges
State 9: Flat Branch, Corn Creek,
State 14: Mortar Creek, Calloway Creek Canal, Tallapoosa River
State 63: Lake Martin
State 111: Lake Jordan
State 170: Flat Branch
State 212: Coosa River
State 229: Tallapoosa River

Railroad: CSX

Alabama Power: Transmission lines, Hydroelectric Dams

Natural Gas: Transmission Pipeline, Compressor Station, LNG Storage Facility

Propane: Transmission Pipeline

See the following maps for critical facilities located in Elmore County, Alabama:

- Figure 5.4.1-1 Elmore County Map – Critical Facilities
- Figure 5.4.1-2 Town of Coosda Map – Critical Facilities
- Figure 5.4.1-3 Town of Deatsville Map – Critical Facilities
- Figure 5.4.1-4 Town of Eclectic Map – Critical Facilities
- Figure 5.4.1-5 Town of Elmore Map – Critical Facilities
- Figure 5.4.1-6 City of Millbrook Map – Critical Facilities
- Figure 5.4.1-7 City of Tallassee Map – Critical Facilities
- Figure 5.4.1-8 City of Wetumpka Map – Critical Facilities
- Figure 5.4.1-9 Police Departments Map – Critical Facilities
- Figure 5.4.1-10 Correctional Facilities Map – Critical Facilities
- Figure 5.4.1-11 Fire Stations Map – Critical Facilities
- Figure 5.4.1-12 Healthcare Facilities Map – Critical Facilities
- Figure 5.4.1-13 Hazardous Dams Map – Critical Facilities

Figure 5.4.1-1 Elmore County Map – Critical Facilities

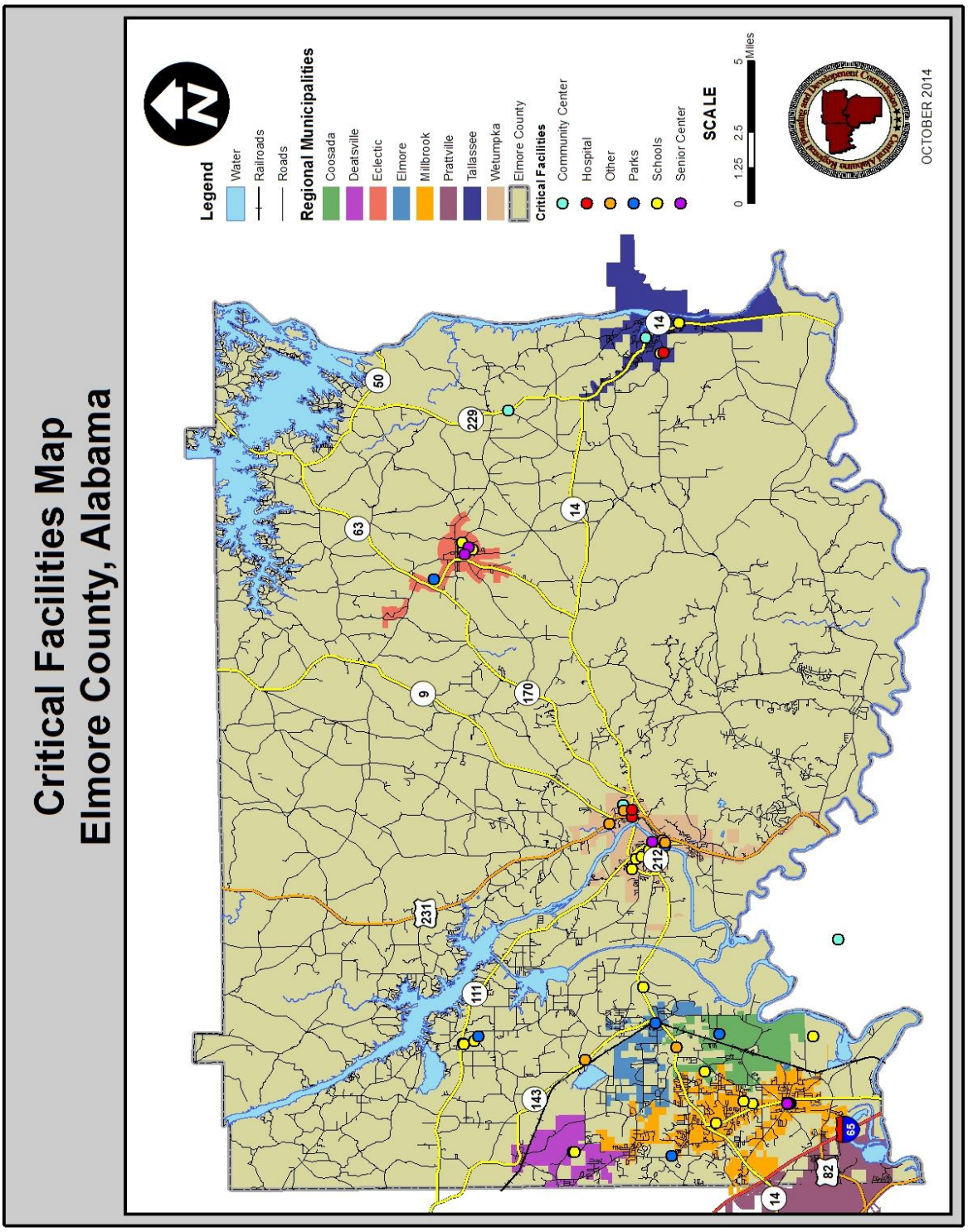

Figure 5.4.1-2 Town of Coosada Map – Critical Facilities

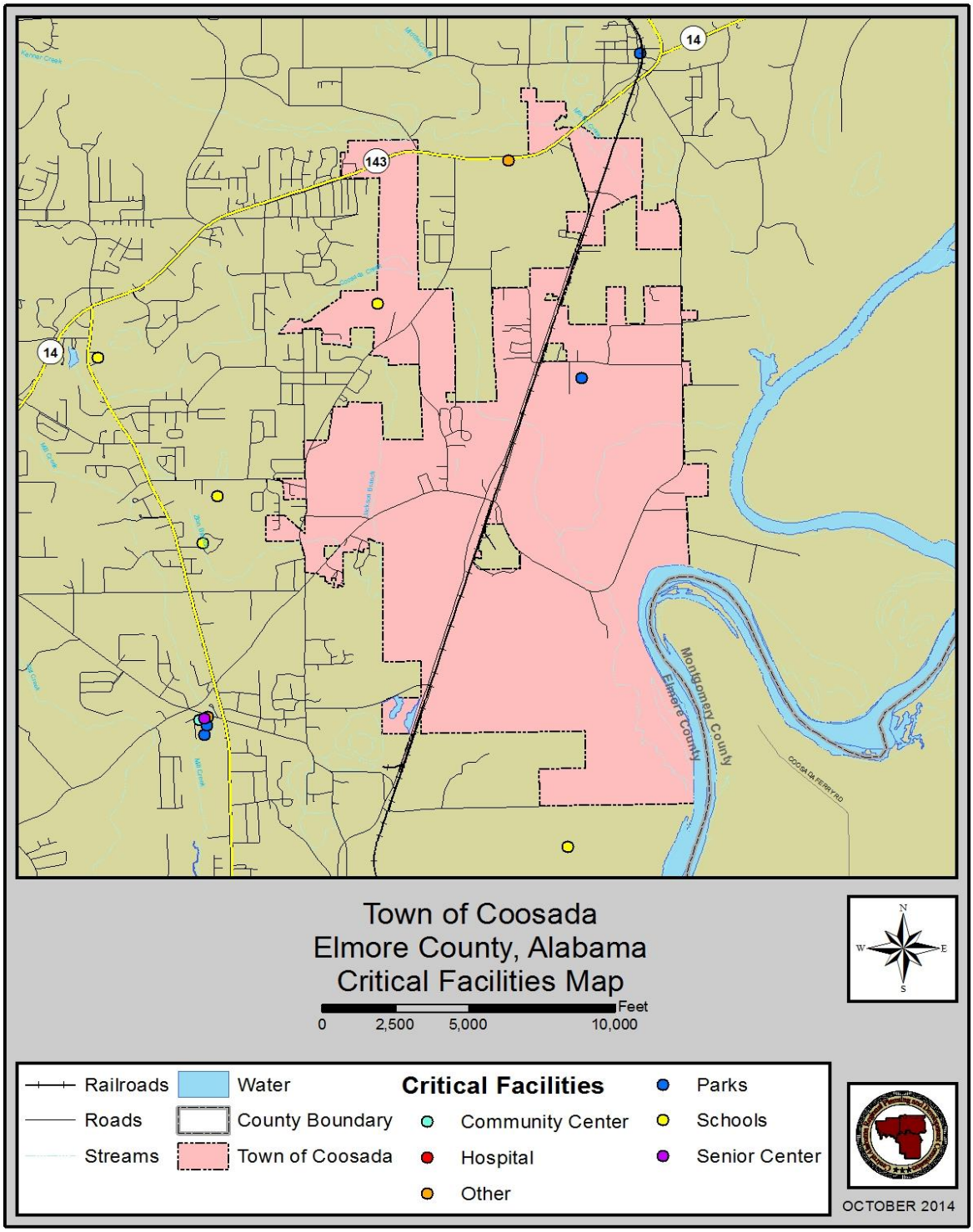

Figure 5.4.1-3 Town of Deatsville Map – Critical Facilities

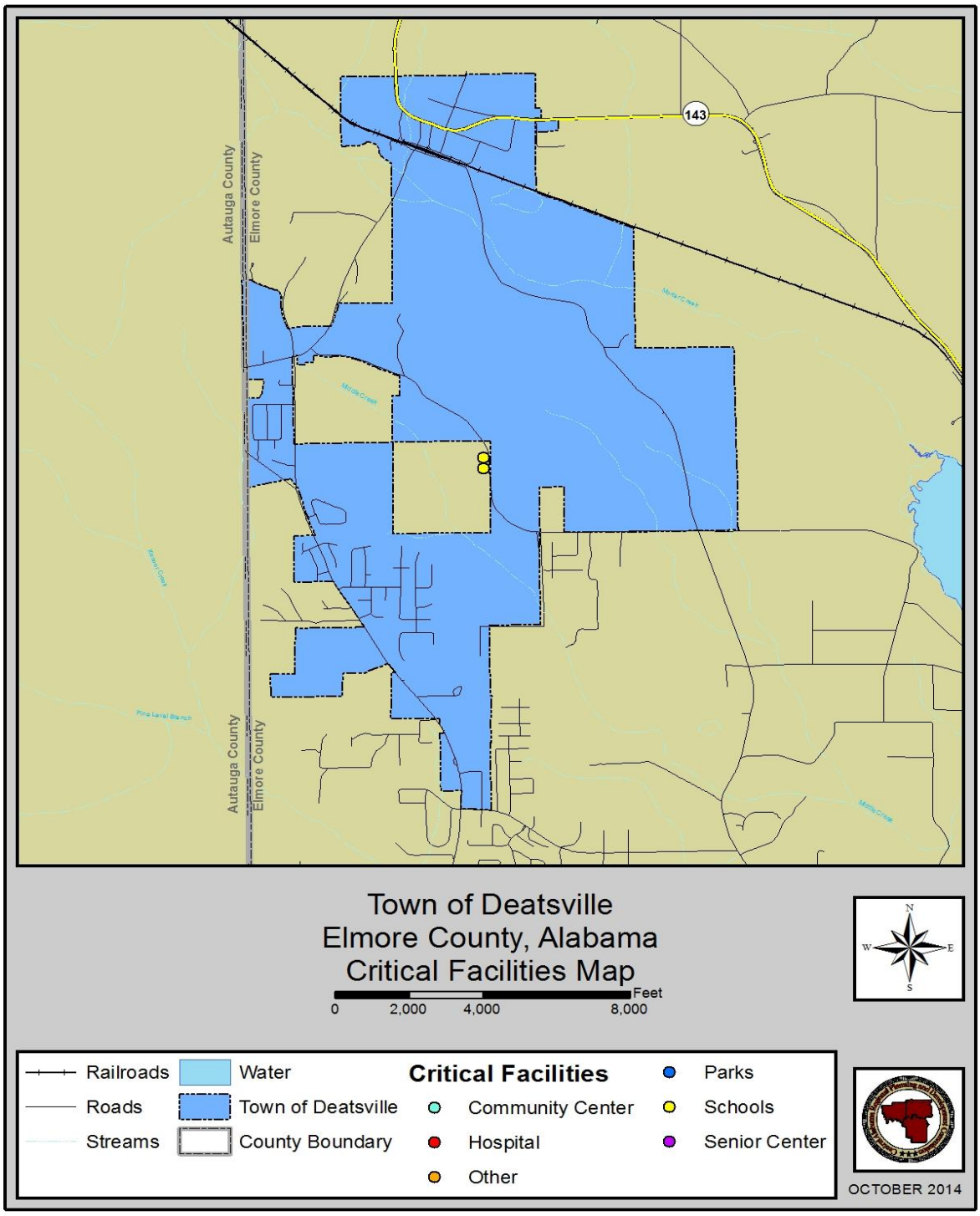

Figure 5.4.1-4 Town of Eclectic Map – Critical Facilities

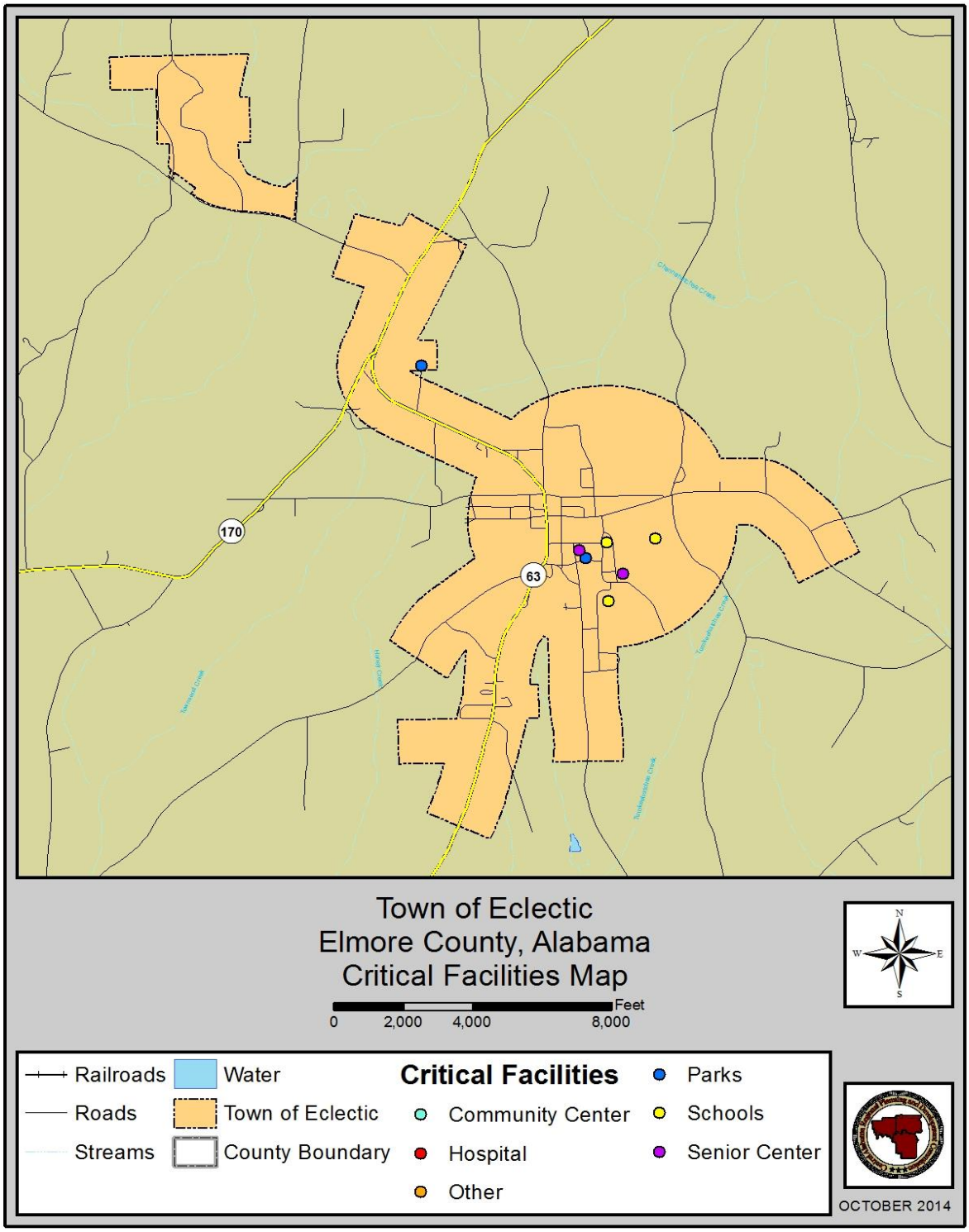

Figure 5.4.1-5 Town of Elmore Map – Critical Facilities

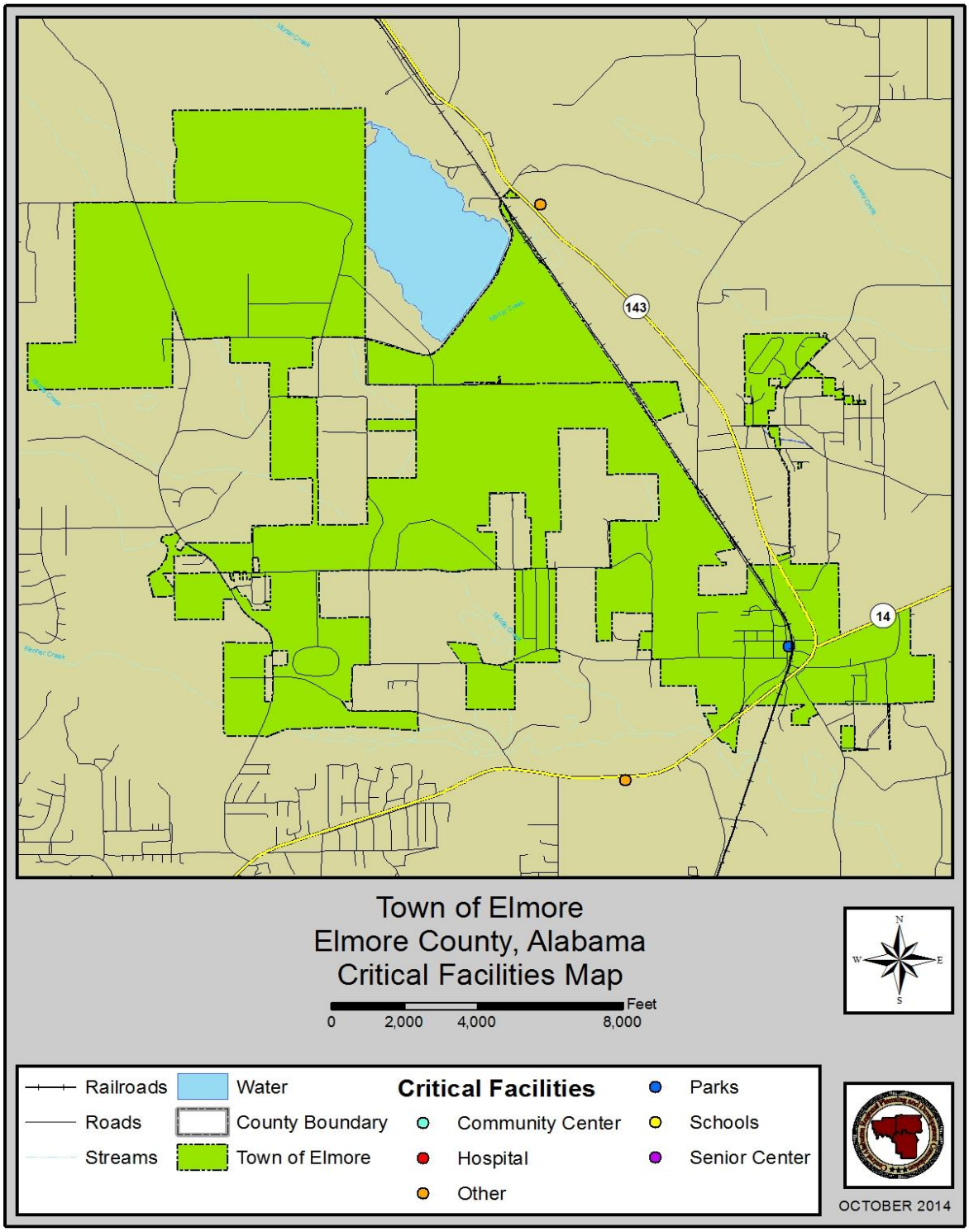

Figure 5.4.1-6 City of Millbrook Map – Critical Facilities

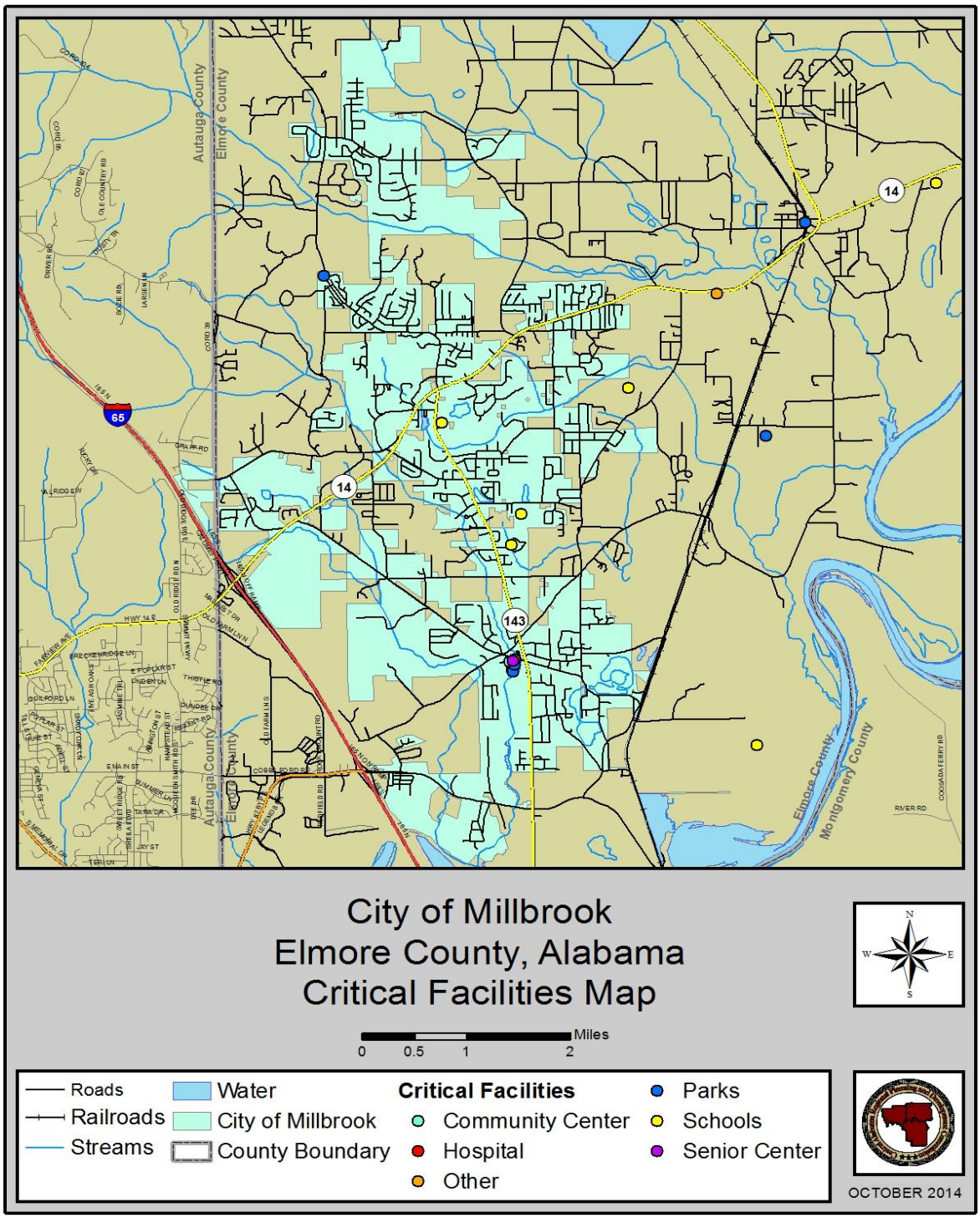

Figure 5.4.1-7 City of Tallassee Map – Critical Facilities

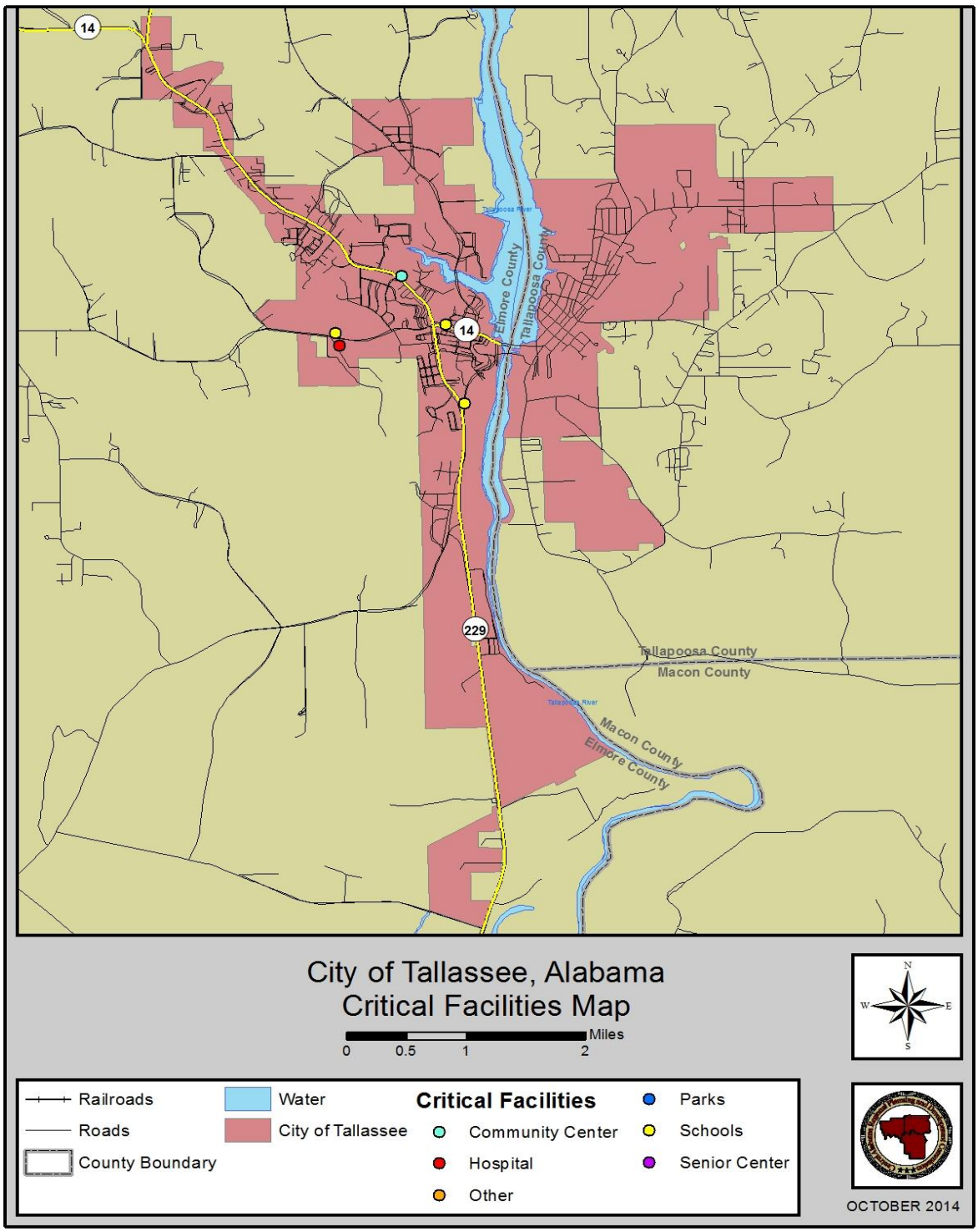

Figure 5.4.1-8 City of Wetumpka Map – Critical Facilities

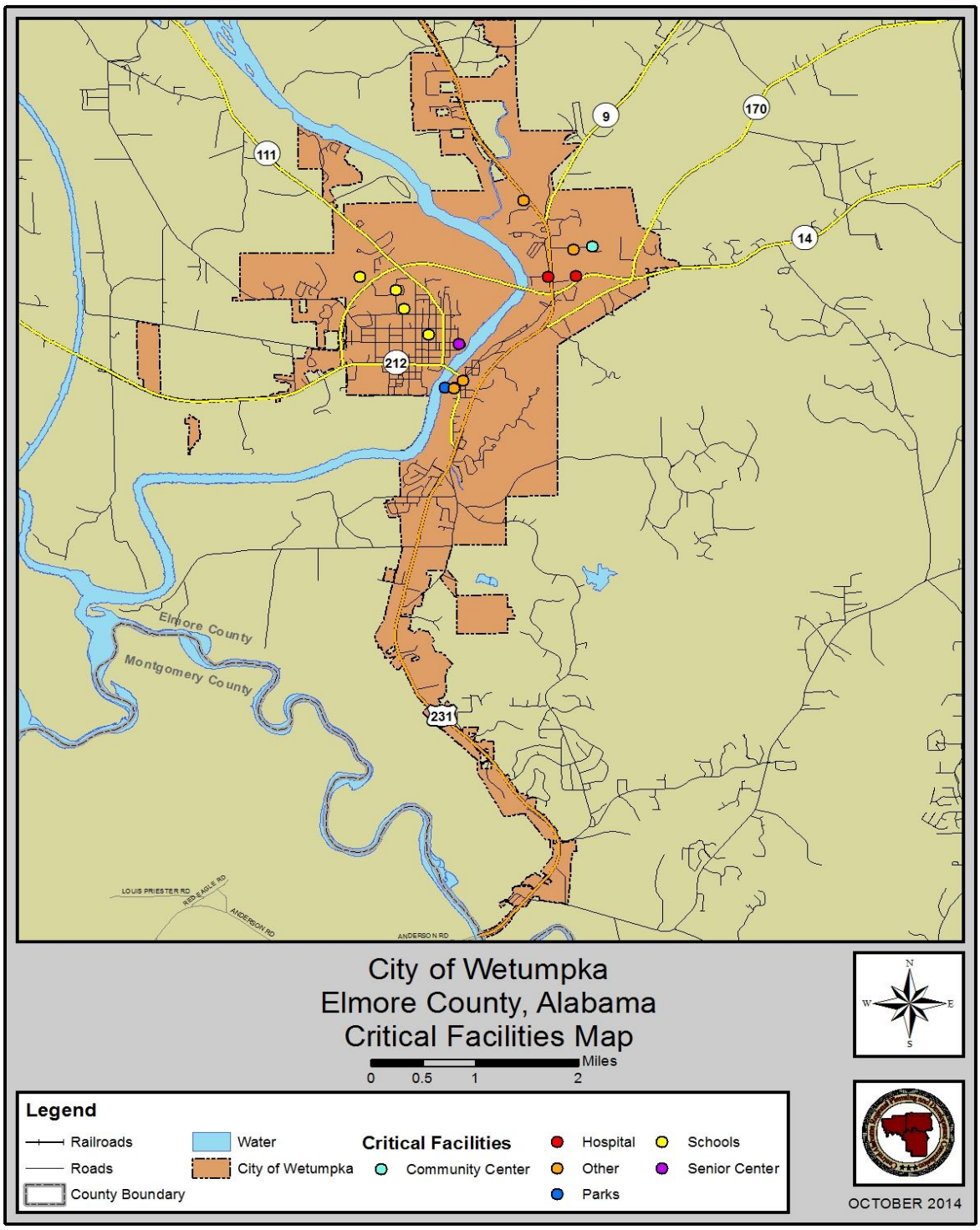

Figure 5.4.1-9 Police Departments Map – Critical Facilities

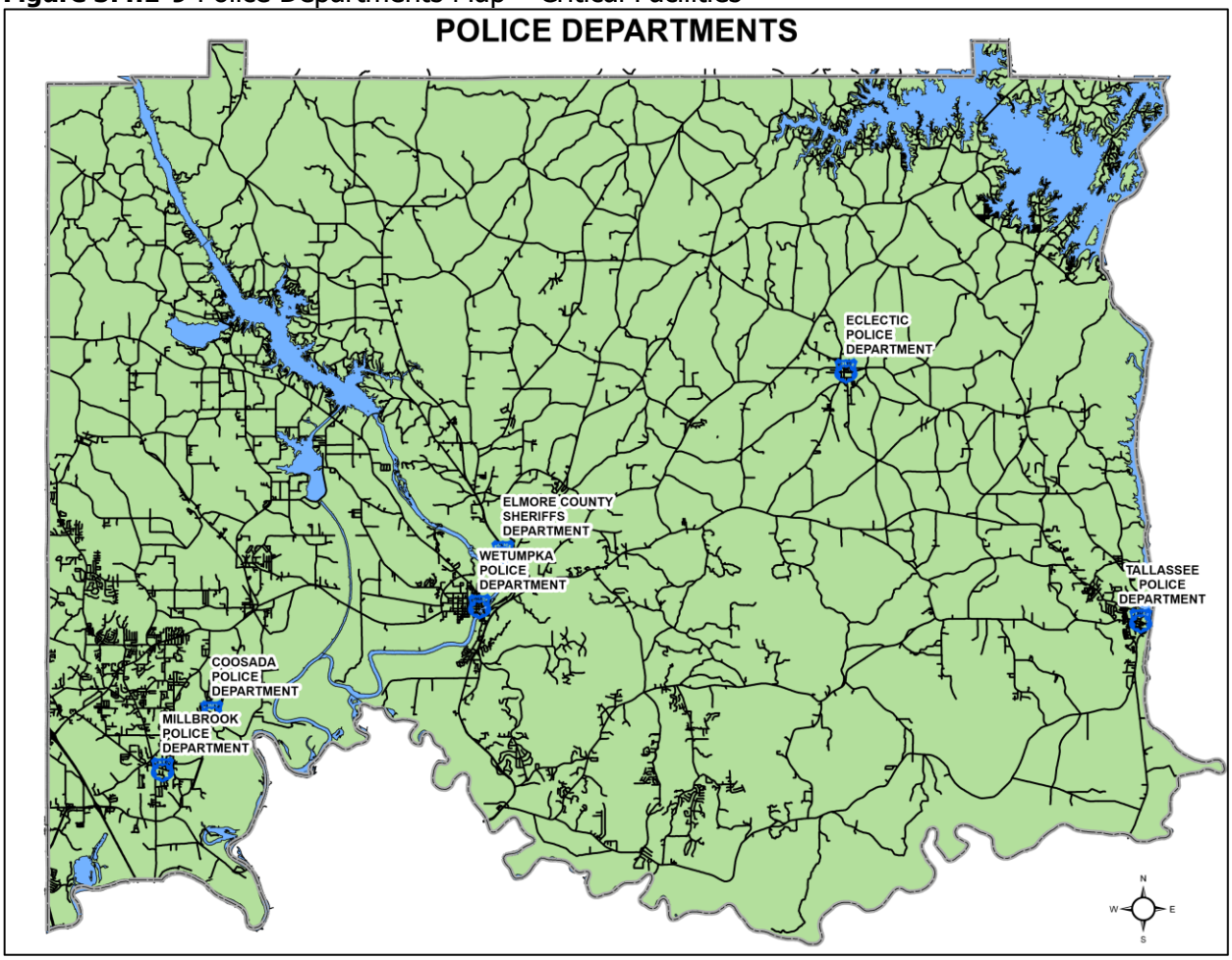

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Figure 5.4.1-10 Correctional Facilities Map – Critical Facilities

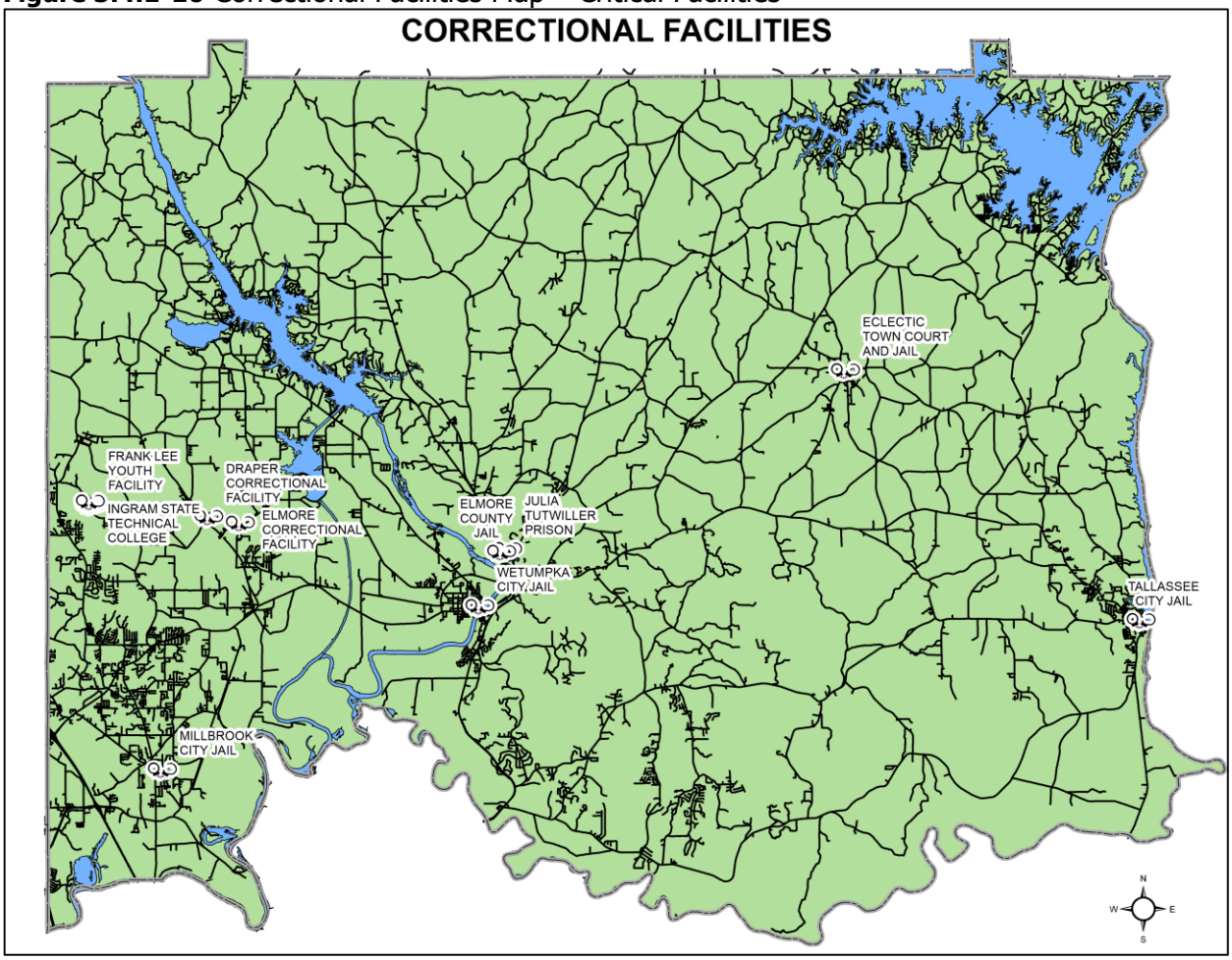

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Figure 5.4.1-11 Fire Stations Map – Critical Facilities

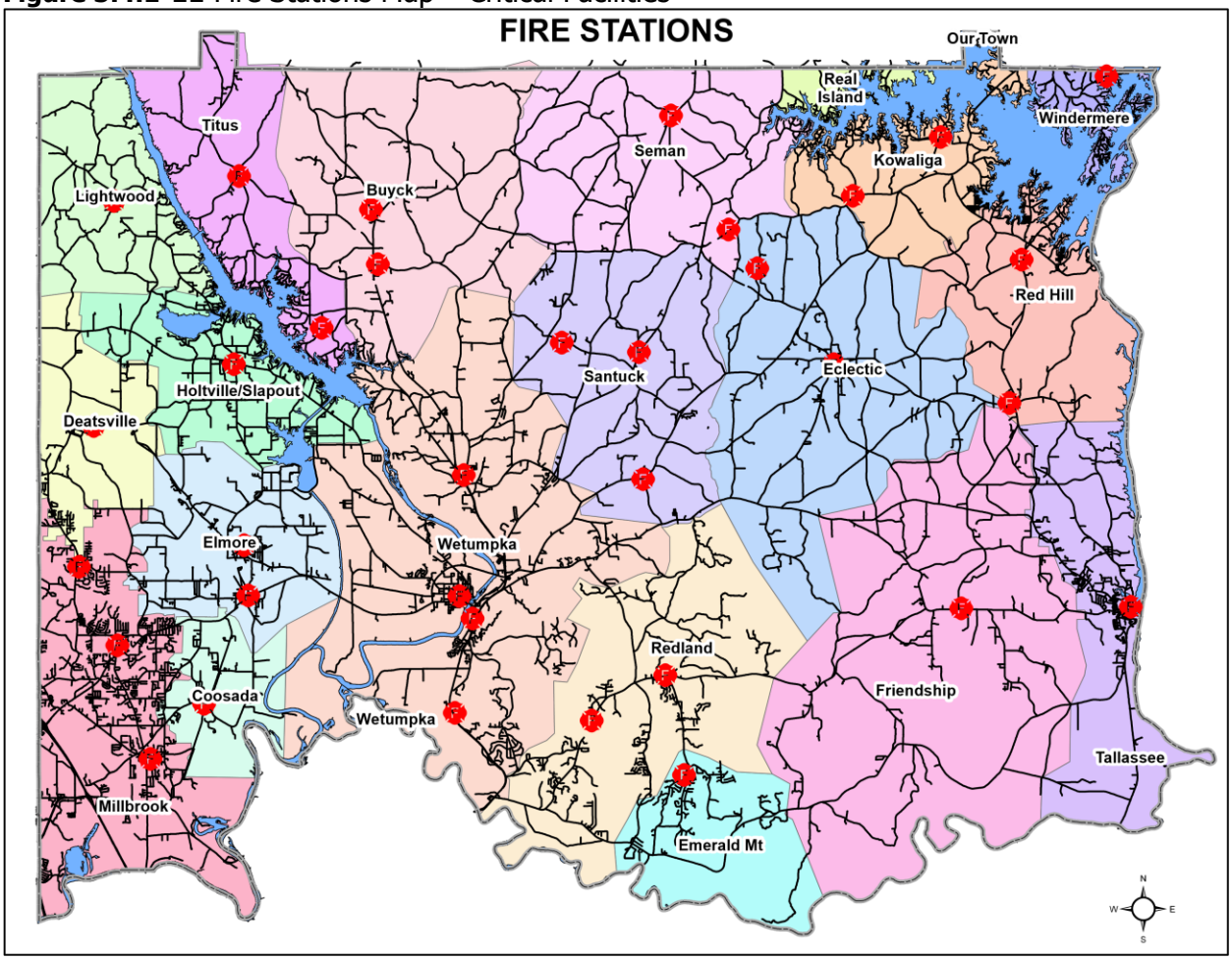

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Figure 5.4.1-12 Healthcare Facilities Map – Critical Facilities

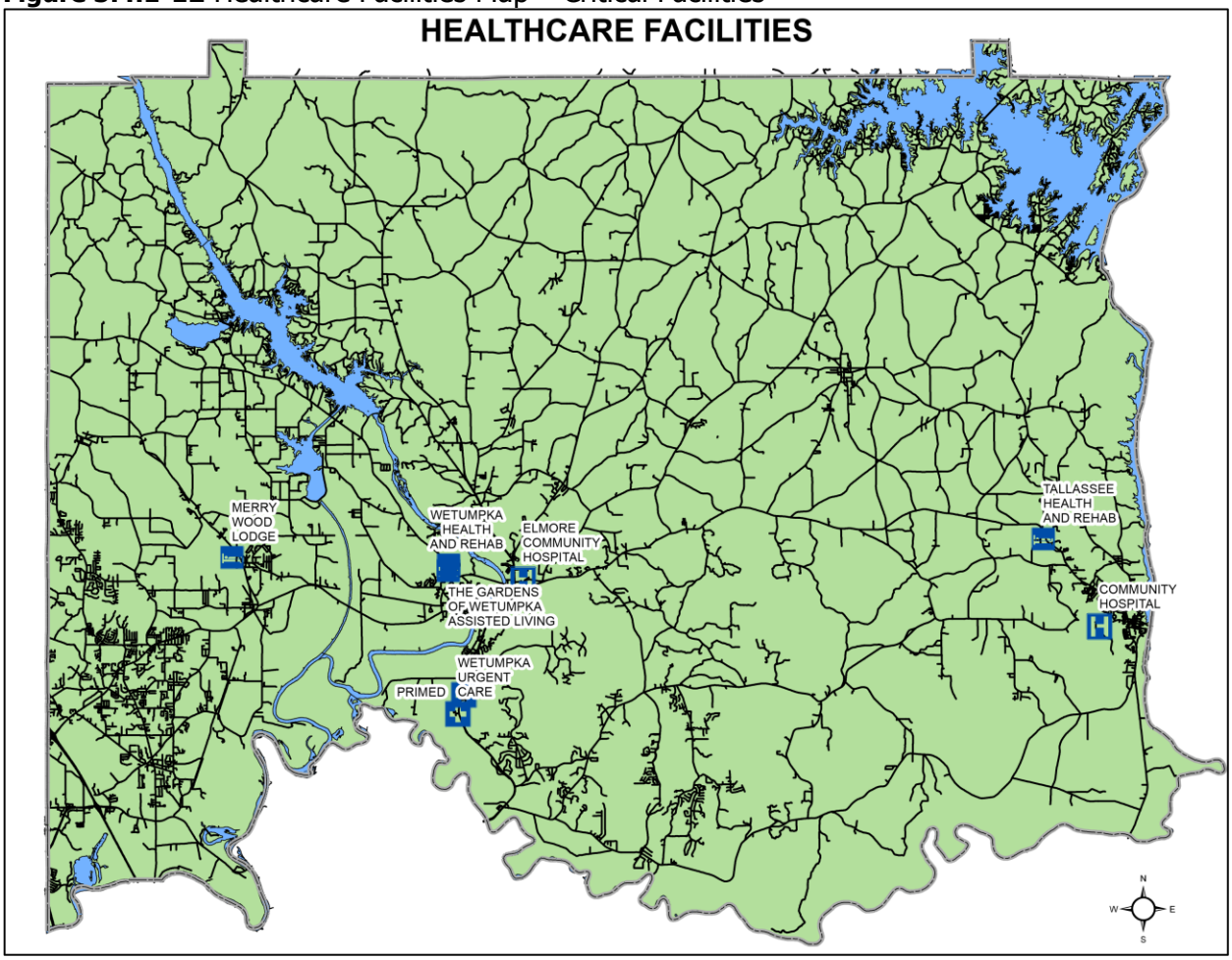

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Figure 5.4.1-13 Hazardous Dams Map – Critical Facilities

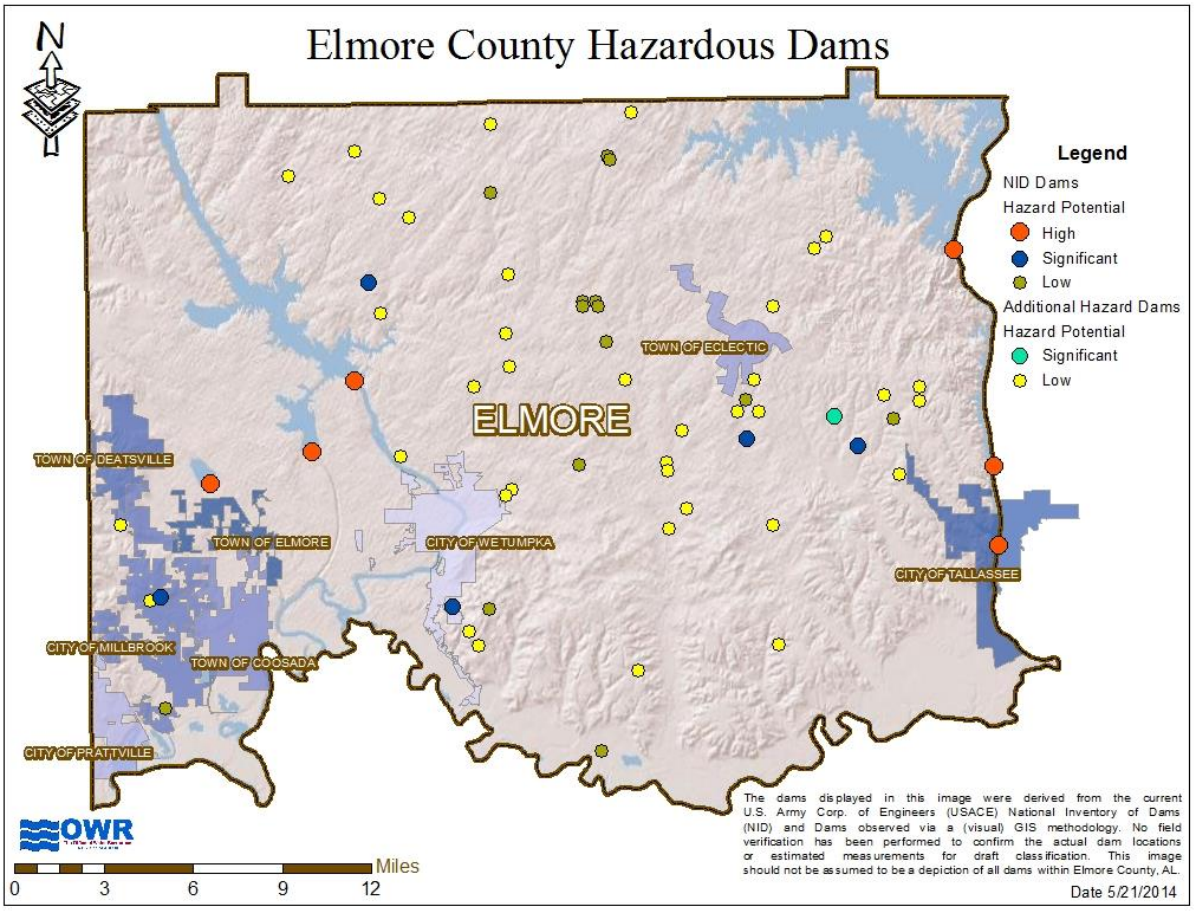

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Table 5.4.1-1 Elmore County Critical Public Facilities Listing

Elmore County Critical Public Facilities Listing			
JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Elmore County Commission	Essential/Law Enforcement	Judicial Building 8935 US Hwy 231	$8,959,141
	Essential/Law Enforcement	County Jail 8955 US Hwy 231	$9,044,322
	Essential/Law Enforcement	Sheriff's Maintenance Shop 121 Laurel Creek Rd.	Excluded from blanket coverage
	Essential/Medical	County Health Department 7967 US Hwy 231	$833,333
	Essential/Governmental	County Extension Office 100 Queen Ann Dr.	$277,778
	Essential/Governmental	County Extension Kitchen 100 Queen Ann Dr.	$77,778
	Essential/Governmental	EMA/HS Office, 201 Hill St., Wetumpka, AL, 36092	$1,800,000
	Essential/Governmental	Courthouse 100 Commerce St.	$5,250,000
	Essential/Law Enforcement	Drug Task Force 100 Commerce St.	Excluded from blanket coverage
	Essential/Governmental	Heavy Equipment Shop 155 County Shop Rd.	$55,556
	Essential/Governmental	Engineers Office 155 County Shop Rd.	$333,333
	Essential/Governmental	Tenant Occupied 210 Old Mont. Hwy	$75,000
	Essential/Governmental	Voting House 295 Ware Rd.	$33,333

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENTCOST
Elmore County Board of Education	Essential/Education	Service Center, Eclectic, AL	$4,336,243
	Essential/Education	Coosada Elementary School	$11,440,362
	Essential/Education	Eclectic Elementary School	$8,915,597
	Essential/Education	Eclectic Middle School	$8,322,203
	Essential/Education	Elmore County High School	$11,721,497
	Essential/Education	Holtville Elementary School	$8,287,218
	Essential/Education	Holtville Middle School	$7,145,352
	Essential/Education	Holtville High School	$11,539,630
	Essential/Education	Millbrook Middle Junior High School	$14,886,648
	Essential/Education	Robinson Springs Elementary School	$7,062,010
	Essential/Education	Coosada Elementary School	$11,440,362
	Essential/Education	Stanhope Elmore High School	$14,825,378
	Essential/Education	Wetumpka Elementary School	$13,010,178
	Essential/Education	Wetumpka High School	$16,916,131
	Essential/Education	Wetumpka Middle School	$14,425,303
	Essential/Education	Wetumpka Junior High School	$8,119,057
	Essential/Education	Elmore County Area Vocational School	$5,336,479
Sub Total			$166,289,286

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Town of Coosada	Essential/Governmental	City Hall, 5800 Coosada Rd., 36020	500,000
	Infrastructure	Building/Shop	60,000
	Essential/Fire	Station #1 5830 Coosada Rd. C64	350,000
	Essential	Community Center	250,000
	Infrastructure/Public Works	Sewer Pump Station	100,000
Sub Total			1,260,000
Town of Eclectic	Essential/Government	City Hall, 50 Main St., 36024	$163,218
	Essential/Government	Municipal Building, 145 Main St.	$200,000
	Essential/Government	Conference Room 50 Main St.	$56,276
	Essential	Recreation Hall, 12 1/2 ® College St.	$26,139
	Essential/Fire	Fire Station, 140 First Ave.	$130,000
	Infrastructure/Public Works	Pumping Station, 335 Union Rd.	$28,139
	Infrastructure/Public Works	Pumping Station, 1500 Kowaliga Rd.	$28,139
	Infrastructure/Public Works	Pumping Station, 85 Kowaliga Rd.	$28,139
	Infrastructure/Public Works	Pumping Station, 400 West Collins Way	$28,139
	Infrastructure/Public Works	Pumping Station, 220-B Varner Rd.	$28,139

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Town of Eclectic Continued…	Infrastructure/Public Works	Pumping Station, 500 Nichols Ave.	$28,139
	Infrastructure	Storage Building, 50 Rear Main St.	$52,899
	Infrastructure/Contents	Aerators/Pumps/Panels, 700 N. College Ave.	$166,575
Sub Total			$963,941
Town of Elmore	Essential/Governmental	Town Hall, 36025	$95,000
	Essential/Governmental	Annex Building	$120,000
	Infrastructure	Storage Buildings	$65,000
Sub Total			$280,000
City of Millbrook	Essential/Governmental	Police Court (1/1), Millbrook, 36054	$904,672
	Essential/Fire	Fire Station (2/1)	$582,227
	Infrastructure/Public Works	Street Department Shop (3/1)	$180,302
	Essential/Fire	Fire Station (4/1)	$108,911
	Essential/Fire	Fire Station (5/1)	$86,221
	Essential/Governmental	Probate Annex (6/1)	$42,294
	Essential	Activity Center (6/2)	$128,571
	Infrastructure/Public Works	Water Tank	$226,887
	Infrastructure/Public Works	Repeater Station	$13,198

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Infrastructure/Public Works	Sewage Treatment Plant (9/3)	2,348,592
City of Millbrook Continued…	Infrastructure/Public Works	Well & Fence (9/4)	$326,193
	Infrastructure/Public Works	Lift Pump & Fence (10/1)	$32,620
	Infrastructure/Public Works	Lift Pump & Fence (11/1)	$32,620
	Infrastructure/Public Works	Lift Pump & Fence (12/1)	$39,143
	Infrastructure/Public Works	Lift Pump & Fence (13/1)	$39,143
	Infrastructure/Public Works	Lift Pump & Fence (14/1)	$39,143
	Infrastructure/Public Works	Lift Pump & Fence (15/1)	$39,143
	Infrastructure/Public Works	Lift Pump & Fence (16/1)	$32,620
	Infrastructure/Public Works	Lift Pump & Fence (17/1)	$195,715
	Infrastructure/Public Works	Lift Pump & Fence (18/1)	$117,429
	Infrastructure/Public Works	Lift Pump & Fence (19/1)	$26,096
	Infrastructure/Public Works	Lift Pump & Fence (20/1)	$19,571
	Infrastructure/Public Works	Lift Pump & Fence (21/1)	$26,096
	Infrastructure/Public Works	Lift Pump & Fence (22/1)	$26,096
	Infrastructure/Public Works	Lift Pump & Fence (23/1)	$26,096

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Infrastructure/Public Works	Lift Pump & Fence (24/1)	$26,096
	Infrastructure/Public Works	Lift Pump & Fence (25/1)	$26,096
City of Millbrook Continued…	Infrastructure/Public Works	Lift Pump & Fence (26/1)	$26,096
	Infrastructure/Public Works	Lift Pump & Fence (27/1)	$26,096
	Infrastructure/Public Works	Lift Pump & Fence (28/1)	$26,096
	Infrastructure/Public Works	Lift Pump & Fence (29/1)	$63,338
	Infrastructure/Public Works	Lift Pump & Fence (30/1)	$19,571
	Infrastructure/Public Works	Lift Pump & Fence (31/1)	$19,571
	Infrastructure/Public Works	Lift Pump & Fence (34/1)	$32,620
	Infrastructure/Public Works	Lift Pump & Fence (35/1)	$26,096
	Infrastructure/Public Works	Lift Pump & Fence (36/1)	$32,620
	Infrastructure/Public Works	Lift Pump & Fence (37/1)	$26,096
	Infrastructure/Public Works	Lift Pump & Fence (38/1)	$36,533
	Infrastructure/Public Works	Lift Pump & Fence (39/1)	$36,533
	Infrastructure/Public Works	Lift Pump & Fence (40/1)	$32,620
	Infrastructure/Public Works	Lift Pump & fence (41/1)	$19,571

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Infrastructure/Public Works	Water Tank & Fence (42/1)	$652,388
	Essential/Governmental	City Hall (43/1), Millbrook, 36054	$707,399
	Essential	Parks & Recreation Building (45/1)	$59,703
	Essential	Parks & Recreation Building (46/1)	$113,436
	Essential	Civic Center (47/1)	$506,204
	Essential	Meeting Building (48/1)	$30,391
Sub Total			$8,152,149
City of Tallassee	Essential/Governmental	Dept. of Public Safety, 214 Barnett Blvd., 36078	$1,343,915
	Essential/Governmental	Recreation Dept. Building, 450 Gilmer Ave.	$304,412
	Essential/Governmental	City Shop, 450 (R) Gilmer Ave.	$152,091
	Infrastructure/Public Works	Water Filter Plant, 2 Old Bridge St.	$2,678,000
	Infrastructure/Public Works	Waste Water Treatment Plant	$1,345,000
	Essential/Fire	Fire Station #1, 123 North Ann Ave.	$346,057
	Essential/Fire	Fire Station #2, 140 Washington St.	$36,121
	Essential/Fire	Fire Station #3, 139 Twin Creeks Dr.	$279,130

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Essential/Governmental	City Hall & Council Chambers, 3 Freeman Ave.	$2,422,700
	Essential	Community Center, 445 Main St.	$238,810
	Essential/Governmental	Future Police & Jail Building	$505,000
Sub Total			$9,651,236
City of Tallassee Board of Education	Essential/Education	Central Office, 308 King St., 36078	$560,754
	Essential/Education	Southside Middle/Jr. High School 805 Friendship Rd.	$8,793,310
	Essential/Education	Tallassee Elementary School Barnett Blvd/Outer Dr.	$13,800,171
	Essential/Education	Tallassee High School Gilmer Ave.	$16,271,933
Sub Total			$39,426,168
City of Wetumpka	Essential/Governmental	City Hall, Wetumpka, 36092	$2,500,000
	Essential/Law Enforcement	Police Station, 208 Marshall St., Wetumpka, 36092	$1,000,000
	Essential/Fire	Station #1, Wetumpka, 36092	$400,000
	Essential/Fire	Station #2, Wetumpka, 36092	$100,000
	Essential/Fire	Station #3, Wetumpka, 36092	$100,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Essential	Civic Center, Wetumpka, 36092	$3,000,000
	Essential	Fain Sr. Center, Wetumpka, 36092	$400,000
	Infrastructure/Public Works	Public Works Facility, Red Eagle Dr., Wetumpka, 36092	$500,000
	Infrastructure/Public Works	Airport FBO	$650,000
Sub Total			$8,650,000
Fire Departments - Others	Essential/Fire	Santuck #1, 7645 Central Plank Rd.	$185,000
	Essential/Fire	Santuck #2, 5354 Georgia Rd.	$163,200
	Essential/Fire	Santuck #3, 2187 Dexter Rd.	$125.000
	Essential/Fire	Titus #1, Titus Rd.	$210,834
	Essential/Fire	Buyck Station #2, 125 Laurel Creek Rd.	$134,130
	Essential/Fire	Holtville Station #1, 5615 Ceasarville Rd.	$130,000
	Essential/Fire	Seman Station #1, 15915 Central Plank Rd.	$142,800
	Essential/Fire	Seman Station #2, 903 Mt. Hebron Rd.	$85,000
	Essential/Fire	Eclectic Station #1, 140 First St.	$153,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Essential/Fire	Eclectic Station #2, 839 Middle Rd.	$42,000
	Essential/Fire	Friendship Station #1, 4544 Friendship Rd.	$142,800
	Essential/Fire	Kowaliga Station #1, 1240 Prospect Rd.	$210,000
	Essential/Fire	Kowaliga Station #2, Mt. Hebron Rd.	$150,000
	Essential/Fire	Elmore Station #1, 15 Fire Station Rd.	$118,320
	Essential/Fire	Elmore Station #2, AL Hwy 143.	$64,600
	Essential/Fire	Windermere Station #1	$100,000
	Essential/Fire	Coosada Station #1, 5830 Coosada Rd.	$153,000
	Essential/Fire	Red Hill Station #1, 3558 Red Hill Rd.	$68,510
	Essential/Fire	Red Hill Station #2, Channel Creek Rd.	$71,400
	Essential/Fire	Redland Station #1, 4367 Redland Rd.	$130,560
	Essential/Fire	Redland Station #2, 6941 Redland Rd.	$265,800
	Essential/Fire	Lightwood Station #1, 6250 Lightwood Rd.	$85,000
	Essential/Fire	Real Island Station #1, 1495 Real Island Rd.	$276,706
	Essential/Fire	Emerald Mtn Station #1, 1785 Old Ware Rd.	$197,200
	Essential/Fire	Deatsville Station #1, 6940 AL Hwy 143	$173,400
Sub Total			$3,478,710

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Central Elmore Water & Sewer Authority	Infrastructure/Public Works	Main Office, 716 US Hwy 231, Wetumpka, 36093	$850,000
	Infrastructure/Public Works	Intake, Wave Crest Rd., Eclectic, 36024	$2,500,000
	Infrastructure/Public Works	Filtration Plant, 80 Lake Point Rd., Eclectic, 36024	$10,000,000
	Infrastructure/Public Works	Maintenance Facility (N), 133 Lake Point Rd., Eclectic 36024	$550,000
	Infrastructure/Public Works	Maintenance Facility (S), 6545 Redland Rd., Wetumpka,36093	$900,000
	Infrastructure/Public Works	Water Storage Tank, 185 Middle Rd., Eclectic, 36024	$1,100,000
	Infrastructure/Public Works	Water Storage Tank, 3394 Pleasant Hill Rd., Wetumpka, 36092	$1,100,000
	Infrastructure/Public Works	Water Storage Tank, 6146 Redland Rd., Wetumpka 36093	$1,100,000
	Infrastructure/Public Works	Water Storage Tank, 6545 Redland Rd., Wetumpka 36093	$1,300,000
	Infrastructure/Public Works	Water Storage Tank, 8436 Balm Rd., Eclectic, 36024	$500,000
	Infrastructure/Public Works	Water Storage Tank, 21268 US Hwy 231, Titus, 36080	$650,000
	Infrastructure/Public Works	Water Storage Tank, 1540 Martin Dam Rd., Eclectic, 36024	$650,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Infrastructure/Public Works	Water Storage Tank, 4007 Jasmine Hill Rd, Wetumpka, 36093	$550,000
	Infrastructure/Public Works	Pumping Station, 1935 Jug Factory Rd., Wetumpka, 36092	$500,000
	Infrastructure/Public Works	Pumping Station, 1240 Willow Springs Rd., Wetumpka, 36093	$500,000
	Infrastructure/Public Works	Pumping Station, 168 Sunny Lane, Wetumpka, 36092	$500,000
	Infrastructure/Public Works	Pumping Station, 6830 Titus Rd., Titus, 36080	$650,000
	Infrastructure/Public Works	Pumping Station, 185 Middle Rd., Eclectic 36024	$500,000
Sub Total			$24,415,000
Eclectic Waterworks Board	Infrastructure/Public Works	Office Building (plus contents), 507 Main St., Eclectic, 36024	$300,000
	Infrastructure/Public Works	Water Tank, 507 Main St., Eclectic, 36024	$650,000
	Infrastructure/Public Works	Pump Station, Hwy 14, Eclectic	$50,747
	Infrastructure/Public Works	Pump Station, Hwy 44, Eclectic	$206,000
	Infrastructure/Public Works	Pump Station, Hwy 63, Eclectic	$150,000
	Infrastructure/Public Works	Water Tank, Main St., Eclectic	$252,782
	Infrastructure/Public Works	Water Tank, Hwy 63, Eclectic	$597,027

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Infrastructure/Public Works	Water Tank, Dean Circle, Eclectic	$660,000
Sub Total			$2,866,556
Elmore Water Authority	Infrastructure/Public Works	Airport Rd., Well, 6370 Airport Rd., Elmore, 36054	$207,479
	Infrastructure/Public Works	Blackmon Well, 6330 Airport Rd., Elmore, 36054	$184,481
	Infrastructure/Public Works	Estes Well, 5260 Pineview Rd., Elmore, 36054	$184,481
	Infrastructure/Public Works	Dismukes Well, 20 Mercer Rd., Elmore, 36054	$245,974
	Infrastructure/Public Works	Kenner Well, 28 Kenner Creek Rd., Elmore, 36054	$184,481
	Infrastructure/Public Works	Eagle Rock Well, Little Deer Run, Elmore, 36054	$491,727
	Infrastructure/Public Works	Eagle Rock Tank, Eagle Rock Subdivision, Elmore, 36054	$874,182
	Infrastructure/Public Works	Ingram Rd. Well, 2514 Ingram Rd., Elmore	$430,000
	Infrastructure/Public Works	Roy Tank, 1933 Deatsville Hwy., Elmore	$1,229,874
	Infrastructure/Public Works	Graves Tank, 157 Sevarg Ln., Elmore	$307,468
	Infrastructure/Public Works	Bellview Tank, 4482 Deatsville Hwy., Elmore	$614,938

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Elmore Water Authority cont…	Infrastructure/Public Works	Flatwood Tank, 1525 Flatwood Rd., Elmore	$1,229,874
	Infrastructure/Public Works	Elmore/Montgomery Booster, 158 Blackwell Dr., Elmore	$92,241
	Infrastructure/Public Works	County Rd. 3 Booster, 1915 Ingram Rd., Elmore	$61,493
	Infrastructure/Public Works	Bellview Booster, 3775 Deatsville Hwy., Elmore	$61,493
	Infrastructure/Public Works	Office Building, 1633 AL Hwy 14, Elmore	$750,000
	Infrastructure/Public Works	Maintenance Building, 6370 Airport Rd., Elmore	$323,000
Sub Total			$7,473,186
Five Star Water Supply	Infrastructure/Public Works	Water Treatment Facility, 751 Lakeview Dr., Wetumpka, 36092	$3,690,412
	Infrastructure/Public Works	Booster Station, 2000-A, Hwy 14 E., Prattville, 36066	$133,709
	Infrastructure/Public Works	Booster Station, 4704 Camp Grandview Rd., Millbrook, 36054	$100,283
Five Star Water Supply cont…	Infrastructure/Public Works	Water Tower, 4704 Camp Grandview Rd, Millbrook, 36054	$334,276
	Infrastructure/Public Works	Booster Station, 4616 Ceasarville Rd., Wetumpka, 36092	$77,250
Sub Total			$4,335,930

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Friendship Water Authority	Infrastructure/Public Works	Office at 4540 Friendship Rd., 36078	$50,000
	Infrastructure/Public Works	Tallassee Pump Station, Friendship & Ingram Rds.	$87,500
	Infrastructure/Public Works	Claude Pump Station, Tallassee Hwy & Luke Paschal Rds.	$87,500
Sub Total			$1,025,000
Holtville Water System, Inc.	Infrastructure/Public Works	Office, 10048 Holtville Rd., Deatsville, 36022	$92,000
	Infrastructure/Public Works	Water Filter Plant, Hogan Rd., Deatsville	$138,000
	Infrastructure/Public Works	Warehouse, Hwy 11, Deatsville	$7,000
	Infrastructure/Public Works	Pump Station (Loc 4), Rt 1, Deatsville	$30,000
	Infrastructure/Public Works	Pump Station (Loc 5-1), County Rd 23, Deatsville	$30,000
	Infrastructure/Public Works	Pump Station (Loc 5-2), County Rd 23, Deatsville	$45,000
	Infrastructure/Public Works	Water Tank, (Loc 5-3), County Rd 23, Deatsville	$100,000
	Infrastructure/Public Works	Water Tank (Loc 5-4), County Rd 23, Deatsville	$180,000
	Infrastructure/Public Works	Water Tank (Loc 5-5), County Rd 23, Deatsville	$175,000
	Infrastructure/Public Works	Water Tank (Loc-5-6), County Rd 23, Deatsville	$175,000
	Infrastructure/Public Works	Water Tank, 10578 Holtville Rd., Deatsville	$900,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Infrastructure/Public Works	Water Tank, Ruffin Rd., Deatsville	$650,000
	Infrastructure/Public Works	Pump Station, County Rd. 23, Deatsville	$40,000
	Infrastructure/Public Works	Booster Pump Station (Loc-9), Hwy 11, Deatsville	$40,000
Sub Total			$2,602,000
Tallassee Sewer & Water System	Infrastructure/Public Works	Upper Sewer Pumping Station, 590 Noble Rd., Tallassee, 36078	$150,000
	Infrastructure/Public Works	Lower Sewer Pumping Station, 679 Noble Rd., Tallassee	$150,000
	Infrastructure/Public Works	Sewer Pumping Station (Armory), 2054 Gilmer Ave., Tallassee	$150,000
	Infrastructure/Public Works	Sewer Pumping Station (GKN), 1227 AL Hwy 229 S., Tallassee	$150,000
	Infrastructure/Public Works	Sewer Pumping Station (Industrial Park), 20345 Rifle Range Rd.	$150,000
	Infrastructure/Public Works	Sewer Pumping Station, 38 Weldon Dr., Tallassee	$150,000
	Infrastructure/Public Works	Sewer Pumping Station, 26 Clay St., Tallassee	$150,000
	Infrastructure/Public Works	Sewer Pumping Station, 407 4th St., Tallassee	$150,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Tallassee Sewer & Water System	Infrastructure/Public Works	Sewer Pumping Station, 2644 Notasulga Rd, Tallassee	$150,000
	Infrastructure/Public Works	Sewer Pumping Station, 37 Sherry St., Tallassee	$150,000
	Infrastructure/Public Works	Sewer Pumping Station (Mill), 1 Lower Tuskeegee Rd, Tallassee	$150,000
	Infrastructure/Public Works	Riverhills Sewer Pumping Station, 438 N. Ann St., Tallassee	$150,000
	Infrastructure/Public Works	Sewer Pumping Station, 50 Hanil Dr., Tallassee	$150,000
	Infrastructure/Public Works	Sewer Pumping Station, 300 North Wesson St., Tallassee	$150,000
	Infrastructure/Public Works	Laney Gin Sewer Pumping Station, AL Hwy 229 S., Tallassee	$150,000
	Infrastructure/Public Works	Water Tank (Burlington), 89020 Tallassee Hwy, Tallassee	$550,000
	Infrastructure/Public Works	Water Tank (Tallaweka), 810 W. Main St., Tallassee	$550,000
	Infrastructure/Public Works	Water Tank (Riverside Heights), 114 McArthur St., Tallassee	$40,000
	Infrastructure/Public Works	Water Tank (Main), 307 Barness Blvd., Tallassee	$800,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Tallassee Sewer & Water System	Infrastructure/Public Works	Carrville Water Tank, 836 Sims Ave., Tallassee	$550,000
Sub Total			$4,890,000
Tri Community Water Systems	Infrastructure/Public Works	Pump House #1 3011 Sandtown Rd., 36054	$171,826
	Infrastructure/Public Works	Pump House #3 1486 AL Hwy 143	$74,263
	Infrastructure/Public Works	Pump House #4 2010 Railroad St.	$74,263
	Infrastructure/Public Works	Office, 2630 Main St.	$112,240
	Infrastructure/Public Works	Pump House #5, 2314 AL River Pkwy	$74,263
	Infrastructure/Public Works	Water Tank, 370 Deatsville Hwy	$636,540
	Infrastructure/Public Works	Water Tank, 1290 Hwy 14	$636,540
	Infrastructure/Public Works	Pump House #6, 2632 Main St.	$403,142
	Infrastructure/Public Works	Property at various locations: Fireplugs, Pipeline	$375,531
Sub Total			$2,558,608
Wetumpka Water Works & Sewer Board	Infrastructure/Public Works	Wilako Waste Water Treatment, 2909 Elmore Road, 36092	11,000,000
	Infrastructure/Public Works	Pumping Station/RTU, Hardee's, 5837 US Hwy 231, Wetumpka, 36092	100,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
	Infrastructure/Public Works	Pumping Station/RTU, Cotton/Coosa Fain Cntr, Coosa St, Wetumpka, 360902	100,000
Wetumpka Water Works & Sewer Board Continued…	Infrastructure/Public Works	Pumping Station, 515 Cotton St., Wetumpka, 36092	80,000
	Infrastructure/Public Works	Pumping Station/RTU, 200 Boundary St., Wetumpka, 36092	100,000
	Infrastructure/Public Works	Pumping Station/RTU, 7969 US Hwy 231	100,000
	Infrastructure/Public Works	Pumping Station, 1009 AL Hwy 9, Cherokee Hwy 9	80,000
	Infrastructure/Public Works	Pumping Station, 220 Ft. Toulouse, Wetumpka, 36092	80,000
	Infrastructure/Public Works	Pumping Station/RTU, 1566 Central Plank Rd., Wetumpka, 36092	100,000
	Infrastructure/Public Works	Pumping Station, 128 Queen Ann St., Wetumpka, 36092	80,000
	Infrastructure/Public Works	Pumping Station, 1574 Georgia Hwy 170, Wetumpka, 36092	80,000
	Infrastructure/Public Works	Pumping Station, 1672 Gossum Switch Rd., Wetumpka, 36092	80,000
	Infrastructure/Public Works	Pumping Station, 4037 US Hwy 231, Wetumpka, 36092	80,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Wetumpka Water Works & Sewer Board Continued…	Infrastructure/Public Works	Pumping Station/RTU, 313 Charles Ave., Wetumpka, 36092	100,000
	Infrastructure/Public Works	Pumping Station, 107 McDonald Dr., Wetumpka, 36092	80,000
	Infrastructure/Public Works	Pumping Station, 1095 Cotton Lakes Blvd., Wetumpka, 36092	80,000
	Infrastructure/Public Works	Pumping Station/RTU, 9835 US Hwy 231, Wetumpka, 36092	100,000
	Infrastructure/Public Works	Pumping Station, 2213 Central Plank Rd., Wetumpka, 36092	80,000
	Infrastructure/Public Works	Pumping Station/ Telemetry, 2749 US Hwy 231, Wetumpka, 36092	110,000
	Infrastructure/Public Works	Pumping Station, 1753 US Hwy 231, Wetumpka, 36092	55,000
	Infrastructure/Public Works	Pumping Station/RTU, 1061 US Hwy 231, Wetumpka, 36092	110,000
	Infrastructure/Public Works	Pumping Station/RTU, 2355 Chapel Lakes Ln., Wetumpka, 36092	75,000
	Infrastructure/Public Works	Pumping Station/RTU, 395 White Water Ridge, Wetumpka, 36092	120,000
	Infrastructure/Public Works	Pumping Station/RTU, 120 Harrogate Springs Rd., Wetumpka, 36092	100,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Wetumpka Water Works & Sewer Board Continued…	Infrastructure/Public Works	Pumping Station/RTU, 420 Main St., Wetumpka, 36092	75,000
	Infrastructure/Public Works	Pumping Station/RTU, 3526 Elmore Rd., Wetumpka, 36092	75,000
	Infrastructure/Public Works	Water Tank (1), 500 MGD Tower Rd., Wetumpka, 36092	400,000
	Infrastructure/Public Works	Water Tank (2), 500 MGD Tower Rd., Wetumpka, 36092	400,000
	Infrastructure/Public Works	Water Tank, 750 MGD Water Tower Rd., Wetumpka, 36092	500,000
	Infrastructure/Public Works	Water Tank, 2.5 MGD Water Tower Rd., Wetumpka, 36092	750,000
	Infrastructure/Public Works	RTU, Golson Hill Hwy 231, Wetumpka, 36092	20,000
	Infrastructure/Public Works	Water Tank, 250 MGD, Hwy 9, Wetumpka, 36092	400,000
	Infrastructure/Public Works	Valve/RTU, 1566 Central Plank Rd., Wetumpka, 36092	30,000
	Infrastructure/Public Works	Water Tank, 300 MGD Elmore Rd., Wetumpka, 36092	575,000
	Infrastructure/Public Works	RTU, 2909 Elmore Rd., Wetumpka, 36092	20,000
	Infrastructure/Public Works	Filter Plant, River Rd., Wetumpka, 36092	50,000

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Wetumpka Water Works & Sewer Board Continued…	Infrastructure/Public Works	Booster Station, 104 Enslen St., Wetumpka, 36092	60,000
	Infrastructure/Public Works	Booster Pump, Golson Hill, Hwy 231, Wetumpka, 36092	60,000
	Infrastructure/Public Works	Parker Control Valve/RTU, 4379 US Hwy 231, Wetumpka, 36092	40,000
	Infrastructure/Public Works	Booster, 1321 US Hwy 231, Wetumpka, 36092	229,000
	Infrastructure/Public Works	Pressure Valve/RTU, AL Hwy 14, Wetumpka, 36092	48,000
	Infrastructure/Public Works	Pole/RTU, AL Hwy 170, Wetumpka, 36092	20,000
	Infrastructure/Public Works	Five Star Wetumpka Meter Pit/RTU, 3488 Elmore Rd., Wetumpka, 36092	60,000
	Infrastructure/Public Works	Five Star Meter Pit/RTU, Ceaserville Rd./Widden Ck., Wetumpka, 36092	20,000
Sub-Total			16,977,000
Totals	-	-	$332,034,344

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5.4.2 General Risk

Source: Alabama State Hazard Mitigation Plan, Dated April 2013

Methodology 1 - Risk Estimates from Local Mitigation Plans
Source: Alabama State Hazard Mitigation Plan 2013 Update

Requirement §201.6(c)(2)(ii) of the FR states that "a description of an overall summary of each hazard and its impact on the community" shall be included in the plan.

The following table extractions are from the **Alabama State Hazard Mitigation Plan, Dated April 2013, relating to Elmore County, Alabama:**

Table 5.4.2-1: **Extracted From Table 5.4-1 of the Alabama State Hazard Mitigation Plan, Dated April 2013:**

Summary of Potential Loss Estimates Extracted
from Local Hazard Mitigation Plans for Specific Hazards

County	Flood		Hurricane		Tornado		Winds	
	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss
Elmore	$62,878	$133,783	$481,303	$6,016,288	$872,866	$3,009,881	$57,746	$160,405

According to the State Plan, after initially reviewing loss estimates for all hazards in all local plans, it was determined that ample usable information was only available for floods, hurricanes, tornadoes, and wind. Although the local plans did include information on loss estimates for other hazards, it was widely inconsistent to the point of being unusable. **Table 5.4-2** shows the cumulative risk of these hazards by county.

Table 5.4.2-2: **Extracted From Table 5.4-2 of the Alabama State Hazard Mitigation Plan, Dated April 2013:**

Total Potential Loss Estimates from Local Hazard Mitigation Plans

County	Total Estimated Risk
Elmore	$1,474,793

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Figure: 5.4.2-1 Annual Loss Estimates from **Flooding** Extracted from Local Hazard Mitigation Plans, Source: Alabama Local Hazard Mitigation Plans (Figure 5.4-1 of Alabama State HMP)

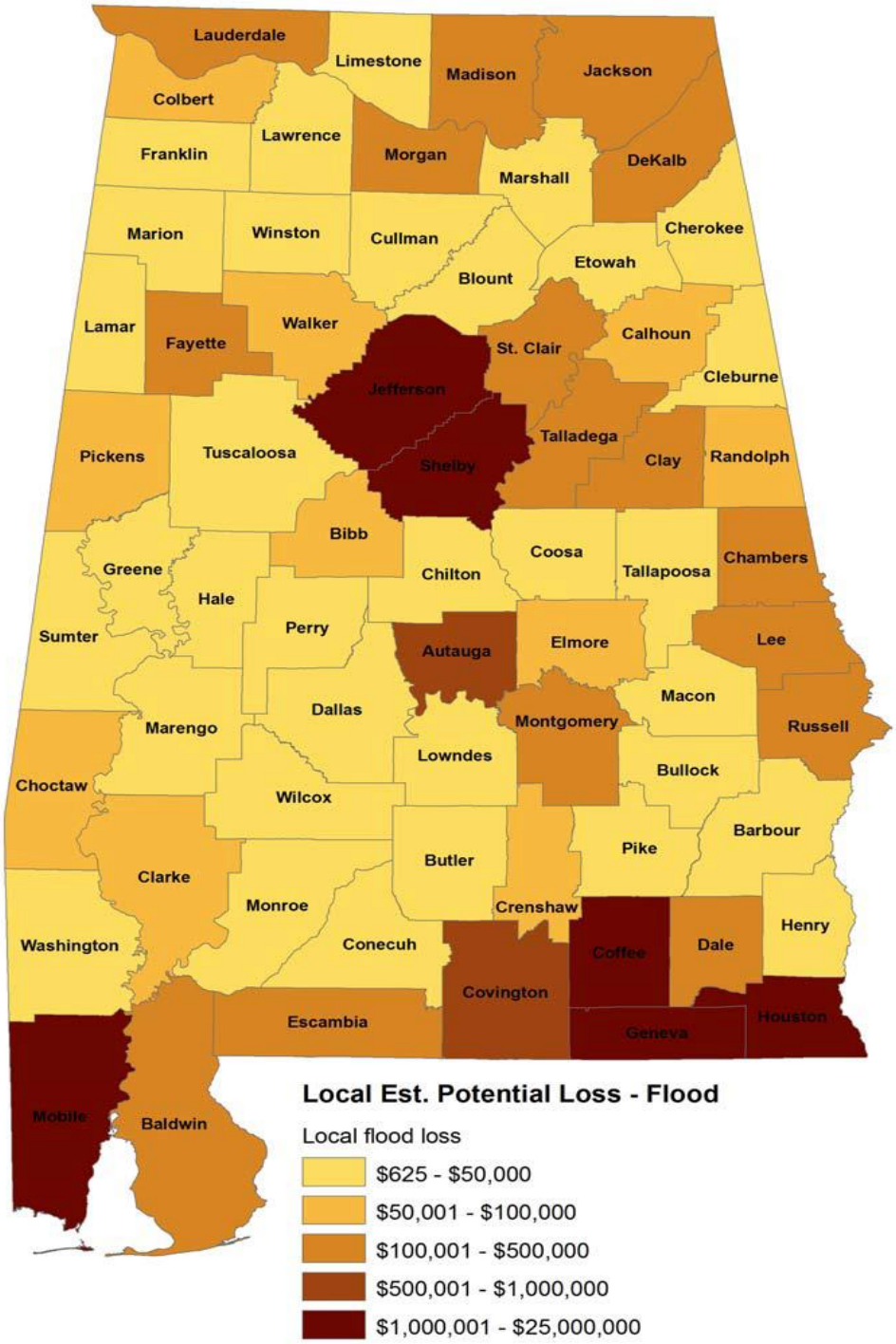


Figure: 5.4.2-2 Annual Loss Estimates from **Hurricanes** Extracted from Local Hazard Mitigation Plans
Source: Alabama Local Hazard Mitigation Plans (Figure 5.4-2 of Alabama State HMP)

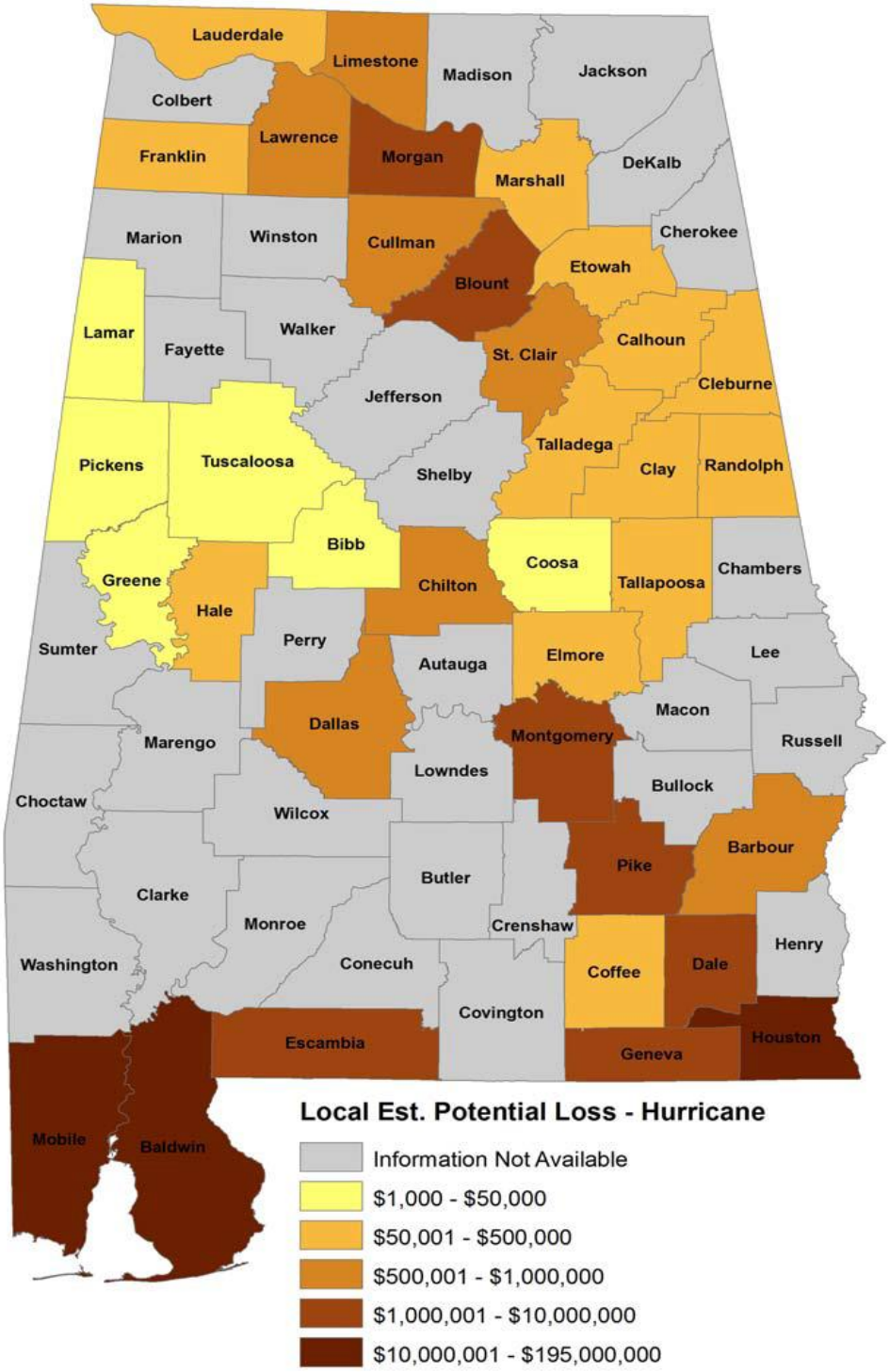


Figure: 5.4.2-3 Annual Loss Estimates from **Tornados** Extracted from Local Hazard Mitigation Plans
Source: Alabama Local Hazard Mitigation Plans (Figure 5.4-3 of Alabama State HMP)

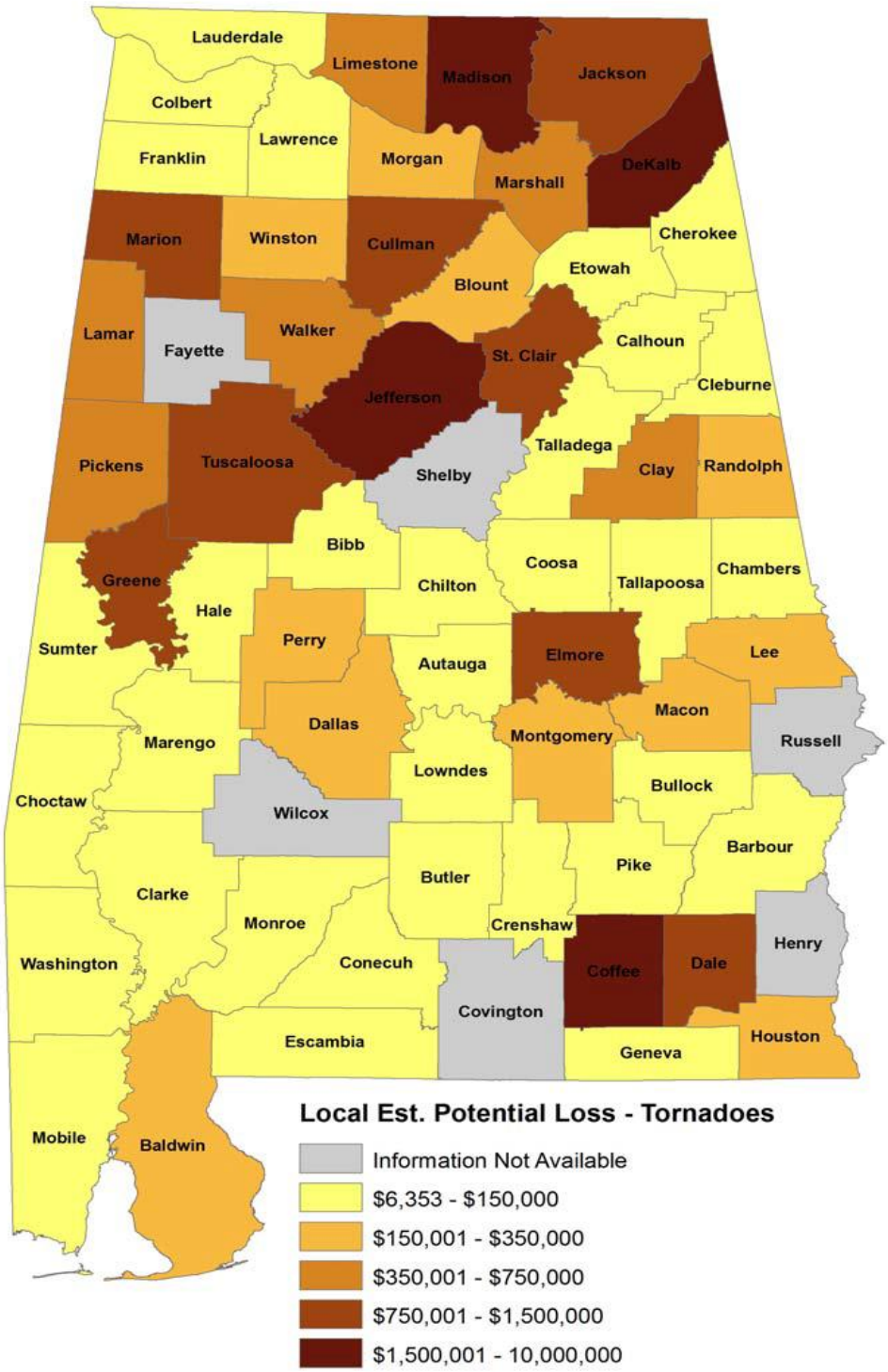


Figure: 5.4.2-4 Annual Loss Estimates from **Windstorms** Extracted from Local Hazard Mitigation Plans
Source: Alabama Local Hazard Mitigation Plans (Figure 5.4-4 of Alabama State HMP)

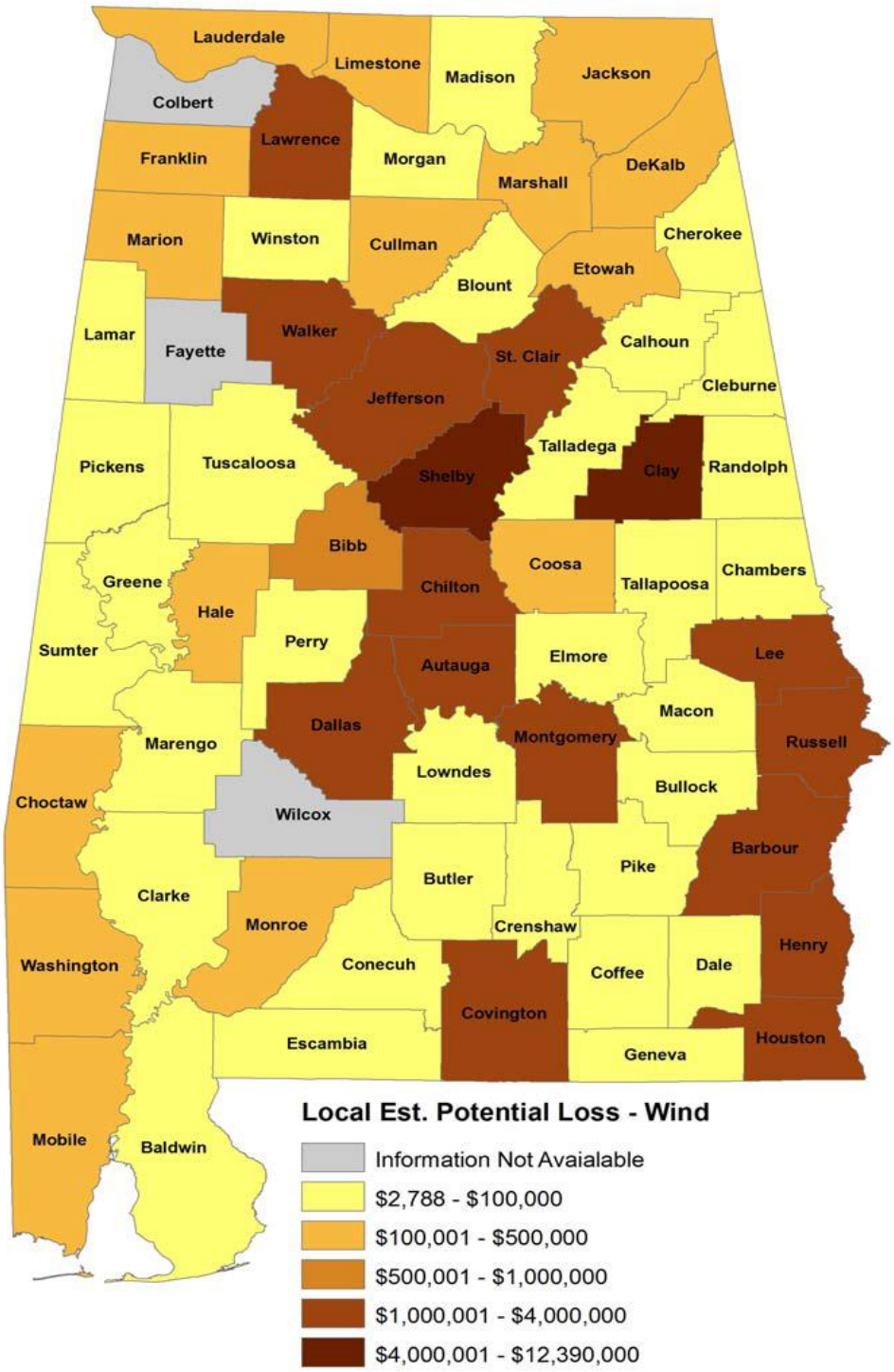
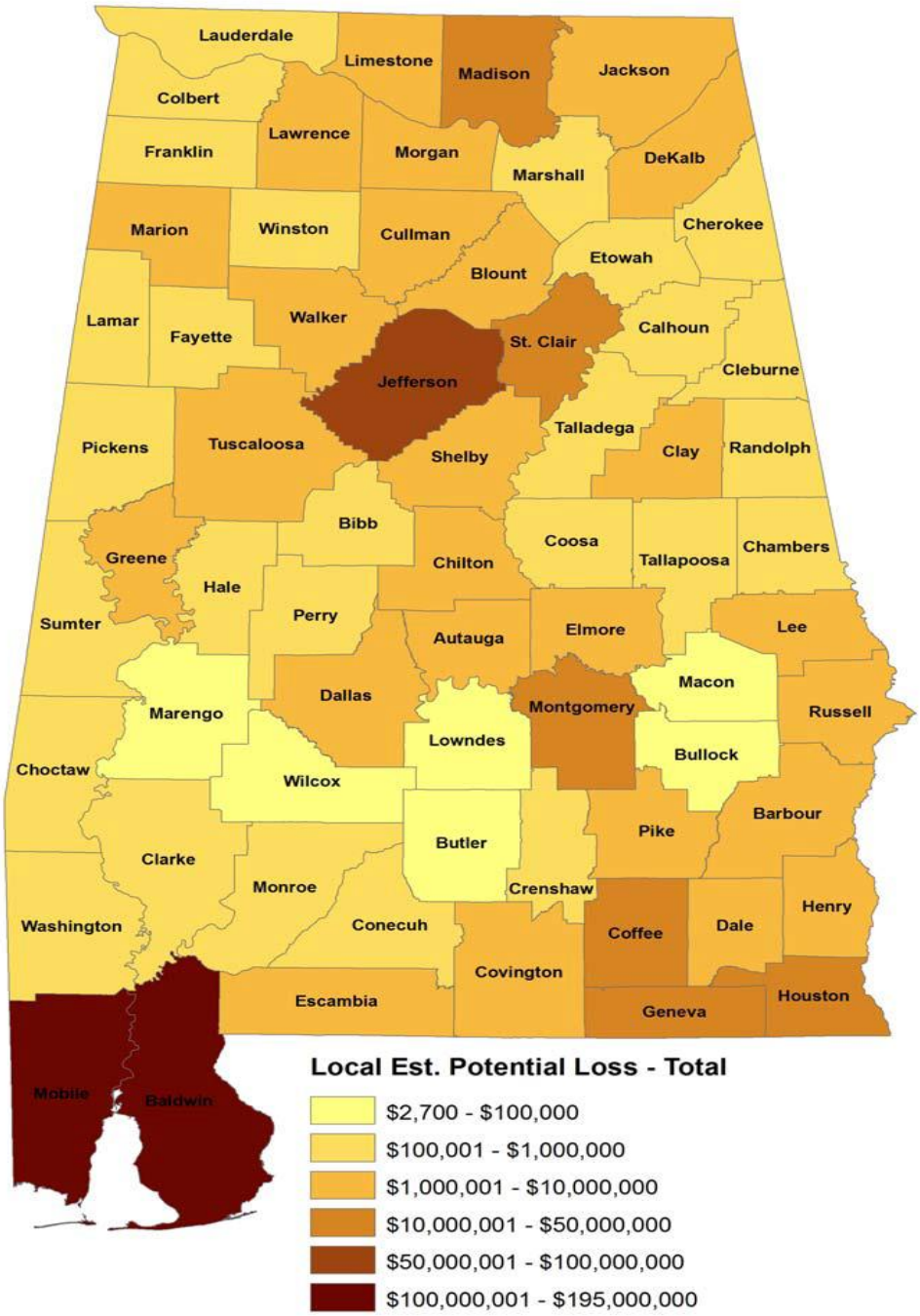


Figure: 5.4.2-5 Total Annual Loss Estimates from Selected Hazards Extracted from Local Hazard Mitigation Plans Source: Alabama Local Hazard Mitigation Plans (Figure 5.4-5 of Alabama State HMP)



Strengths, Biases, and Limitations of Methodology 1
Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

This summary of local risk assessment findings indicates strong agreement between local hazard mitigation plans and the summaries and conclusions presented in this state-level plan (e.g., that coastal counties and those with the highest populations appear to have the most projected future damages). One limitation is that the accuracy of the individual county studies has not been independently verified, except insofar as the plans have been reviewed and approved by AEMA and FEMA. As hazard mitigation planning matures as a practice and the local plans are updated and enhanced over time, the risk assessment methodologies and results are expected to continually improve.

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5.4.3 Flood Risk

Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

Floods are the most extensively studied natural hazard in most parts of the United States. Many areas in the state have, at a minimum, a nationally completed flood map (Flood Insurance Rate Maps). Some areas, typically with a high at-risk population, have detailed flood studies in place. Flood maps help to show where floodwaters are likely to go and the frequency with which they are likely to occur. There is also an array of empirical data about the damages floods have caused in many areas. Data regarding how many people and structures are located in various areas is also available through the U.S. Census, making it possible to determine the approximate number of people at risk to flood. These sources of information were all used in determining statewide risk from floods. The techniques used and the results are discussed in the paragraphs below.

5.4.3.1 Summary of Local Risk Assessments

Potential loss estimates from local hazard mitigation plans can be found in **Section 5.4.2**.

5.4.3.2 Statewide Risk Assessment

Because of the availability of data, five separate methods were used to estimate flood risk statewide. These are discussed in turn below. Although statistical corroboration was not possible because of the nature of the data, the use of multiple methodologies was to provide a broader range of information to better characterize the flood risk.

Methodology 1 – Analysis of NFIP Claims Data[35]

35 The Biggert-Waters Flood Insurance Reform Act of 2012 extends the National Flood Insurance Program (NFIP) through 2017 and included several reforms included eliminating subsidized insurance rate of repetitive loss properties.

This method is based on a straightforward analysis of historic National Flood Insurance Program (NFIP) claims data across Alabama (**Figure 5.4-7**). **Table 5.4-3** shows the history of flood insurance claims in the state, from 1978 to 2012. Most of the columns are self-explanatory.

Ref: Table 5.4-3 of Alabama State Hazard Mitigation Plan Update, Dated 2013
Summary of Flood Insurance Claims Statistics for Alabama Counties
Source: NFIP Community Information System (CIS) Database Query

County: Elmore County
A. Number of flood insurance properties: 563
B. Number of flood insurance losses: 29
C. Number of losses per property (average): 0.05
D. Total dollar value amount of all losses: $432,493
E. Number of losses per year: 0.85
F. Average dollar value amount per loss: $14,914
G. Average annual dollar value of losses county-wide: $12,720

According to the Alabama State HMP, the pattern that emerges in this analysis of claims is similar to that in the other assessment methodologies, i.e., that coastal counties and those with relatively high populations are the most at risk in the state. Certain other results may be interesting as

points of analysis (aside from the total number and amount of claims), such as the number of claims per policy and the average amount of claims in particular counties. **Table 5.4-4** and **5.4-5** show summary information based on the preceding table.

Strengths, Biases, and Limitations of Methodology 1

Source: Alabama State Hazard Mitigation Plan Update, April 2013

This analysis uses FEMA/NFIP flood insurance claim data obtained in August 2012 (**Figure 5.4-6**). The data include a large enough sample over a sufficient period of time to be statistically reliable for the purpose of assessing relative flood risk statewide. This data cannot be considered a pure indication of risk because the repetitive loss properties are identified via insurance claims, so risk to uninsured property is not represented in the data. The raw numbers of properties in the tables above also do not address the issue of flood risk at individual insured sites because data is aggregated to the county level.

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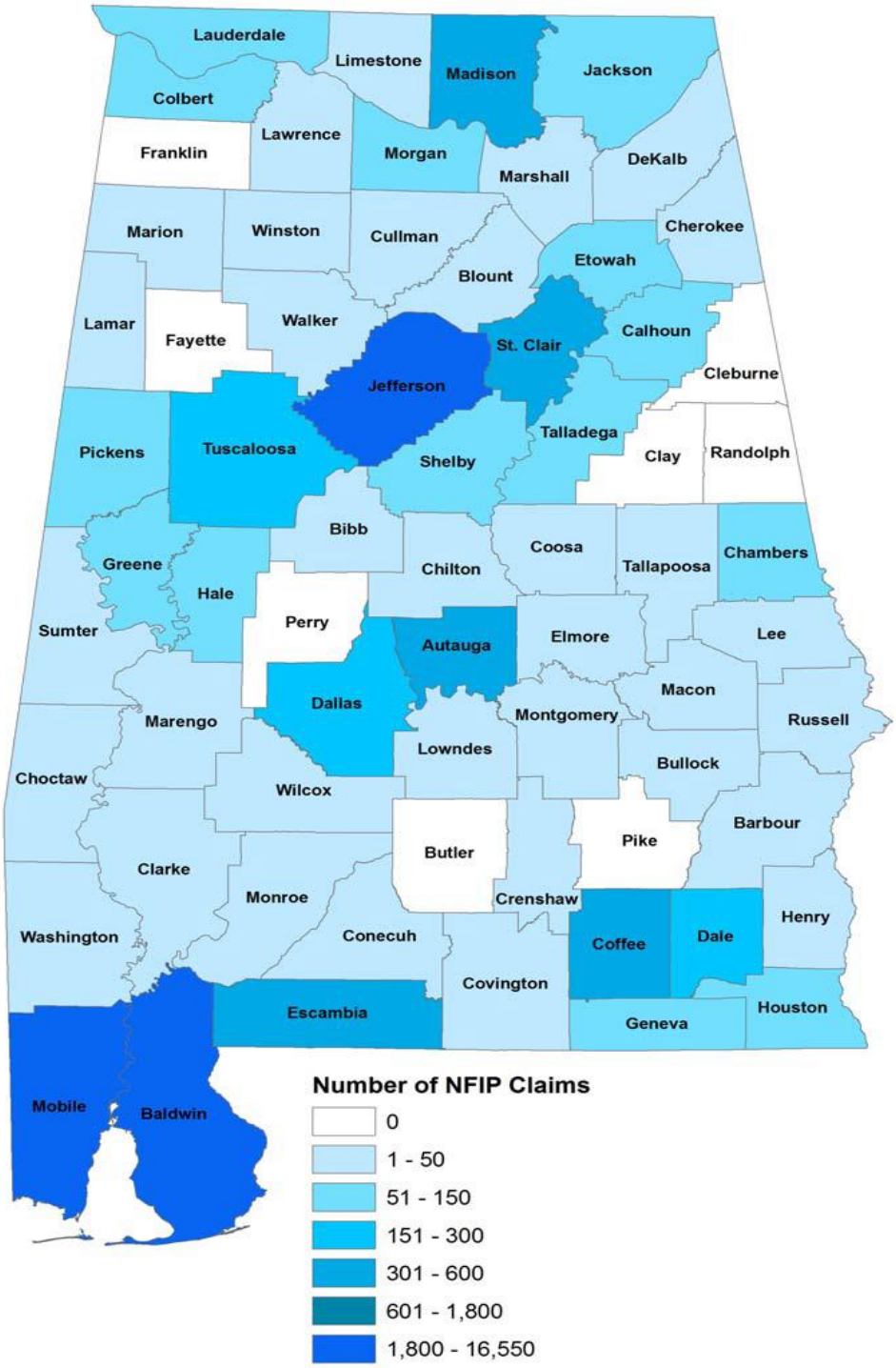
Figure: 5.4.3-1 Number of NFIP Claims in Alabama, 1978-2012 – next page Source: FEMA/National Flood Insurance Program (Figure 5.4-6 of Alabama State HMP)



Methodology 2 – Analysis of NFIP Repetitive Loss Claims Data

Source: Alabama State Hazard Mitigation Plan Update, April 2013

The second flood risk assessment method is based on NFIP repetitive loss insurance claims over a period of about 34 years (the data begins in 1978). The claims information was obtained in September 2012. The data were sorted into counties, and then sorted again to count both the numbers of losses (or claims) over the period and the amount of losses in dollars. These figures were then each divided by the reporting period to determine an annual number of losses (**Table 5.4-6**). This is the annualized figure. The annualized dollar loss figure was then projected out 30 years using the FEMA present-value coefficient from the benefit-cost analysis software. Use of the present value coefficient performs the discounting required by OMB Circular No. A-94 guidance. The 7 percent figure was current at the time this plan was produced and had been in effect for more than 10 years prior.

Ref: Table 5.4-6 of Alabama State Hazard Mitigation Plan Update, Dated April 2013
Summary of Key Repetitive Loss Claims Statistics for Alabama Counties
Source: FEMA Region IV NFIP Query

Totals by County 1978-2012 - ELMORE			
Properties	Change since 2010 Plan	Losses	$ Amount
1	0	2	$29,789

Averages by County - ELMORE		
Loss	$/ property	Annual #
$14,895	$29,789	0.06

County - ELMORE Annual $
$876

According to the Alabama State HMP, the analysis produced the predicted result: coastal counties and counties with the highest populations (e.g., Jefferson) have the most risk. Although the cumulative risk column (far right) indicates the counties that appear to have the most potential for future flood losses, other data can also be useful indicators of more localized risks (although the data used in the analysis do not include specific addresses). For example, areas with the highest per-claim average may suggest that either flood depths or structure/contents values are above the statewide average. This information can be used to identify the most appropriate mitigation methods. The tables and figures below show the data in various configurations.

Strengths, Biases, and Limitations of Methodology 2
Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

According to the Alabama State HMP, this analysis uses FEMA/NFIP repetitive loss flood claim data obtained in September 2012 (**Figure 5.4-6**). The data includes a large enough sample over a sufficient period of time to be statistically reliable for the purpose of assessing relative flood risk statewide. The criteria for determining which properties qualify as repetitive loss status naturally introduces certain biases into the resulting data. This data cannot be considered a pure indication of risk because the repetitive loss properties are identified via insurance claims, so risk to uninsured property is not represented in the data. The raw numbers of properties in the table above also do not address the issue of flood risk at individual insured sites because data is aggregated to the county level. The data can, however, provide insight into the relative flood risk in the state, accepting the bias noted previously. The concentrations of repetitive loss properties in certain counties suggests that further study should be undertaken in these areas to determine if mitigation actions are warranted. This risk index is particularly important in the context of FEMA grant programs because FEMA has established explicit goals related to mitigation actions at such properties.

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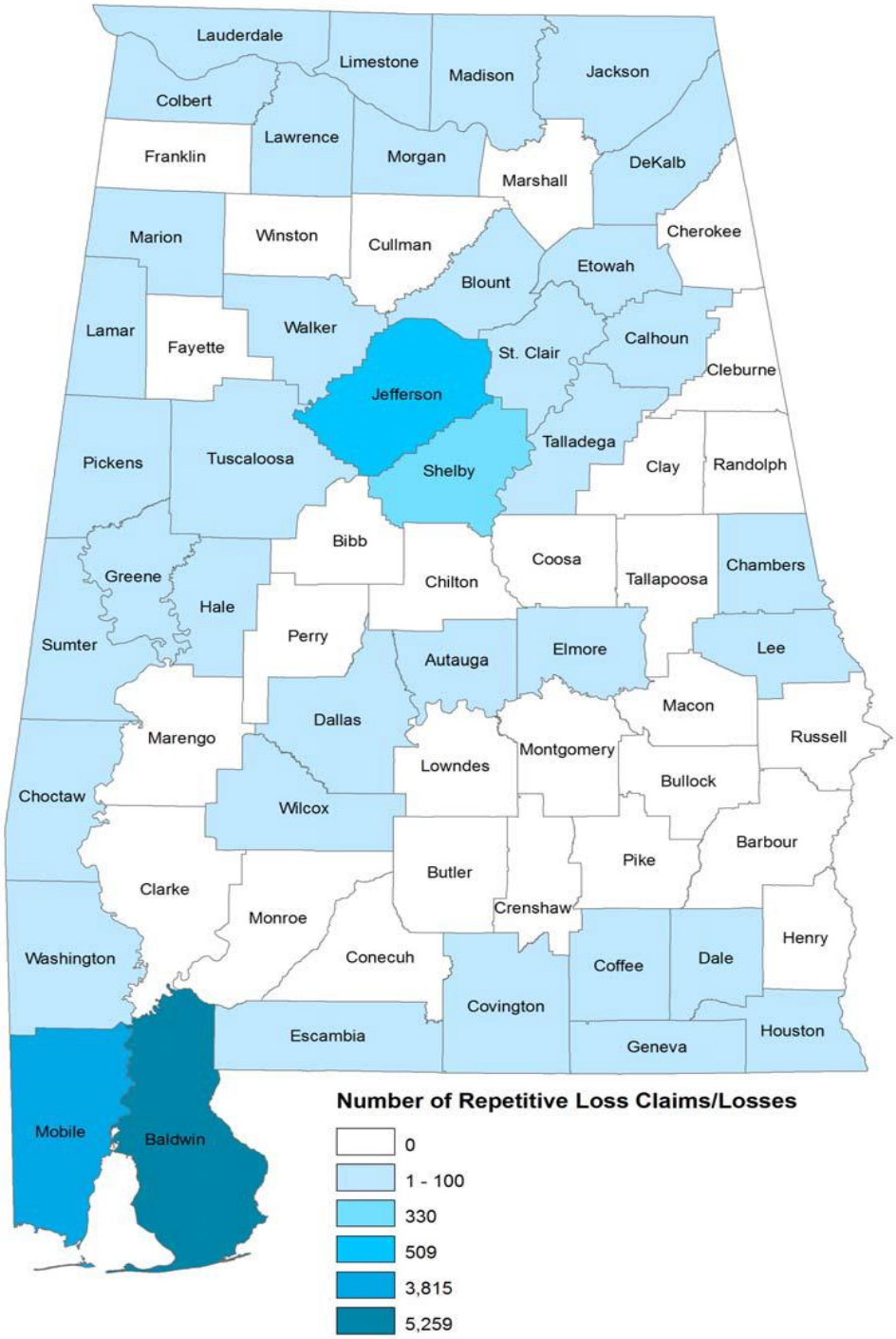
Figure: 5.4.3-2 Number of NFIP Repetitive Loss Claims in Alabama, 1974-2012 Source: FEMA/National Flood Insurance Program (Figure 5.4-7 of Alabama State HMP)



Methodology 3 – GIS Analysis of Census Data and Digital Flood Maps

Source: Alabama State Hazard Mitigation Plan Update, April 2013

The third method consists of a process in which 2010 population data at the U.S. Census 2010 block level was overlaid onto base maps that show the boundaries of the 1-percent-annual chance flood from effective Digital Flood Insurance Rate Maps (DFIRMs) for all 67 counties in the state. This method shows the estimated population at-risk based on the intersection of the census block with the mapped flood hazard area (**Table 5.4-9** and **Figure 5.4-8**). (Note that the top seven with the highest population in the floodplain remain from the 2010 plan that used 2000 U.S. Census population data. However, all have an increased amount of population found to be located in the floodplains.)

Ref: Table 5.4-9 of Alabama State Hazard Mitigation Plan Update, Dated April 2013
Estimated Population in the 1-Percent-Annual-Chance Flood Hazard Area by County

County	Population in 1-Percent-Annual-Chance Flood Hazard Area
Elmore	39,836

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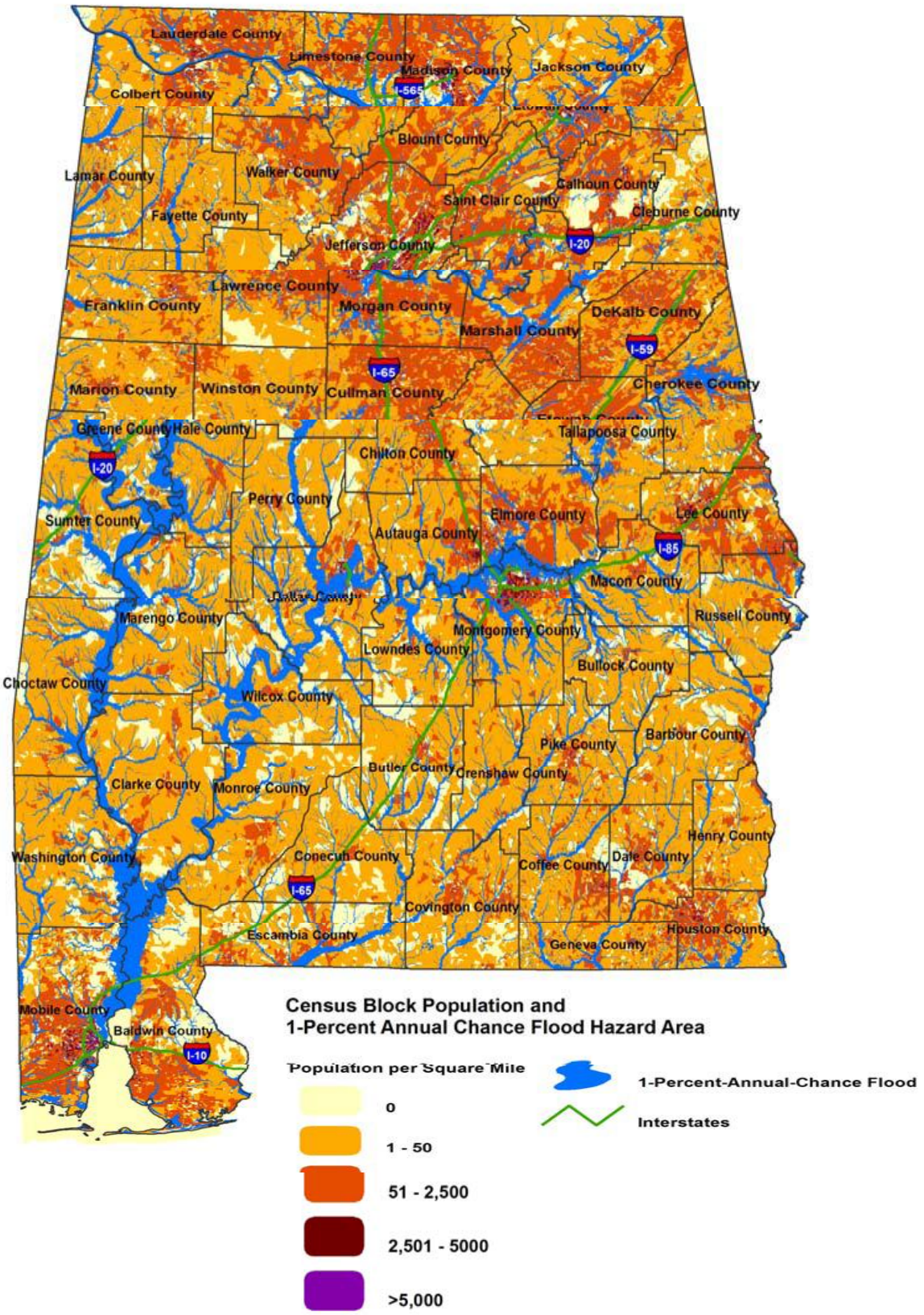
Figure: 5.4.3-3 (Next Page) Alabama Population in the 1-Percent-Annual-Chance Flood Hazard Area, Graphical Depiction Source: U.S. Census 2010, FEMA (Figure 5.4-8 of Alabama State HMP)


Lauderdale County
Limestone County
Madison County
Jackson County
Colbert County
I-565
Blount County
Lamar County
Walker County
Calhoun County
Saint Clair County
Cleburne County
Fayette County
Jefferson County
I-20
Lawrence County
Franklin County
Morgan County
DeKalb County
Marshall County
I-59
I-65
Marion County
Winston County
Cullman County
Cherokee County
Greene County
Hale County
Tallapoosa County
Chilton County
I-20
Perry County
Sumter County
Elmore County
Lee County
Autauga County
I-85
Macon County
Dallas County
Marengo County
Russell County
Montgomery County
Lowndes County
Bullock County
Choctaw County
Wilcox County
Barbour County
Pike County
Butler County
Crenshaw County
Clarke County
Monroe County
Henry County
Washington County
Conecuh County
Dale County
Coffee County
I-65
Covington County
Houston County
Escambia County
Geneva County
Mobile County
Baldwin County
I-10
Census Block Population and
1-Percent Annual Chance Flood Hazard Area
Population per Square Mile
0
1 - 50
51 - 2,500
2,501 - 5000
>5,000
1-Percent-Annual-Chance Flood
Interstates

Strengths, Biases, and Limitations of Methodology 3
Source: Alabama State Hazard Mitigation Plan Update, April 2013

This method is based on data considered reliable because it comes from official sources such as the U.S. Census Bureau and FEMA-issued Digital Flood Insurance Rate Maps (DFIRMs). The method provides a reasonable way to correlate the other hazard and risk data obtained in Methods 1 and 2, but should not be considered reliable as an independent method to calculate risk. Although the data underlying the census block figures can be considered reliable, the exact distribution of people and structures within the individual census blocks is not known. This method assumes that the entire population of a census block would be at risk regardless of the percentage of the census block actually intersecting the flood zone or the actual distribution of persons within that exposed intersecting portion. The accuracy of this assumption cannot be tested within the scope of this plan, but presumably some census blocks and counties will have higher than expected densities of people in the floodplain, and some will have lower densities.

Methodology 4 – Analysis of FEMA Hazus-MH Data
Source: Alabama State Hazard Mitigation Plan Update, April 2013
Note: Elmore County did not have direct access to Hazus during the update of this plan.

Hazus-MH is a nationally applicable standardized GIS-based methodology that consists of models for estimating potential losses from earthquakes, floods, hurricane winds and coastal storm surge. A tsunami model is also under-development and anticipated to be released in late 2014. Hazus-MH was developed by FEMA under contract with the National Institute of Building Sciences (NIBS). NIBS maintains committees of earthquake, flood, wind, and software experts to provide technical oversight and guidance to Hazus-MH development. Loss estimates produced by Hazus-MH are based on current scientific and engineering knowledge of the effects of earthquakes, floods, and hurricane winds. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing mitigation plans and policies, emergency preparedness, and response and recovery planning.

Hazus-MH provides estimates of hazard-related damage before a disaster occurs and takes into account various impacts of a hazard event. The impacts include the following:

- Physical damage – damage to residential and commercial buildings, schools, essential facilities, and infrastructure.
- Economic loss – lost jobs, business interruptions, and repair and reconstruction costs.
- Social impacts – impacts to people, including requirements for shelters and medical aid.

Hazus-MH uses state-of-the-art GIS software to map and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of earthquakes, floods, and hurricane winds on populations. Hazus-MH is capable of use in real-time to support response and recovery following a natural disaster.

Hazus-MH provides for three levels of analysis:

- A Level 1 analysis yields a rough estimate based on the nationwide database and is a solid way to begin the risk assessment process and prioritize high-risk communities.

- A Level 2 analysis requires the input of additional or refined data and hazard maps that will produce more accurate risk and loss estimates. Assistance from local emergency management personnel, city planners, GIS professionals, and others may be necessary for this level of analysis.

- A Level 3 analysis yields the most accurate estimate of loss and typically requires the involvement of technical experts such as structural and geotechnical engineers who can modify loss parameters based on the specific conditions of a community. This level of analysis will allow users to supply their own techniques to study special conditions such as dam breaks and tsunamis. Engineering and other expertise are needed at this level.

CDMS, Comprehensive Data Management System, is a complementary tool to Hazus-MH to integrate local data. Several types of data can be filtered through CDMS to replace the default inventory in Hazus. Examples include replacement value by census tract and block, number of structures per census tract and block, and number of people per census tract and block. Point level data can also be integrated through CDMS included critical facilities and bridges. Within Hazus, several options are available to add user-defined structures and hazard data.

In order to update Methodology 4, Hazus-MH files (HPRs) for the flood hazard were obtained. The HPRs were created by FEMA using Hazus-MH MR4 Patch 1 to serve as a nationwide baseline for flood loss estimation for the 1-percent-annual-chance flood and annualized loss at the county level.

Ref: Table 5.4-10 of Alabama State Hazard Mitigation Plan Update, Dated April 2013 Estimated Average Annualized Loss for the 1-Percent-Annual-Chance Flood Hazard Area by County

County	Average Annualized Loss for 1-Percent-Annual-Chance Flood Hazard Area
Elmore	$4,851,000

According to the Alabama State HMP, the State of Alabama intends to incorporate FEMA Risk MAP studies for this portion of the flood hazard analysis in future plan updates. Risk MAP relies heavily on Hazus-MH to complete flood studies at the watershed level. It was initially thought that several watershed level studies would be ready for release to local governments and incorporation into this plan. However, such studies are still undergoing review. The projects (led by ADECA-OWR at the state level) will employ a level 2 Hazus-MH analysis (described above) integrating local tax assessor data via CDMS and flood data. As these studies become available, they will be

incorporated into the plan to show flood losses. Elmore County will rely upon the State of Alabama for assistance in this area too, when the time comes.

Methodology 5 – NOAA Storm Surge Inundation Limits
Source: Alabama State Hazard Mitigation Plan Update, April 2013

According to the Alabama State HMP, this 5th methodology pertains to storm surge that primarily affects coastal areas, and therefore focuses solely on Mobile and Baldwin counties.

Figure: 5.4.3-4 Flood Zone Map, Elmore County, Alabama

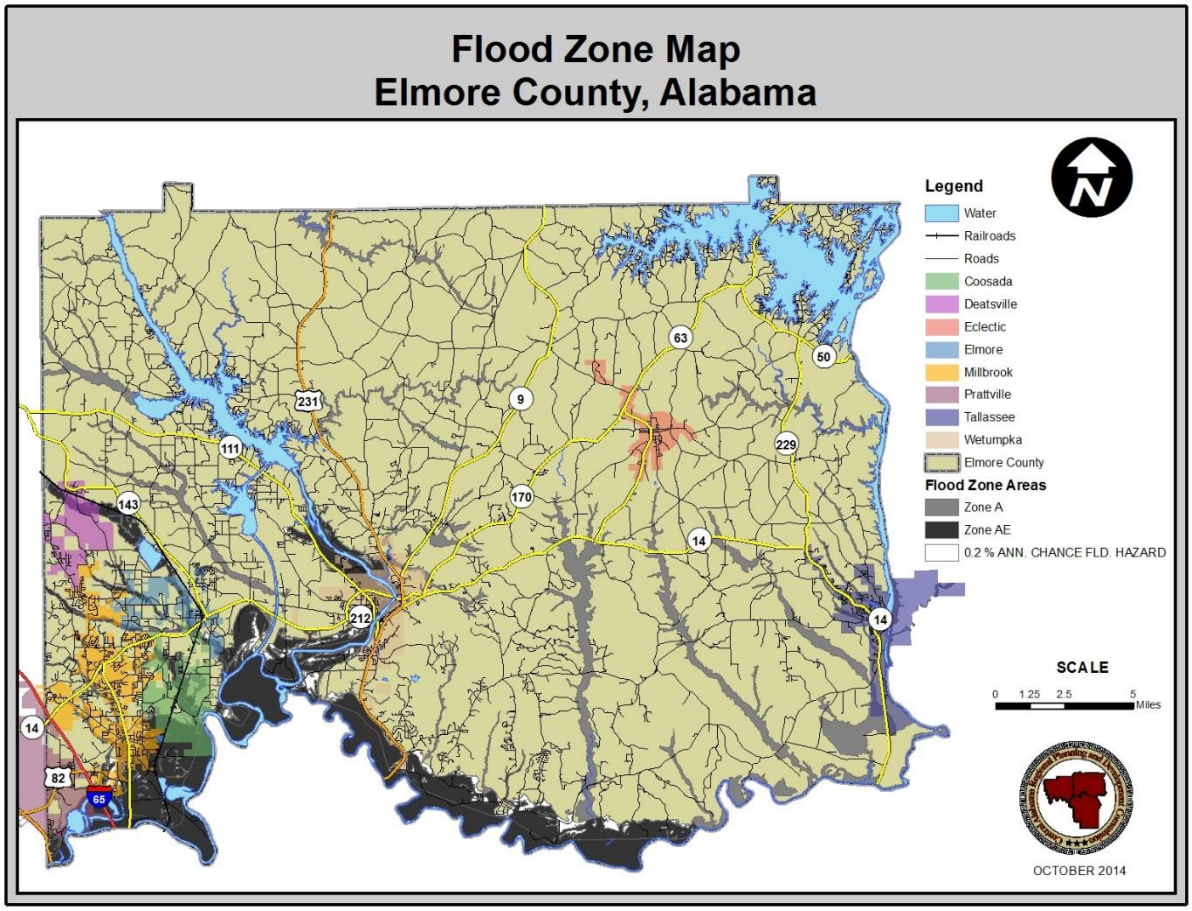


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Figure: 5.4.3-5 Town of Coosada Flood Zone Map

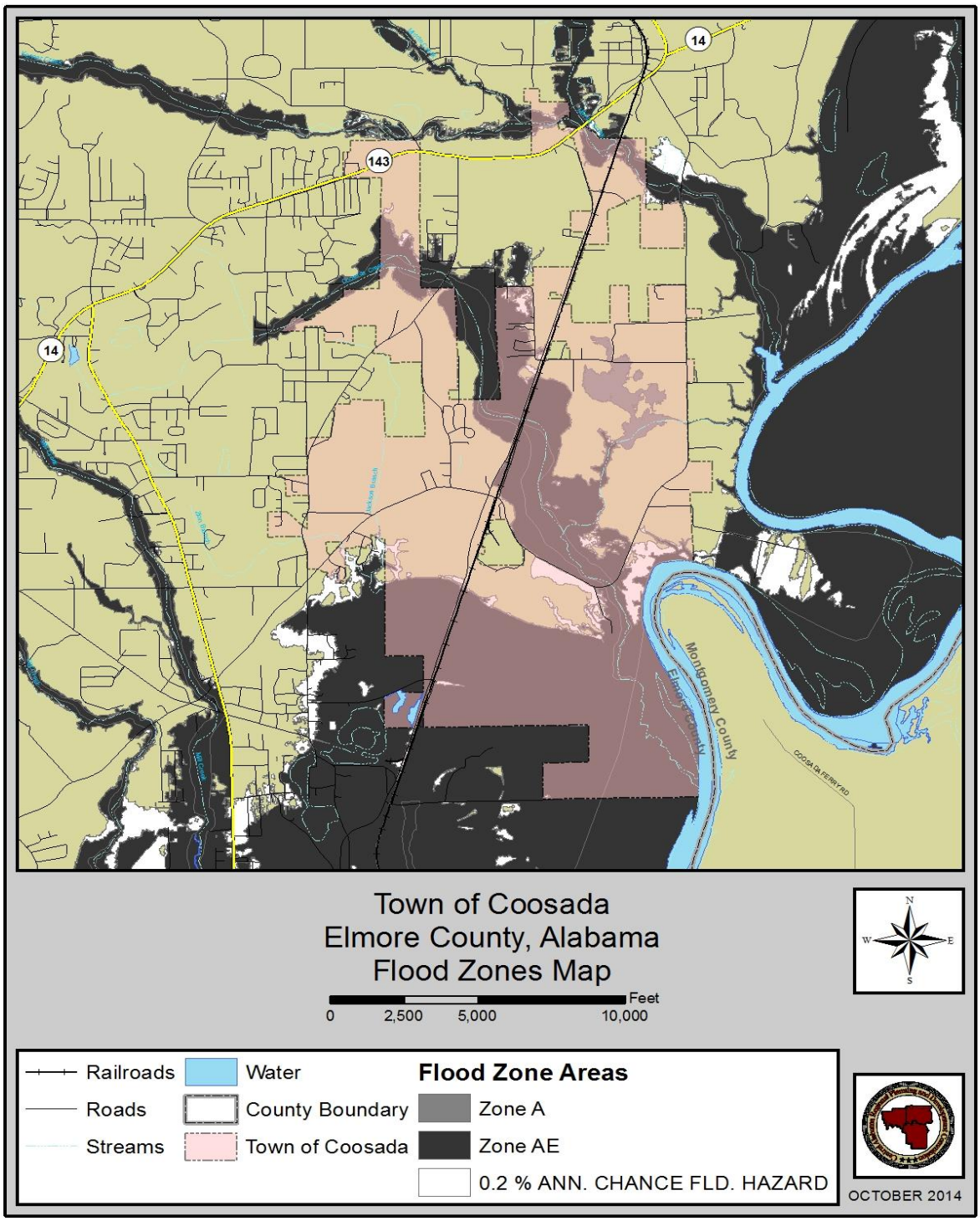


Figure: 5.4.3-6 Town of Deatsville Flood Zone Map

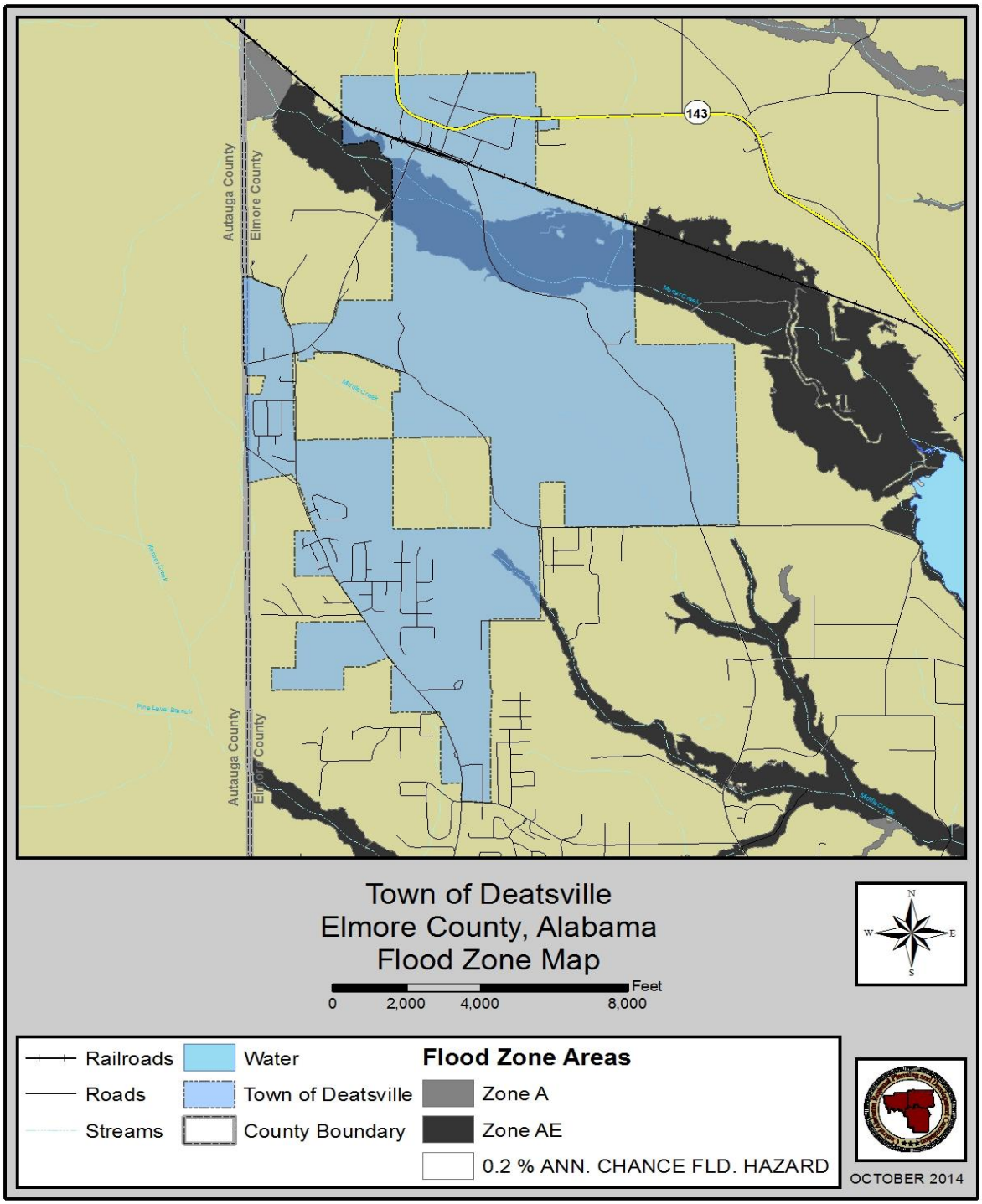


Figure: 5.4.3-7 Town of Eclectic Flood Zone Map

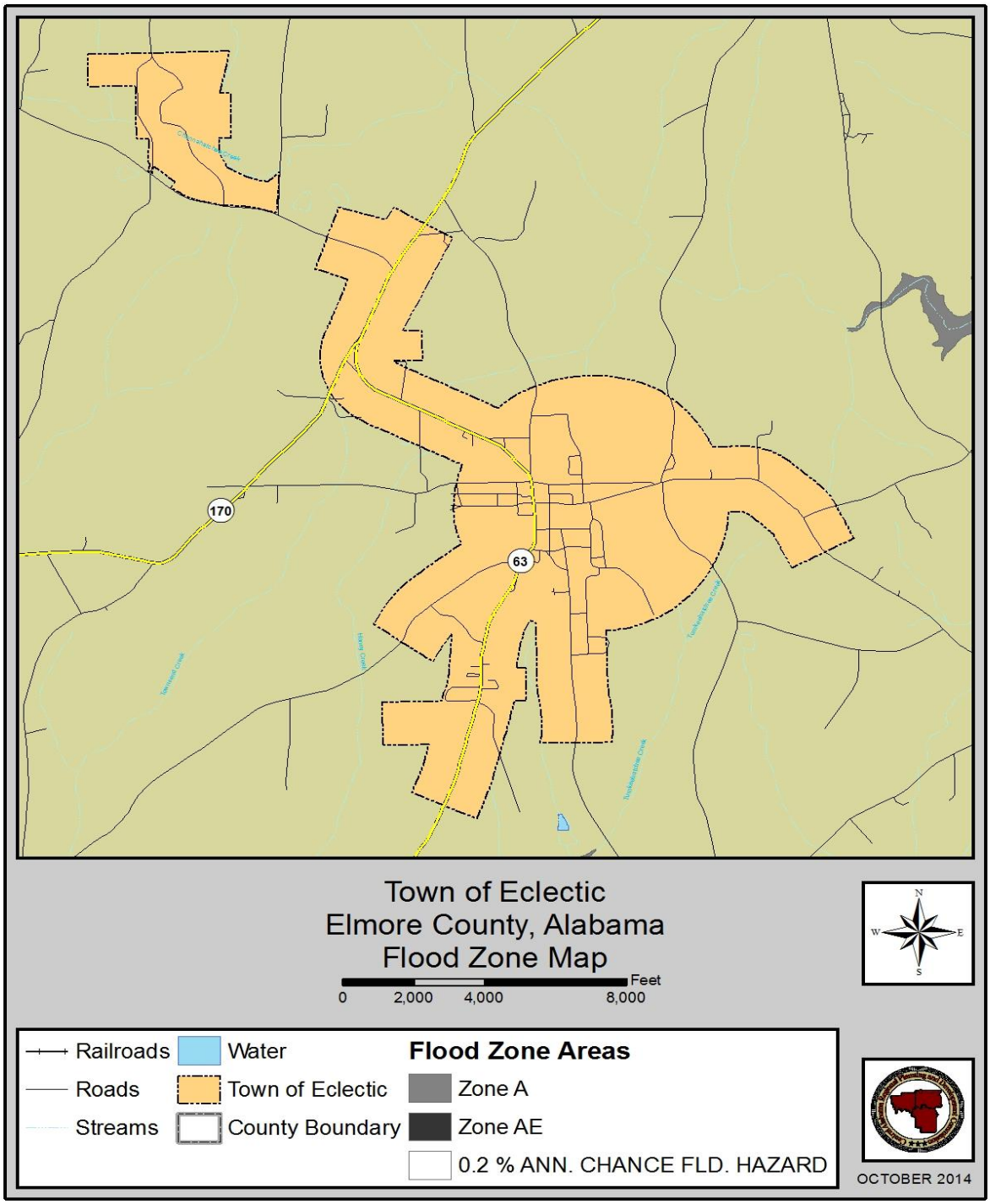


Figure: 5.4.3-8 Town of Elmore Flood Zone Map

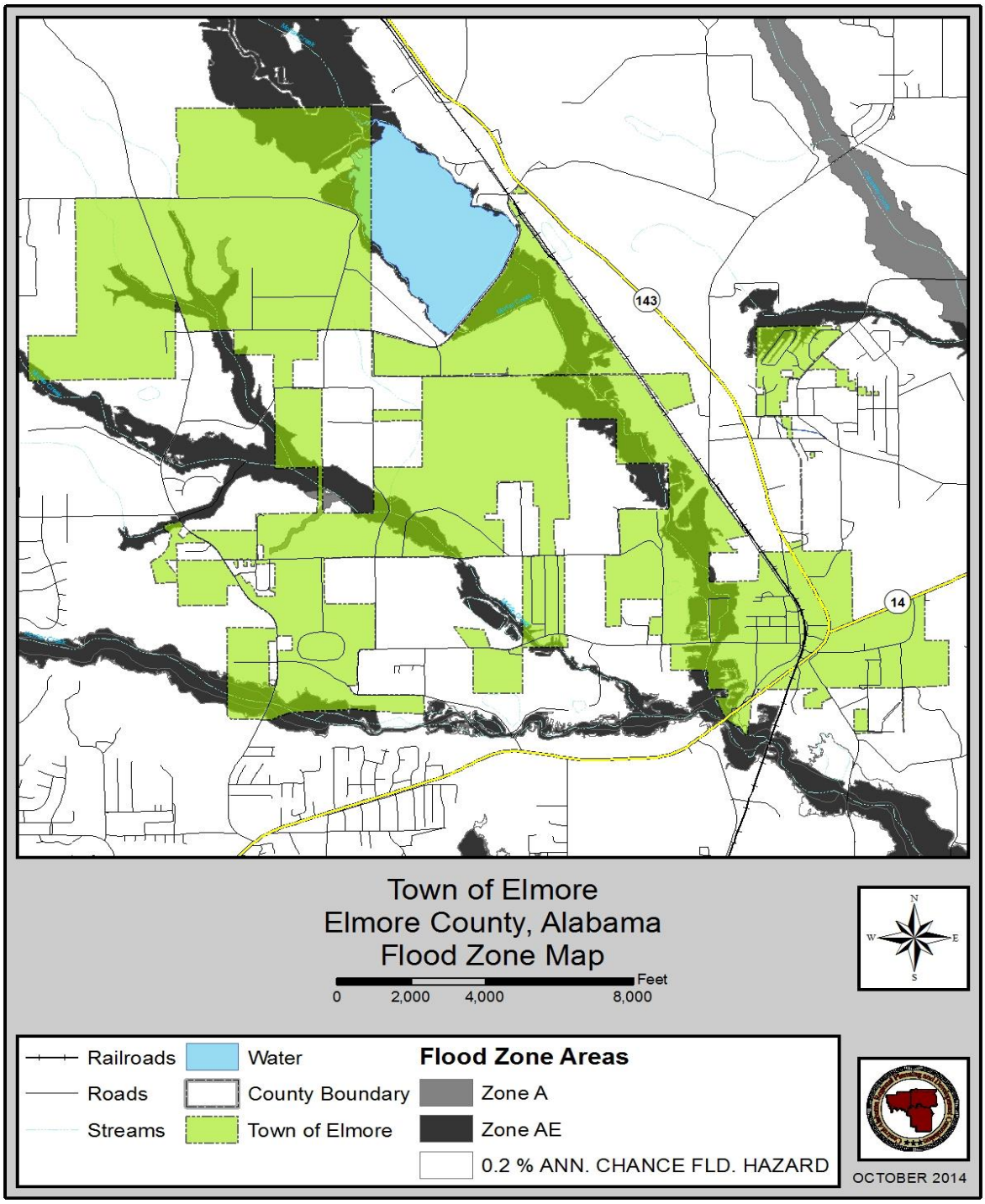


Figure: 5.4.3-9 City of Millbrook Flood Zone Map

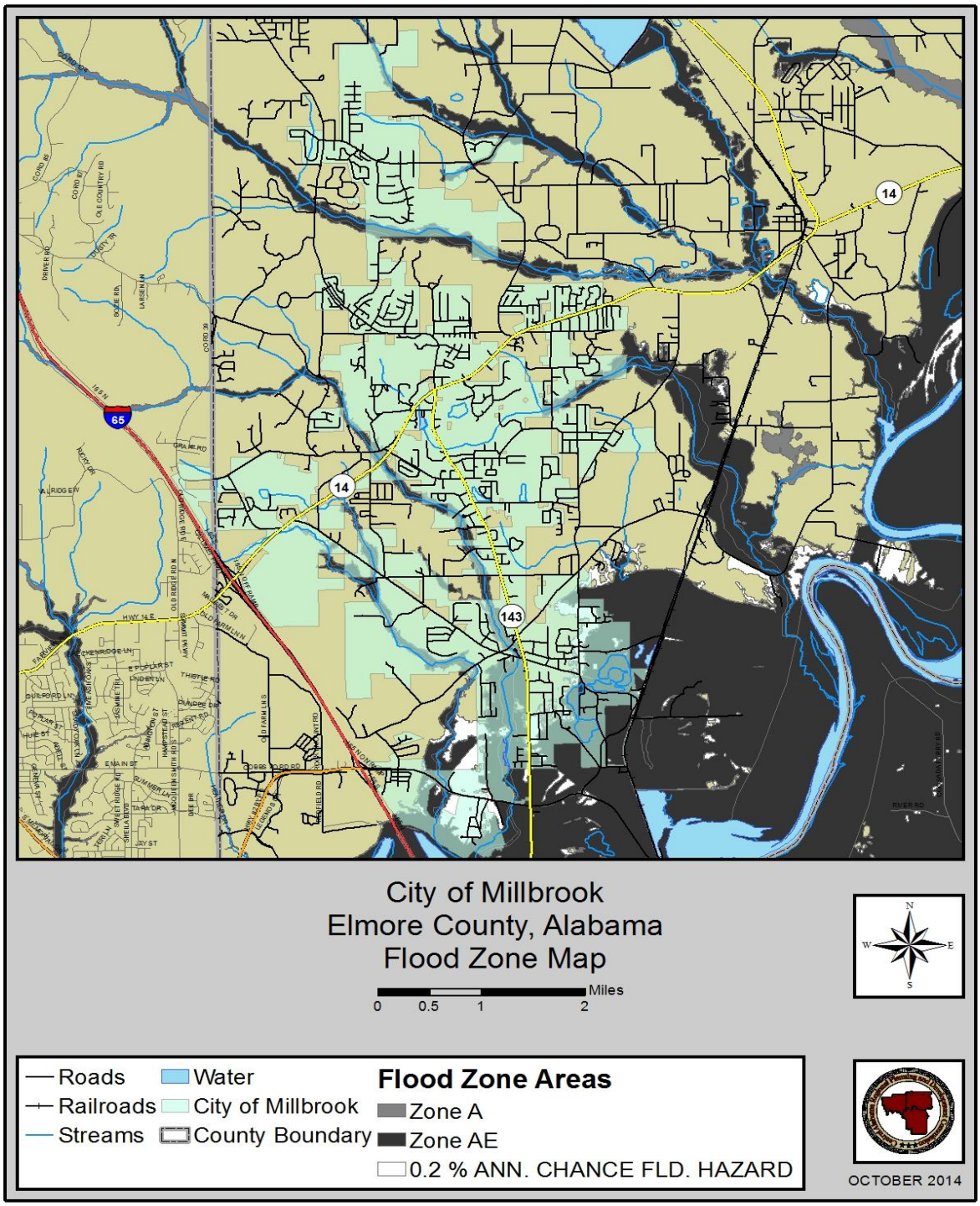


Figure: 5.4.3-10 City of Tallassee Flood Zone Map

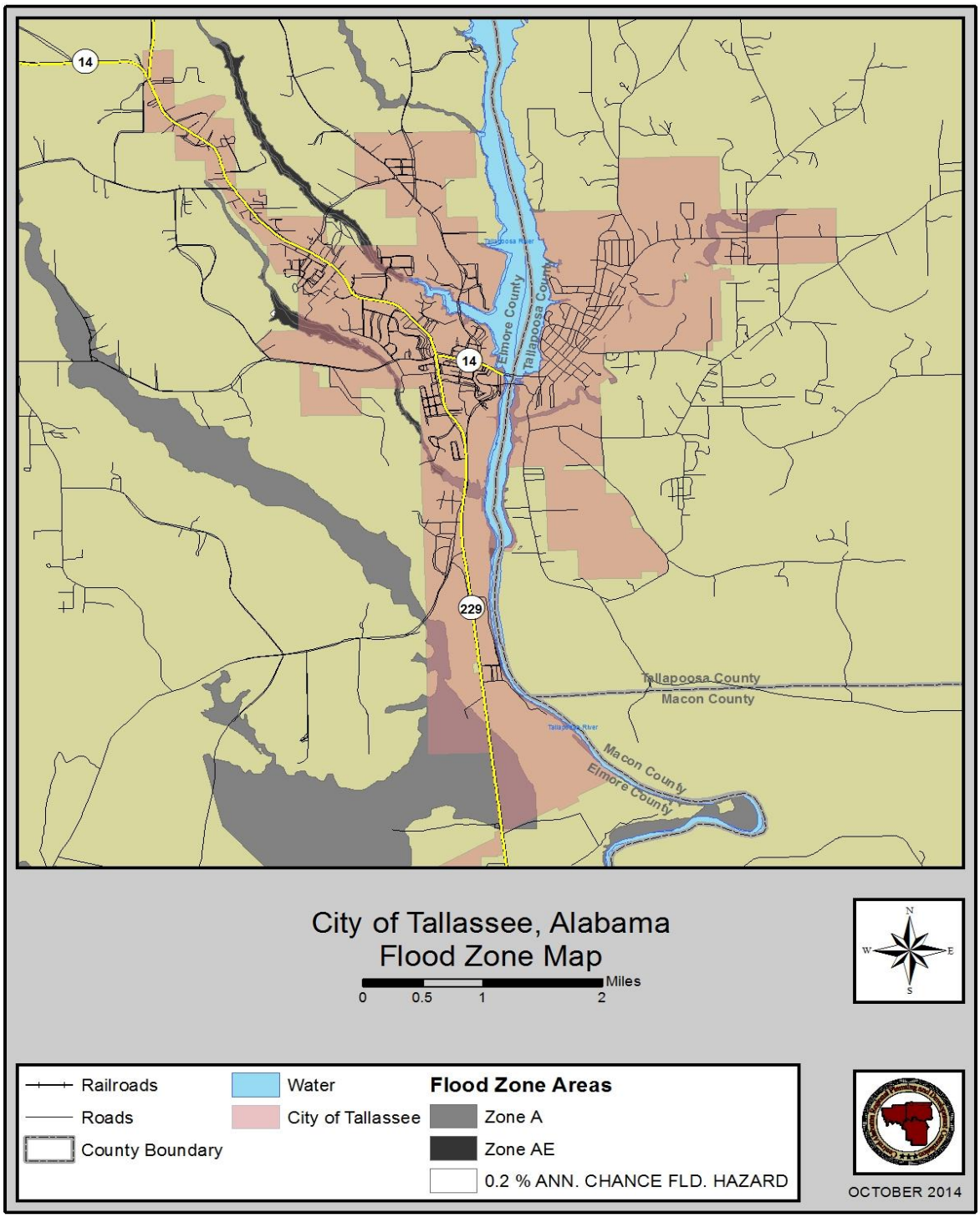
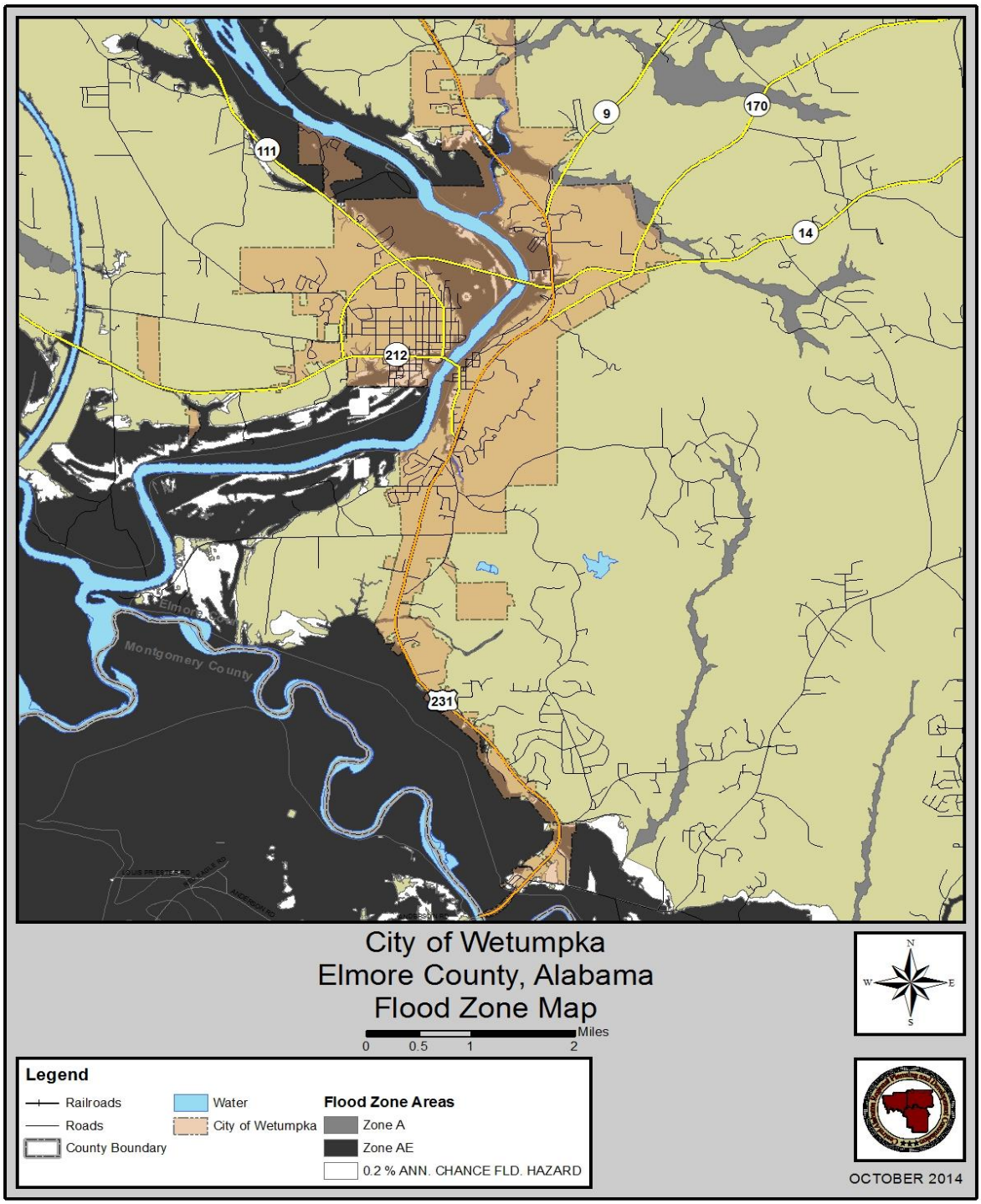


Figure: 5.4.3-11 City of Wetumpka Flood Zone Map



5.4.4 Wind Risk

Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

As discussed throughout this document, the SHMT includes hurricane, tornado and windstorm in this category.

5.4.4.1 Summary of Local Risk Assessments

Potential loss estimates for wind events from local hazard mitigation plans can be found in Section 5.5.1.

5.4.4.2 Statewide Risk Assessment for Wind

Tornado Methodology - Analysis of Historic Data Obtained from NOAA

As described in **Section 5.2**, tornadoes are prevalent over the entire state of Alabama. NOAA maintains a database of tornadoes that extends back approximately 60 years. The database includes tornado strength, reported dollar damages, and reported numbers of deaths and injuries. The NOAA database subdivides the information by county, so it is possible to report the numbers of tornadoes and the deaths and injuries at that level.

The data are provided by date of occurrence. To determine state-wide tornado risk, the NOAA data was first sorted by county and then by year. The figures for deaths and injuries were reported as raw numbers, so the data were converted to dollar figures using the values shown in Table 5.4-13 below.

Ref: Table 5.4-13 of Alabama State Hazard Mitigation Plan Update, Dated April 2013 Values Used for Monetary Conversion of Tornado Deaths and Injuries

Damage Category	Value for Monetary Conversion
Death	$2,200,000
Injury (blended major and minor)	$12,500

The figures used for valuation of deaths and injuries are approximations based on FEMA guidance used in benefit-cost analysis of hazard mitigation measures. Major and minor injuries are combined in the NOAA data, so it was necessary to use a blended number in the valuation.

Table 5.4-14 shows a summary of tornado risk by county. It is notable that Jefferson and Limestone Counties have surpassed the $1 billion mark in damages following the April 27, 2011 tornadoes.

Ref: Table 5.4-14 of Alabama Hazard Mitigation Plan Update, Dated April 2013 Summary of Tornado Risk by County[37]

37 Calculations shown in this table represent data ranging from January 1, 1950 to May 31, 2012. Note that dollar values are not inflated to current dollar values.

Source: National Climatic Data Center

County Name: Elmore

Number Of Tornadoes: 38

Tornadoes (Damage Only): Total - $61,889,900

Annual Average - $998,224
Tornadoes (Damage + Deaths and Injuries): Total - $75,552,400
Annual Average - $1,218,587

According to the Alabama State HMP the distribution of tornado occurrences state-wide as shown in the NOAA database (Elmore County only extracted above) indicates that the coastal counties (Baldwin County with 91 tornadoes and Mobile County with 80 tornadoes) tend to have a higher tornado probability than do other counties. This is presumably because of the addition of waterspouts and the influence of hurricanes in producing additional tornadoes. However, with the 2013 plan update, Jefferson County now ranks first in number of occurrences with 87 recorded tornadoes. It should also be noted that tornado probability is not perfectly analogous to risk, because risk is created only when assets or operations will be negatively impacted by the hazard. In the case of the coastal counties noted above, the relatively high populations and development do produce considerable risk. This is also true for Jefferson County which includes the City of Birmingham and its surrounding suburbs. **Table 5.4-14** above includes separate calculations of physical damages and casualties based on past tornado occurrences. Note that including casualties adds significantly to the risk, as is the case with all hazards that can result in deaths or injuries. Although the potential dollar losses appear very large, it is important to consider that tornadoes are almost impossible to predict in a particular place more than a very short period in advance of the occurrence and there is a relatively small range of cost-effective mitigation options available to protect against more severe events.

Figure 5.4-4-1 shows average annual tornado loss from 1950 to 2012.

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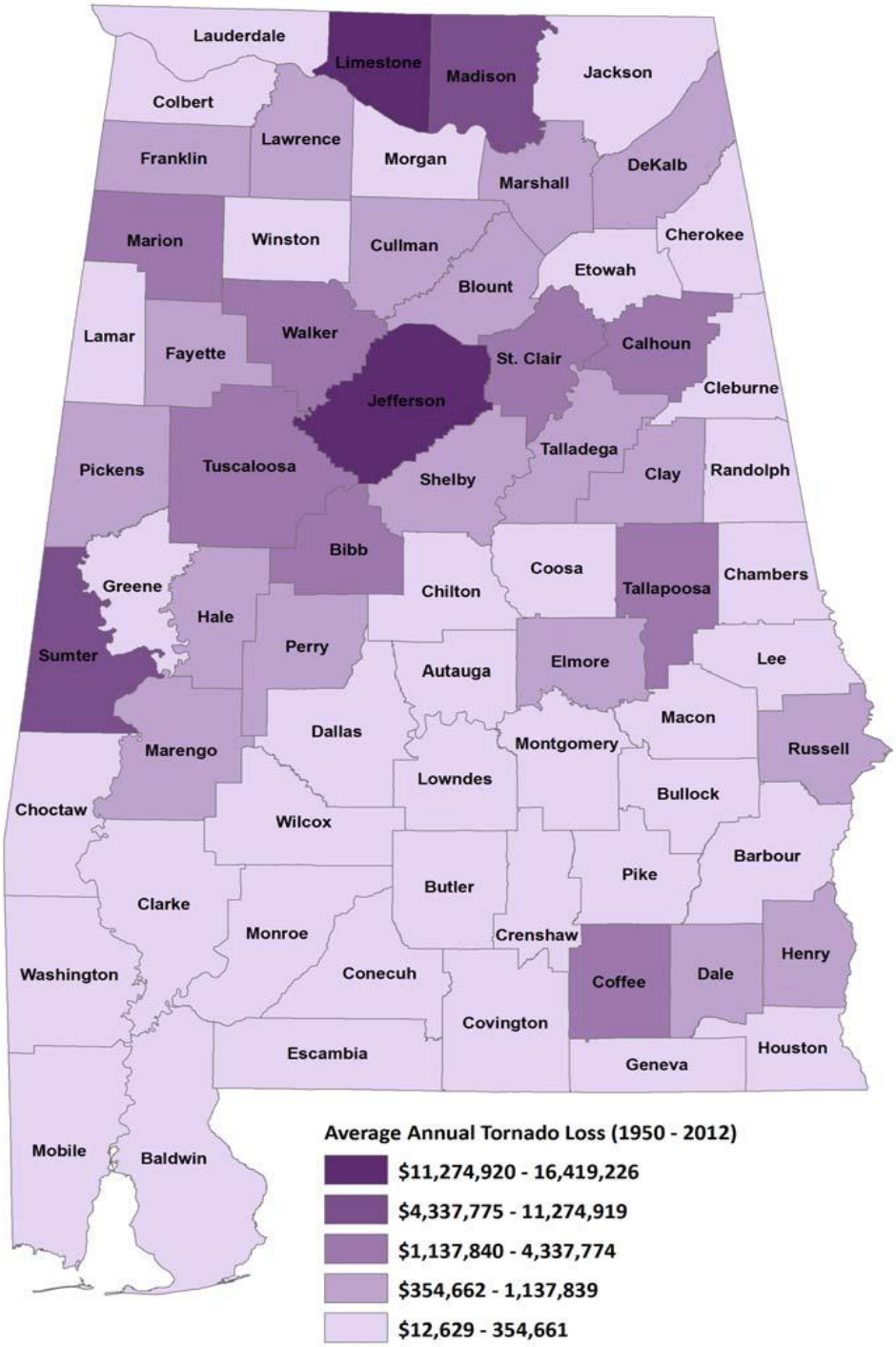
Figure: 5.4.4-1 Average Annual Tornado Loss 1950-2012 Source: National Climatic Data Center (Figure 5.4-9 of Alabama State HMP)



Strengths, Biases, and Limitations of the Methodology
Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

According to the Alabama State HMP, Alabama has a well-established history of tornadoes, and the NOAA database is large enough that it is reasonable to use past occurrences as a general indicator of future risk, at least on a state-wide basis. Clearly, as with all risks, the presence of vulnerable assets (including people) in particular areas increases risk because of the potential for damage, death, and injury. Because tornadoes occur relatively quickly (as opposed to floods and hurricanes, both of which are usually preceded by long lead-time warnings and predictions about their severity) several additional factors must be considered in assessing risk, including: the presence and effectiveness of warning systems, public knowledge about what to do if a tornado does occur, the willingness of the population to take appropriate action, and the availability of adequate shelter (both in terms of its proximity to potential users, structural characteristics, and potential occupancy level).

Using past occurrence data to estimate future vulnerability can be particularly problematic for tornadoes, except in the most general sense. It is important to understand that tornadoes are a widespread phenomenon in most central U.S. states. Much of the record of tornado events is based on *observations* of tornadoes forming or touching the ground, or on after-the-fact empirical observations of the damage they caused. Because of this, it is appropriate to assume that the probabilities are somewhat higher than what is suggested by the data – in many cases tornadoes occur in unpopulated places where they are neither observed nor cause any damage, death, or injuries.

Tornado probabilities are primarily influenced by weather and topography, and can be expected to remain relatively static over a long period of time, although actual year-to-year occurrences may vary. The NOAA database indicates that Alabama experienced 2,346 tornadoes from 1950 to 2012, an average of 38 per year statewide (and increase from an average of 31 in the previous plan). Of these, the majority were Fujita class F0 to F2, though stronger tornadoes occur frequently.[38] A prevalence of tornadoes exists in the coastal areas. This likely includes a number of hurricane-generated tornadoes and waterspouts. In addition, northern and central Alabama have experienced a large number of events that resulted in the greatest damages and fatalities.

As with the other hazards, it is important to note that tornado probability and tornado risk are not the same, although probability is a key determinant of risk. The entire state is at risk to tornado an occurrence and probability is relatively equal throughout. Historically, coastal, northern, and central areas of the state have the greatest number though they are possible elsewhere. Although tornadoes clearly have great potential to damage physical assets, the most significant damage they cause is in the form of deaths and injuries. This indicates that the most vulnerable areas are highly correlated with population density, the presence and efficacy of warning systems, and the availability and proximity of appropriate shelter.

38 As noted in Alabama State HMP, Section 5.5.2, Frank Tatom's study, "Assessment of Tornado Threat For Alabama For the Years 1950 – 2011," indicates that tornadoes reported as F3 or higher make up 21 occurrences in the state.

Hurricane Methodology – Hazus Calculation of Losses

Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013
Note: Elmore County did not have direct access to Hazus during the plan's update.

Hurricanes mainly affect the coastal areas of Alabama, although their effects may be felt a considerable distance inland as well, in the form of rain and wind. Typically, hurricane wind speeds decay markedly as storms move away from the open waters of the Gulf of Mexico. As noted in previous sections, hurricane damages usually result from a combination of wind and flooding. This can result in difficulties disaggregating data about flood damages because flood and hurricane damage databases often overlap. There is a NOAA database of hurricanes, but a review of the data seems to indicate that it may be somewhat unreliable in terms of the reported dollar damages. It is clear that hurricanes present a serious risk because of their potential severity and large scale.

According to the Alabama State HMP, FEMA's Hazus-MH 2.1 Service Pack 1 (September 2012) software was used for the analysis in this section. A probabilistic hurricane scenario was run which can be defined as the average of expected dollar losses in any one year. Annualized loss is the estimated loss to buildings on an annual basis; it considers different magnitudes that could impact the area and averages losses on a per year basis. It should be noted that actual annual loss may be substantially higher or lower than annualized loss reported here, but the value provides a way to estimate vulnerability across the state in a relative manner. The figures in **Table 5.4-16** are annual expected losses in the *Direct, Business,* and *Total Loss* columns. Annual Direct Loss is a sum of building and contents losses. Annual Business Loss is a sum of income, rental, wage, inventory and relocation losses. Annual Total Loss is a sum of the Annual Direct Loss and Annual Business Loss fields. The county results are ranked by Annual Total Loss below. Elmore County ranked seventeenth (17th) on the list.

Ref: Table 5.4-16 of Alabama Hazard Mitigation Plan Update, Dated April 2013
Hazus Calculation of Dollar Losses

County: Elmore
Annual Direct Loss: $852,000
Annual Business Loss: $74,000
Annual Total Loss: $926,000

The statewide risk pattern for hurricane wind is similar to the estimated risk for the flood hazard. As noted earlier, this result is related to the populations and locations of the highest-risk areas in the state.

Strengths, Biases, and Limitations of the Methodology

Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

These results are based on a default-data risk assessment from FEMA's Hazus-MH software. The patterns in the result are as predicted, and the most current version of Hazus (Hazus-MH 2.1 Patch 1, September 2012) was used in the assessment, so the results are presumed to be

reasonably reliable. However, as with any software, Hazus is only as good as the information in its database. Elmore County did not have direct access to Hazus during the plan update process.

Potential Dollar Losses to County Facilities in High Wind Hazard Areas

Having only basic information on location and value of county facilities limits the assessment that can be done in general and especially for the wind hazard. Without facility construction-, population- and operation-specific information, it is not presently possible to estimate losses to county facilities with sufficient accuracy to make the estimates that would be useful in prioritizing mitigation activities. However, if more building specific information becomes available in the future, analysis may be possible through use of Hazus-MH. The county should continue the data-gathering process based on its most important facilities; prioritize these by potential risk, then gather the data that would be required to perform a formal risk assessment.

It can be said with some certainty, however, that all county-owned facilities are vulnerable to the high wind hazard. These facilities have a combined value of $332,034,344 million dollars.

According to **Figure 5.5-4 of the Alabama State HMP**, wind storm losses are concentrated in the central area of the state.

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5.4.5 Seismic Risk

Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

Although the earthquake hazard was reduced to moderate risk, the full vulnerability assessment remained since the methodology and data was in place. Calculating seismic risk requires detailed information about the potential for earthquakes, soil characteristics and the likely behavior of buildings and infrastructure when they are subjected to shaking. One step in the process of understanding seismic risk in the state continues to be the use of FEMA's Hazus-MH methodology to determine seismic risk on a statewide level.

5.4.5.1 Summary of Local Risk Assessments

A review of local hazard mitigation plans revealed that only three plans (Dale, Jefferson, and Mobile County) contained potential loss estimates for earthquakes due to a lack of data and historical damages.

5.4.5.2 Statewide Risk Assessment for Earthquakes

Earthquake Methodology – Hazus Calculation of Losses

Note: Elmore County did not have direct access to Hazus during the plan's update.

FEMA's Hazus-MH software was used to estimate seismic risk for all 67 counties in Alabama. The methodology uses Hazus-MH default data about seismic hazards across the state in conjunction with statewide building stock data (including essential facilities information), and the software's standard algorithms. The calculation algorithms estimate annual seismic risk (expected losses) using information about "shake" probabilities and soil characteristics, among other parameters. A probabilistic earthquake scenario was run which can be defined as the average of expected dollar losses in any one year. Annualized loss, reported below, is the estimated loss to buildings on an annual basis; it considers different magnitudes that could impact the area and averages losses on a per year basis. In other words, no specific magnitude was chosen as several magnitudes are run to determine impact and annualized loss. It should be noted that actual annual loss may be substantially higher or lower, but the value provides a way to estimate vulnerability across the state in a relative manner. **Table 5.4-18** shows the Hazus direct physical losses to structures, contents, and inventory in the study area.

Ref: Table 5.4-18 of Alabama State Hazard Mitigation Plan Update, Dated April 2013
Estimated Seismic Risk to Alabama Counties:
Annualized Direct Physical Losses to Buildings and Building Contents

County: Elmore
Buildings: $40,101
Contents: $27,234
Total: $67,335

Table 5.4-19 of the Alabama State HMP shows the Hazus income losses related to relocation, capital, wages, and rental income in the study area.

Ref: Table 5.4-19 of Alabama State Hazard Mitigation Plan Update, Dated April 2013
Estimated Seismic Risk to Alabama Counties: Annualized Business Losses to Relocation, Inventory, Wages, and Rental Income

County: Elmore
Relocation: $187
Inventory**:** $6,839
Wages: $2,551
Rental Income: $2,813
Total: $12,390

Strengths, Biases, and Limitations of the Methodology
Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

According to the Alabama State HMP this analysis uses FEMA's Hazus-MH software to calculate estimated seismic losses for all counties across the state (**Figure 5.4-10**). The utility of these results is limited by at least one significant factor. Facility-specific Hazus data is limited to the defaults in the software providing a fairly reliable initial estimate. However, more detailed information about buildings (geospatial location, structure type, use, size, occupancy, etc.), would facilitate a much more detailed and accurate calculation. As a part of its long-term plan update and maintenance processes, the State will continue undertaking detailed risk assessments for critical State facilities; this work will include data collection for seismic risk calculations. The calculations will be introduced into a future plan update.

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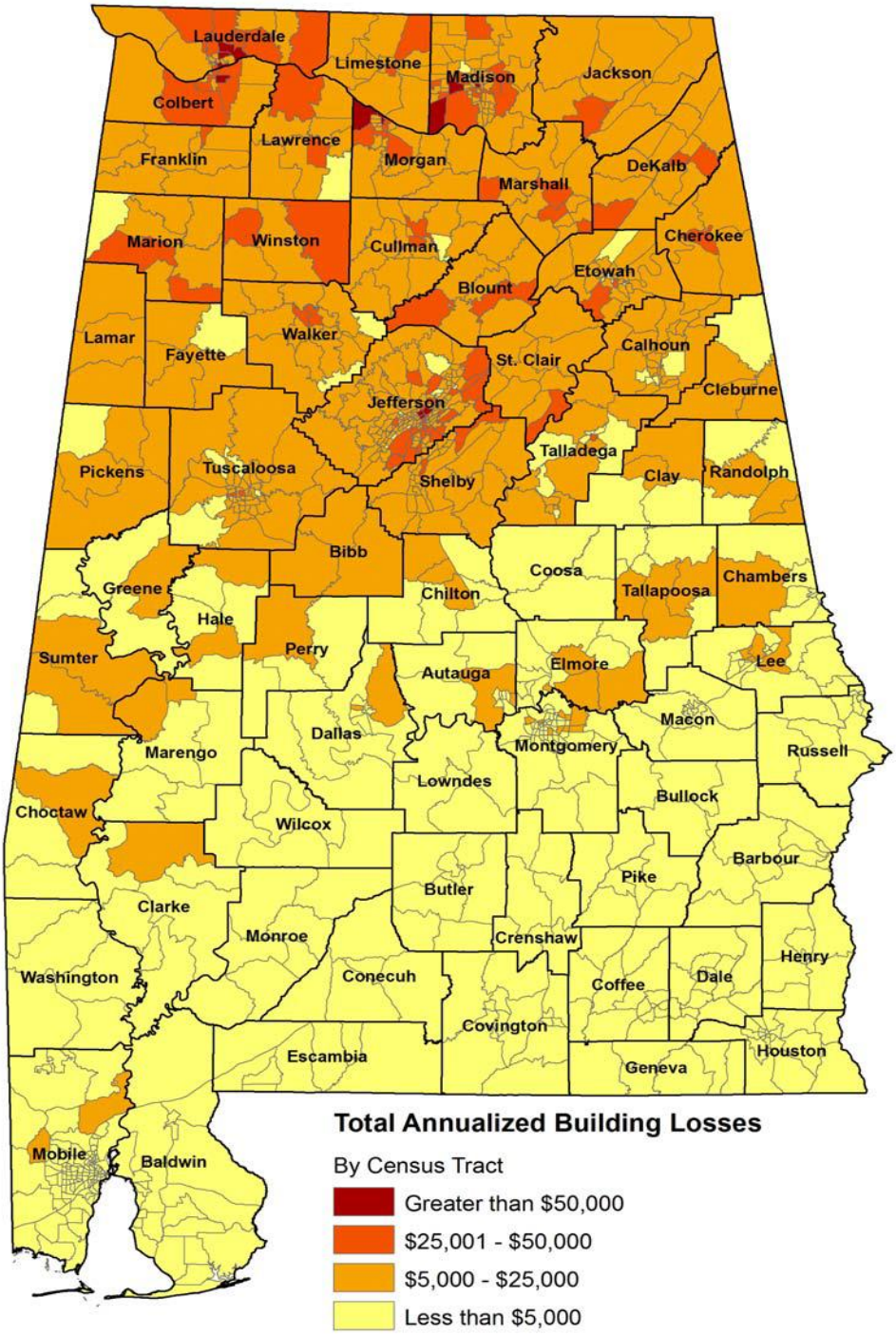
Figure 5.4.5-1 Total Annualized Building Losses Source: Federal Emergency Management Agency/Hazus-MH 2.1 Patch 1 (Alabama State HMP Figure 5.4-10)



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5.4.6 General Summary and Recommendations

Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

The information presented in this plan should be used as the basis for the State to prioritize its mitigation actions in the immediate future, and to determine additional measures it should undertake to improve its ability to identify and address risks. The three sub-sections below describe data strengths and limitations for the most significant hazards in the state, and outline some potential steps that the State can initiate to address them.

In general, the flood risk assessment provides the expected results. As described in **Section 5.3**, risk is a function of probability, vulnerability, and the value of community elements (including people) that may be impacted by floods. Notably, almost all flood risk is related to the built environment, and the expected result of defining risk in this way is that places with the most structures, infrastructure, and people tend to have the most risk, particularly if the probability of flooding is high. Logically, in places where there are high probabilities of events occurring combined with relatively large populations and infrastructure, risk is the greatest.

As noted in the body of this section, because of their very high monetary value, casualties can dominate tornado and hurricane risk assessments. Although it is usually appropriate to include casualties in such an assessment, it is very important to recognize that risk is only one of many factors that must be considered in developing and prioritizing mitigation efforts. For example, although heavily populated areas have high risk from tornadoes (because there are many people), any assessment of a mitigation project would have to consider this information as well as contemplate the presence and effect of warning systems, the availability of shelter, and the ability of people to get to shelter in time to avoid a tornado. Similar considerations apply to all hazards and potential mitigation activities.

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5.5 Impacts of Population Growth and Development Trends on Vulnerability

Note: See: Section 3. Community Profiles for more detailed information on population and development trends.

Development trends, particularly population shifts and land use changes created by major economic development expansions and infrastructure improvements of county-wide significance, are important considerations to effective mitigation planning. These trends must be continually monitored and analyzed to keep abreast of changing vulnerabilities of jurisdictions and the increasing exposure of growing populations, new buildings, and enlarged infrastructure to all hazards—natural, technological, and human-related (man-made). As growth and development patterns change over time, the risks to property damage and lives also change. This section examines the projected growth trends and other impacts of county-wide significance that are expected to affect the location and extent of hazards vulnerability (natural, technological, and human-related) over time.

This plan fully recognizes that changes in development for jurisdictions in hazard prone areas are ongoing issues that must be constantly monitored and addressed in the local planning processes. Changing development trends and the on-going growth and shift of population can increase levels of vulnerability. The potential impacts of these changes can have adverse impacts, such as those noted here:

- Increasing demands for developable land area to accommodate new growth can push new development to previously undeveloped floodplains.
- New development and associated parking, roads, and other impervious surfaces can increase urban runoff, exacerbating flooding hazards.
- New construction in previously rural areas can push the wildland urban interface, increasing exposure to wildfires.
- New housing may be constructed inadequately to withstand the damaging wind threats of hurricanes, tropical storms and tornadoes.
- Increased population can stretch the demand for limited water resources in times of drought.
- More development in widespread areas subject to sinkholes can increase the probability of property and infrastructure damages.

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5.5.1 Population Growth Trends and the Impact on Vulnerability

Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013

Alabama growth changes have been modest over recent years. Census 2000 recorded a population of over 4 million residents in the state of Alabama. Census 2010 captured 4.8 million persons. Overall, the state has experienced steady growth from 2000 to present. Every county in the state is exposed to some risk of property damage or loss of life during a natural hazard. However, metropolitan areas such as Birmingham, Mobile, Huntsville, and Montgomery run a higher vulnerability, because of population density and higher property values in metropolitan areas. It is important to monitor the plan regularly in order to track the types and properties at risk. Mitigation goals and strategies of this plan update have been reviewed and reprioritized based on the rate and amount of development that has occurred in high risk and highly vulnerable areas. **Figure 5.5-1** depicts the population density distributions counties across the state. The three most vulnerable counties on list (Jefferson, Mobile, and Madison Counties) (See: **Table 5.5-10**) also have the highest population density (greater than 320 persons per square mile). Montgomery County and St Clair County also have high population densities. Coffee County is the only county on the list that is indicated as low population density.

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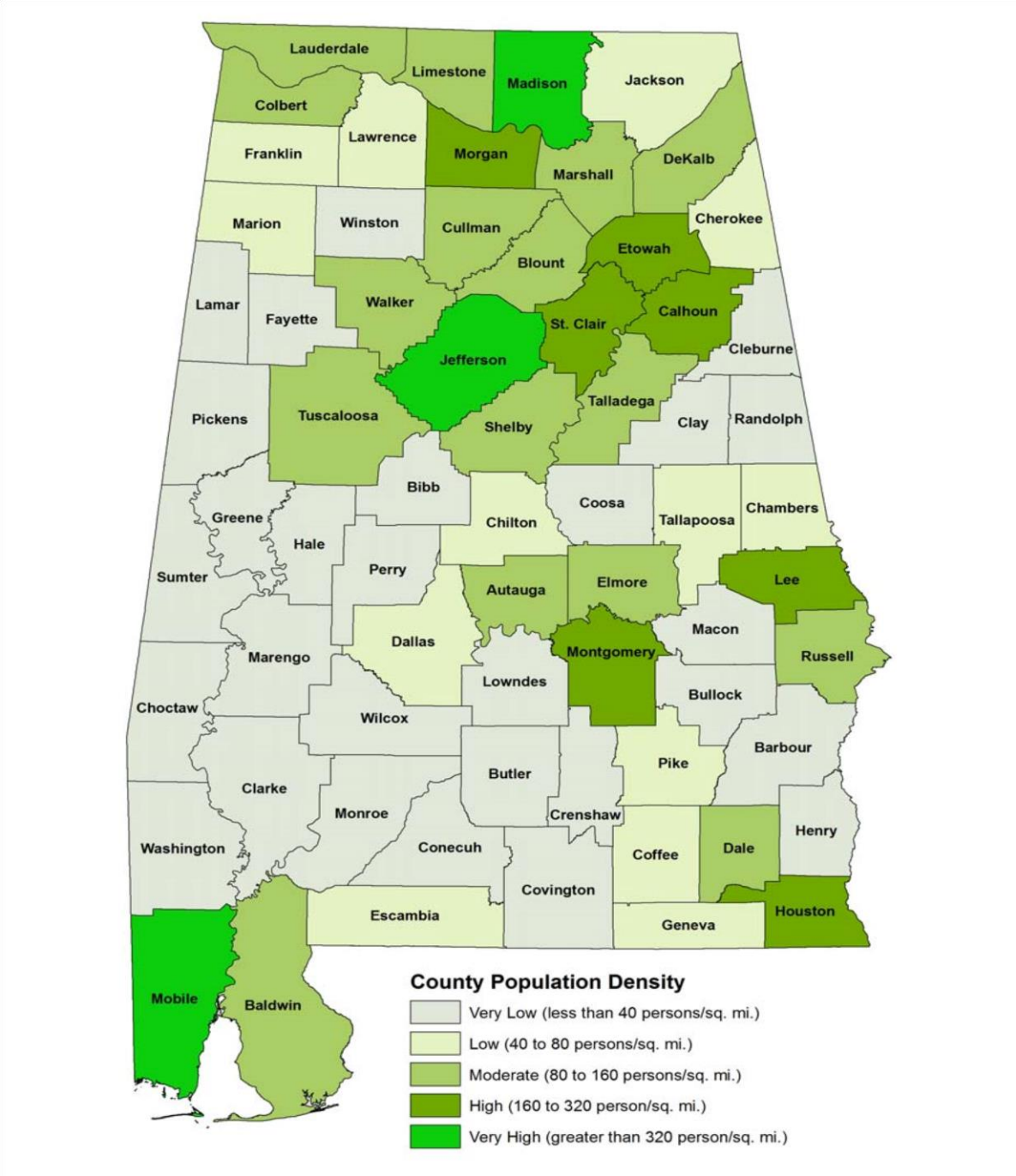
Figure 5.5.1-1 Population Density by County in Alabama in 2010



Source: U.S. Census Bureau

Given the importance of population shifts over time, successful mitigation planning requires a look at future trends to assess future vulnerability.

The state population increased by over 330,000 between 2000 and 2010. Population projections show that Alabama is expected to increase by approximately 16.5 percent by the year 2040. The population projections for the state and counties are presented in **Table 5.6-2**. Much of this growth can be attributed to major manufacturers, such as Honda, Hyundai, and ThyssenKrupp Steel and Stainless USA, LLC. Each of these manufacturers has or should have significant growth impacts on the state as a whole.

It is important to reassess statewide vulnerability on a regular basis as growth in high hazard areas increases the overall types, numbers, and value of properties at risk.

Ref: Table 5.6-6 of Alabama State Hazard Mitigation Plan Update, Dated April 2013
Alabama County 2010 Population and Future Population Projections Through 2040

County: Elmore
Actual:
2000: 65,874
2010: 79,303
Projections:
2015: 84,950
2020: 90,211
2025: 94,857
2030: 98,810
2035: 102,032
2040: 104,541
Number: 25,238
Percent: 31.8

Note: These projections are driven by population change between Census 2000 and Census 2010. Recent data on births and deaths from the Alabama Department of Public Health are used to derive birth and death rates for the state and each county.

Source: U.S. Census Bureau and Center for Business and Economic Research, The University of Alabama, Fall 2012.

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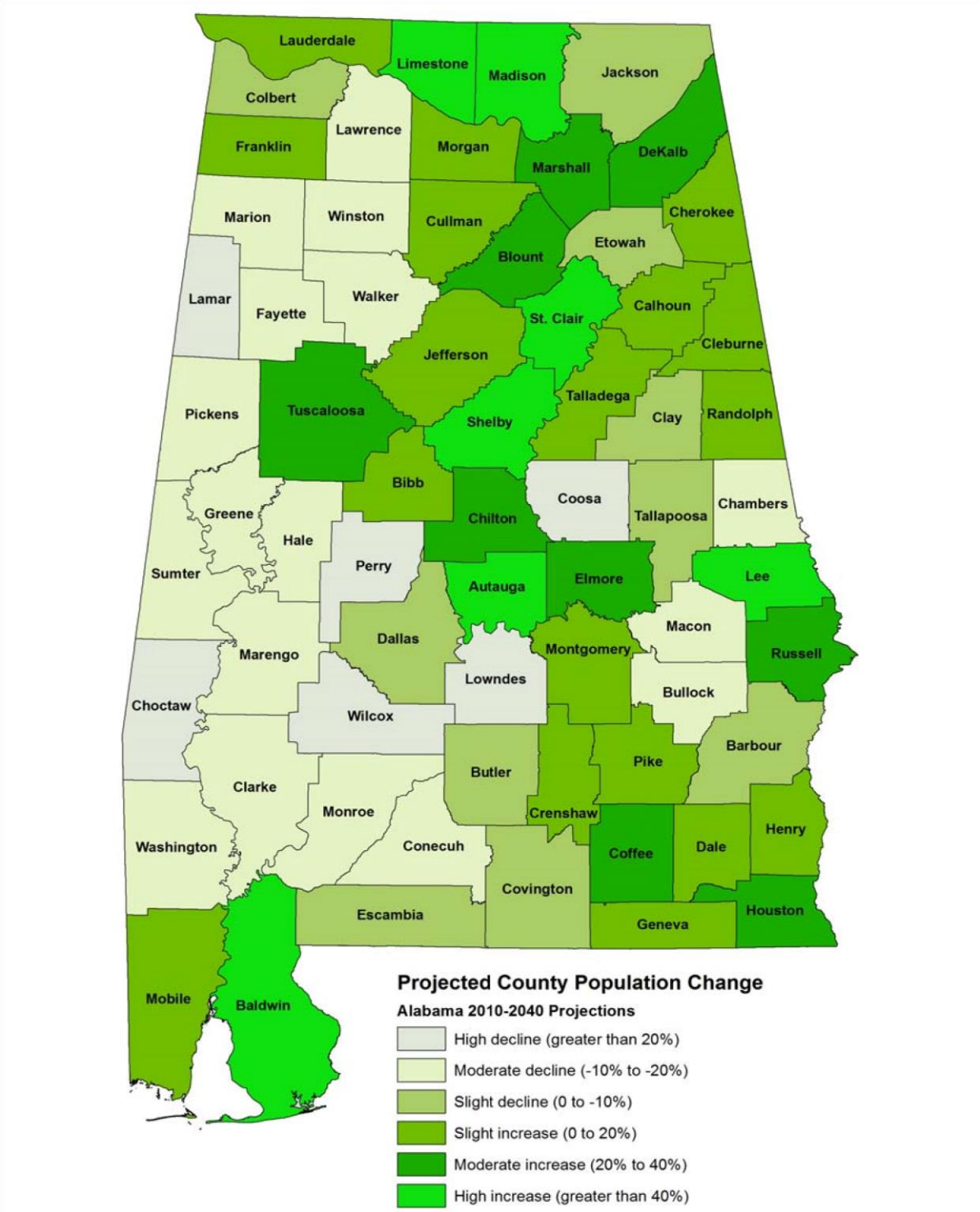
Figure 5.5.1-2 Projected County Population Change



Source: U.S. Census Bureau

5.5.2 Economic Development and Transportation Improvement Impacts on Vulnerability

Source: Alabama State Hazard Mitigation Plan Update, Dated April 2013
Note: See: Section 3. Community Profiles, for in-depth information regarding Elmore County

Since 2000, Alabama has experienced surges in economic development activity. The state has established itself as a leader in advanced manufactured, biotechnology, and aerospace.

Honda Manufacturing of Alabama, LLC located in Talladega County (in Lincoln, Alabama) has contributed billions of dollars to Alabama's economy in recent years and employs approximately 4,500 Alabamians at the plant. Eighty six percent of these employees are from Calhoun, Etowah, Jefferson, St. Clair, and Talladega counties. Honda's 24 suppliers employ more than 4,000 additional Alabama citizens. Employment with Honda is predicted to continue to increase.

In April 2002, Hyundai Motor Manufacturing of Alabama, LLC announced plans to build an automobile assembly plant in Montgomery that began operating at full capacity in 2007. The plant is located on 1,600 acres providing plenty of acreage for future expansion. Hyundai is responsible for bringing 30 parts suppliers to the area, which has helped lower the typically high unemployment rate in this part of Alabama known as the "Black Belt" (for its rich black soils). Each of the 30 suppliers is within a 90-mile radius of the plant. The Korean-based company is a $1 billion investment in Alabama's economy. It employs nearly 3,000 people and announced a plan to add a third shift in 2012 that will support another 900 jobs.

On May 11, 2007, ThyssenKrupp Steel and Stainless USA, LLC announced that Calvert had been selected as the site for a new steel plant, a $3.7 billion investment. Construction began in 2007 with operations beginning in March 2010. The plant is expected to encompass over 3,500 acres of land in north Mobile and south Washington counties. ThyssenKrupp will provide nearly 3,000 Alabama citizens with permanent jobs. The Alabama Port Authority is in the development stages of the Pinto Island Terminal, which will serve as an import/export terminal for ThyssenKrupp.

2011 and 2012 brought continued growth to the state and manufacturing continued to be a top industry. 2011 was reported as the best year for manufacturing jobs since 2007 by the Alabama Secretary of Commerce. Some 313 existing manufacturers announced expansion plans in the state which will result in thousands of jobs throughout the state. The Alabama Robotics Technology Park (RTP), in North Alabama west of Huntsville, completed phase II of III, which includes a training center and a 43,000 square foot testing facility used by NASA and the U.S. Army Missile Command.

In early 2012, the state announced a new strategy for economic development called Accelerate Alabama. It will focus on bringing additional advanced manufacturing companies from specific economic sectors already deep rooted in Alabama's economy. The strategy also focuses on improving infrastructure and workforce training.

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Section 6. Mitigation Strategy

This section of the plan addresses requirements of Final Rule (FR) Section 201.6 (c) (3). A copy of the FR is provided for reference in **Appendix B** of this document.

Contents of this Section

6.1 Final Rule Requirements for Mitigation Strategy
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What has been updated?

The 2010 *Elmore County Natural Hazard Mitigation Plan* was completely revised during the 2015 plan update process. For the 2015 update, the Plan underwent a *major* re-write, was completely restructured and reformatted, and vastly broadened to include *all* hazards relative to Elmore County--natural, technological, and human-related (man-made)--thus warranting the new title: *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*.

Certain informational elements of the 2010 Plan were retained and carried forward into the 2015 plan update, like various maps, storm events data, census data, facilities, methodologies, strategies, action items, etc. All retained informational elements were refreshed and updated as appropriate and expanded where applicable. Numerous informational elements were added to the Plan to support the newly incorporated technological and human-related (man-made) threats and hazards, as well as additional natural hazards not previously covered, such as fog, sinkholes, and land subsidence.

Given the broad scope of changes resulting from this update, users are highly encouraged to read this plan "cover to cover," expecting numerous differences between the *2010* and *2015* editions. The scope of change contained herein extends far beyond the typical, minor, or expected changes one might see in a standard plan update.

The primary driving factors behind the complete "over-haul" of this Plan include:

- ✓ The desire to standardize its structure to more closely aligned it with that of the governing Final Rule (FR), thus improving its organization, cohesiveness, and flow;
- ✓ The desire to incorporate a number of threats and hazards not previously addressed in the Elmore County HMP; and
- ✓ The desire to more closely mirror the Alabama State Hazard Mitigation Plan, Updated April 2013.

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Section 6.1 Final Rule Requirements for Mitigation Strategy

The Final Rule (FR) Subsection 201.6 (c) (3) requires the county hazard mitigation plan to include a Mitigation Strategy. "(The Mitigation Strategy shall provide) the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment…" 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…" (iii) An action plan describing how the actions identified in paragraph (c) (2) (ii) of this section will be prioritized, implemented, and administered by the local jurisdiction (iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan. Additionally, the Final Rule (FR) Subsection 201.6 (5) (d) (3) requires that the plan be updated on a regular basis. Specifically, "(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 for approval within 5 years in order to continue to be eligible for mitigation project grant funding."

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Section 6.2 County Mitigation Strategy

During the update planning process in November of 2010, the Elmore County Hazard Mitigation Planning Committee (also referred to in this plan as the committee or Multi-Agency Coordination ((MAC)) Group or group) reaffirmed the county's overall hazard mitigation strategy: Reduce risks through actions and policies that limit the effects of *natural* hazards on the physical assets and citizens of Elmore County. As stated briefly below, the strategy was later modified in the fall of 2012 to address technological and human-related (man-made) hazards as well. Subsequent subsections of Section 6 provide detailed descriptions of the county's hazard mitigation goals, objectives, and implementation strategies.

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Section 6.3 County Hazard Mitigation Goals

The 2010 *Natural Hazard Mitigation Plan* identified five goals supporting Elmore County's overall mitigation strategy. During 2012 the committee met, reviewed, and re-assessed the goals to see if they were still valid. Additionally, worksheets were sent to the committee to obtain detailed feedback on the pertinence and validity of the original goals. During the early review process, all feedback received reaffirmed the applicability of the goals from the 2010 Natural Hazard Mitigation Plan to the county's updated mitigation strategy. However, in 2012, EMA began discussing the need to pursue an "all-hazards" approach to hazard mitigation with the members of the HMPC/MAC Group. All member feedback indicated a unanimous agreement to update the county's hazard mitigation plan to an *all-hazards* plan and to no longer limit the plan to natural hazards. Therefore, the 2015 plan update includes numerous human-related (man-made) and technological threats and hazards that could also potentially impact Elmore County, even though the Final Rule (FR) pertains only to natural hazards at this time. The goals were updated to reflect the new *all-hazards* approach and to better communicate their intent.

In support of this general strategy, the HMPC/MAC Group and Elmore County EMA reviewed the previously adopted hazard mitigation goals from the 2005/2009 Plan updates. Those goals follow:

Goal 1. Increase Elmore County's capabilities in order to mitigate the effects of a natural hazard in the County.
Goal 2. Design, enhance, or amend County policies that will work to reduce the impact a natural hazard has on Elmore County.
Goal 3. Protect the County's most valuable assets and vulnerable populations through cost effective and feasible mitigation projects whenever financially possible.
Goal 4. Increase the public awareness of natural hazards in Elmore County in order to make the public a partner in hazard mitigation.
Goal 5. Ensure that future development in the County is as "hazard proof" as possible by contributing to the sustainability of the community.

In light of recent events/disasters that have impacted the county and the transition from a natural-hazards-only to an *all-hazards* mitigation plan for the 2015 update, the HMPC/MAC Group determined that the current goals are still valid, would remain relatively unchanged, except for a revision in wording changing references from natural hazards to *all-hazards*. These newly revised goals are discussed in greater detail in **Section 6**, but for convenience, are provided below:

Goal 1. Increase Elmore County's capabilities in order to mitigate the effects of all hazards --natural, technological, and human-related (man-made)--identified in the Plan, occurring in or impacting Elmore County.
Goal 2. Design, enhance, or amend County policies aimed at reducing the impact the identified hazards could have on Elmore County.
Goal 3. Protect the County's most valuable assets and vulnerable populations through cost effective and feasible mitigation activities and projects whenever financially possible.
Goal 4. Increase the public's awareness of all hazards in Elmore County in order to

make the public a partner in hazard mitigation.

Goal 5. Ensure that future development in the County is as "hazard proof" as possible by contributing to the sustainability of the community.

Where applicable, the revised *all-hazards* wording has also been incorporated into the mitigation activities in **Section 6** of this updated Plan, as well.

These goals are accompanied by objectives and actions that are designed to support the implementation of the goals. A multi-stage process was used to identify, evaluate, and prioritize the goals, objectives, and actions. The process is described in **Section 6.8**.

Post-Disaster Hazard Management Policies

In September of 2008, the Elmore County Commission signed the updated Elmore County Emergency Operations Plan (EOP). The EOP is simultaneously undergoing update. The EOP supersedes any previous emergency management/civil defense plans promulgated by the county for this purpose. It provides a framework in which the departments of each city, town, and the county can plan and perform their respective emergency functions during a disaster or national emergency. The EOP recognizes the need for ongoing Emergency Management Planning by all jurisdictions of government within Elmore County.

The EOP attempts to be all inclusive in combining the four phases of Emergency Management, which are (1) Mitigation: Those activities which eliminate or reduce the probability of disaster; (2) Preparedness: Those activities which government, organizations, and individuals develop to save lives and minimize damage; (3) Response: To prevent loss of lives and property and provide emergency assistance; and (4) Recovery: Short-term and long-term activities which return the community to normal or with improved standards.

The EOP is in accordance with existing federal, state, and local statutes. It has been concurred by the Elmore County Commission and the State Emergency Management Agency. It will be revised and updated as required. This EOP is based upon guidelines contained in the National Response Framework (NRF). The NRF, as a core plan for national incident management, is linked to an array of incident or hazard-specific federal contingency plans that are designed to implement the specific statutory authorities and responsibilities of various departments and agencies. Therefore, Elmore County operates under the same guidelines to ensure complete and comprehensive coordination.

Emergency Support Functions (ESFs) to the EOP are functional and expand upon the concept of operations contained in the Basic Plan. Annexes provide specific responses for local agencies and define their responsibilities. The Standard Operating Guidelines (SOGs) required for the implementation of the County EOP are not included because of their voluminous nature. SOGs are the general operating guidelines for departments and agencies and are maintained by those departments and agencies. An annual review of the EOP is undertaken by the Elmore County EMA Director and those agencies and departments of the county having emergency assignments. The Elmore County EMA Director ensures that a list of all plan holders is maintained at the Elmore County EMA Office and that updates are sent to each one of these individuals upon completion.

The EOP requires fair and equal treatment to all regardless of race, creed, color, national origin, sex, age, or handicap. First priority will always be to save lives, second is protection of the environment, and third is mitigation of damage to property.

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Section 6.4 Discussion and Evaluation of County Pre- and Post-Disaster Hazard Management Programs

Pre-Disaster Hazard Management Programs

In addition to the programs noted above, Elmore County actively pursues *natural* hazard mitigation opportunities, primarily through AEMA/FEMA grant programs and technical assistance. The county, primarily through the Elmore County EMA and the NFIP Coordinator, encourages communities and potential sub-grantees to participate in the FEMA programs, and offers technical assistance and support in developing project applications.

Post-Disaster Hazard Management Programs

Post-disaster management programs in Elmore County are established primarily at the local level. The Elmore County EMA manages the Elmore County Emergency Operations Plan aimed at post-disaster response and mitigation. Elmore County Emergency Operations Plan (EOP) – The EOP is designed for county level response to local emergencies. The county plan recognizes the role of the state and federal governments in major disasters, and contains procedures to request and utilize local, state, and federal assistance. The plan ties the federal, state, and local roles in regard to preparedness, response and recovery. The plan also delineates the chain of command for each section of disaster management. Some mitigation initiatives also appear in the plan. Some but not all of the ESFs within the EOP contain a continuity of government section.

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6.4.1 Discussion and Evaluation of County Pre- and Post-Disaster Hazard Management Capabilities

Pre-Disaster Hazard Management Capabilities
Although all mitigation techniques will likely save money by avoiding losses, many projects are costly to implement. Elmore County will continue to seek outside funding assistance for mitigation projects in both the pre- and post-disaster environment. Elmore County has, through a variety of programs and funding sources, established a record of accomplishment on behalf of the citizens of the county. The capability of the county to manage hazards is demonstrated by its success in formulating projects and securing local matching funding for pre- and post- disaster mitigation projects. Financing of hazard mitigation has been accomplished through several primary AEMA/FEMA-based funding mechanisms, such as FEMA's: 1) Pre-Disaster Mitigation Program, 2) Flood Hazard Mitigation Assistance Program, 3) Hazard Mitigation Grant Program (HMGP), 4) Mitigation Technical Assistance Programs (MTAP), 5) SBA Disaster Assistance Program, 6) Community Development Block Grants, and 7) Disaster Mitigation Planning and Technical Assistance. The county relies exclusively on a local matching approach to secure appropriate levels of funding. Pre- and post-disaster mitigation activities are promoted and facilitated by the county. The county functions largely in an administrative and coordinating role only through its EMA. The county's EOP coordinates the response effort.

Most of the county's EMA capability has evolved in the development and stewardship of hazard management and mitigation projects initiated in conjunction with several key programs. The Hazard Mitigation Grant Program (HMGP) continues to be the focal point of most Elmore County EMA capability.

Post-Disaster Hazard Management Capabilities
The EOP, basic plan Section VI, includes continuity of operations.

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6.5 Evaluation of County Laws, Regulations, Policies and Programs Related to Hazard Mitigation and Development in Hazard Prone Areas

6.5.1 Evaluation of County Laws Related to Hazard Mitigation and Development in Hazard Prone Areas

The following is a review of the county laws of pre-disaster and post-disaster hazard management. The Elmore County EMA was established under the authority of Alabama Code – Section 31-9-10 and by resolution of the Elmore County Commission. The AEMA was established through Section 4 of the Alabama Emergency Management Act of 1955 (Public Law 31-9), Act 47, June 1955. Section 10, Alabama Law, 1955 Act No. 47, directs the establishment of local organizations for emergency management in accordance with the state emergency management plan and programs. The local organizations have the responsibility of coordinating the disaster preparedness, mitigation, response and recovery efforts of local governments. Under this legislation, each county is required to have an emergency management organization, either individually or jointly. Appropriate ordinances and/or resolutions are required to establish each local organization and must provide for the organization, powers, duties, divisions, services and staff of the agency.

One of the most significant state enabling statutes related to hazard mitigation can be found in Title 11, Chapter 52, *Planning, Zoning, and Subdivisions* of the Code of Alabama. Section 11-52 et seq is the state planning enabling legislation for municipalities only. First enacted in 1935, the statute provides municipalities' broad powers for comprehensive planning, capital improvements programming and the regulation of land use, development, and conservation of land areas through zoning ordinances and subdivision regulations. It permits municipalities to create planning commissions to oversee planning and land use controls, and Boards of Adjustments to hear appeals. It is the basis for floodplain management regulations within all municipalities and provides additional powers to control the location and types of development activities that might be affected by other natural hazards, including landslides and land subsidence.

Unincorporated areas of counties in Alabama are severely restricted by the lack of a state planning enabling statute. Only three counties statewide – Baldwin, Jefferson, and parts of Shelby County – are permitted to establish zoning ordinances by special acts adopted by the state. County regulation of subdivisions within unincorporated areas, however, is granted by Title 11, Chapter 24 of the Code of Alabama. County commissions are permitted to regulate the subdivision of land and the construction of streets and utilities with the advice of an advisory board. Municipalities may enforce subdivision regulations within its police jurisdictions, which extend two miles beyond the municipal boundaries within unincorporated areas of a county. Code of Alabama, Title 11, Chapter 19, Sections 11-19-1 through 11-19-24, entitled *The Comprehensive Land Use Management Act* was enacted to prevent economic and human loss in flood-prone areas and permit counties to manage floodplain development within unincorporated areas. This act provides the established county commission the authority to create a comprehensive land-use management program for floodplain management, in accordance with the NFIP criteria. As a

result, unincorporated communities are eligible for flood insurance through the NFIP. The program helps mitigate damages caused by floods by controlling land use and development and improving the long-range management of flood prone areas. The statute authorizes each county commission to adopt floodplain management ordinances for unincorporated areas. County Planning Commissions are granted broad authority to control development in flood-prone zones by adopting ordinances and Flood Insurance Rate Maps that delineate the various flood zones controlled by the adopted ordinances. Each county must appoint an administrator of the program and provide for a Board of Adjustment to hear appeals to the ordinance requirements.

Table 6.5.1-1 identifies the NFIP participating communities in Elmore County. **Table 6.5.1-2** identifies communities not participating in NFIP at this time.

Table 6.5.1-1 Elmore County Communities Participating in the NFIP

Federal Emergency Management Community Status Book Report
Elmore Communities Participating in the National Flood Program

As of: 09/22/2014

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Eff Map Date	Reg-Emer Date	Tribal
015012#	Coosada, Town of	08/19/86	08/19/86	09/03/14	09/17/86	No
010406#	Elmore County	12/15/78	02/19/86	09/03/14	02/19/86	No
010490#	Elmore, Town of	-	11/19/08	09/03/14	01/12/12	No
010370#	Millbrook, City of	09/15/78	08/15/84	09/03/14	08/15/84	No
010002#	Prattville, City of	05/03/74	08/15/78	09/03/14	08/15/78	No
010069#	Tallassee, City of	09/06/74	09/15/83	07/18/11	09/15/83	No
010070#	Wetumpka, City of	06/28/74	01/03/86	09/03/14	01/03/86	No

Table 6.5.1-2 Elmore County Communities **NOT** Participating in the NFIP

Federal Emergency Management Community Status Book Report
Elmore Communities NOT Participating in the National Flood Program

As of: 09/22/2014

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Eff Map Date	Sanction Date	Tribal
010488#	Deatsville, Town of	-	11/19/08	09/03/14	11/19/09	No

Note: The Town of Eclectic is not subject to/eligible for participation in the NFIP because it is not identified as a special flood hazard area. Therefore, the Town of Eclectic is not included in either of the above tables. (Source: Elmore County Highway Department, Assistant County Engineer, Sep 29, 2014).

The Elmore County EMA shall act as the coordinating agency for the county in the event of an incident/accident involving a leak, spill, release of hazardous material, or threat of same. Elmore County EMA shall develop, in cooperation with other departments and agencies of the county, the necessary plans, rules and procedures for responding to these incidents/accidents. Elmore County EMA will be responsible for ensuring that these plans, rules and procedures are implemented and carried out in Elmore County.

In November 2010, the Elmore County EMA began contacting members of the County Hazard Mitigation Planning Committee (HMPC). The committee's mission is to develop and oversee a comprehensive *natural* hazard mitigation planning process that facilitates federal, state, regional and local agencies' coordination; constantly monitors and evaluates the potential risks of hazards to life and property; actively mobilizes all available community resources and measures to mitigate the threats of hazards; and, results in programmed actions with specific results. As stated throughout this document, by fall of 2013, a concerted effort was underway to refocus hazard mitigation planning to *all-hazards* vice natural hazards only.

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6.5.2 Evaluation of County Regulations Related to Hazard Mitigation and Development in Hazard Prone Areas

Much of the authority to perform pre-disaster planning and mitigation through development regulations is allocated to the local level and municipalities. A key state regulation addressing pre-disaster mitigation planning at the county level is overseen by the Alabama Department of Conservation and Natural Resources and implemented by the Alabama Department of Environmental Management. The program consists of comprehensive management policies and guidance for the protection and enhancement of the quality, quantity, and viability of coastal resources and the management of the uses of these resources. While the plan is fairly comprehensive, the enforcement component should be further considered relevant to development regulations such as land-use plans and no-build zones.

Alabama has granted localities very limited authority to regulate development through its planning enabling legislation. Based on the New York City Zoning Ordinance of 1925, Alabama's 1935 enabling legislation has remained virtually unchanged to this day. It restricts enabling authority to cities and towns only, requiring counties to seek special acts to extend zoning controls to unincorporated communities. "Smart Growth" efforts have recently begun to examine and modernize the state legislation to better promote improved land development practices.

Alabama enacted the Comprehensive Land Use Management Act to give individual counties the right to establish commissions to control development in flood-prone and hazard areas through land use planning and zoning. Each of these special commissions has the right to establish and enforce zoning and construction limits in flood-prone areas. While this method is a reasonable approach for permitting floodplain management within unincorporated areas, a county-wide program to enable localities to plan for and manage the full range of land use and development in all areas. Both incorporated and unincorporated areas should be considered.

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6.5.3 Evaluation of County Policies Related to Hazard Mitigation and Development in Hazard Prone Areas

To prevent the introduction of new risks from hazards throughout the county, current county hazard mitigation policies mandate an appropriate level of county and local organization and coordination for an effective and programmatic approach to identifying projects to reduce and manage hazards. While appropriate policies appear to be in place, funding mechanisms are substantially reliant on federal funding with local match requirements. To achieve the desired result of what appears to be fundamentally sound policies, some additional dedicated county funding source may be beneficial from a management, enforcement, and implementation standpoint. Current policies describe comprehensive organizational responsibilities and interactive capabilities between state and local authorities, coordinating agencies and local populations. Disaster response policies are particularly established.

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6.5.4 Evaluation of County Programs Related to Hazard Mitigation and Development in Hazard Prone Areas

In the past, primary responsibility for coordination and facilitation of hazard mitigation activities was assigned to the Elmore County EMA, with the primary focus on responding to local requests from private citizens, citizen groups, planning agencies, and municipal governments for assistance with grant applications and coordination with AEMA/FEMA for judgment on applicability and justification. Transition from a reactive to a more pre-emptive hazard mitigation protocol currently is underway, as local plans are developed and updated and more specific and detailed risk assessment models are developed in accordance with ongoing county plan initiatives.

While FEMA Pre-Disaster Mitigation (PDM) grants are available, county reliance is heaviest on the HMGP, with some focus on Public Assistance and other facilitating programs. In most cases, specific hazard mitigation funding is requested through a local agency that seeks funding for a specific, and generally, post-disaster defined mitigation project through submittal to Elmore County EMA to the AEMA/FEMA. The most active areas of grant use are as follows: Installed all-hazards outdoor warning sirens, back-up power generation, and enhanced emergency alert and notifications systems; Installed community and individual safe rooms; and update of the *Elmore County All-Hazards Mitigation Plan.*

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6.6 County Funding Capabilities for Hazard Mitigation Projects

This section describes the county's designated authority and enabling mechanisms for funding of hazard mitigation projects. In Elmore County, the County Commission has designated the Director of the Elmore County EMA as the officer of the county authorized to accept federal funding for emergency management purposes. Funds received are deposited by the County Administrator and disbursed by the County Administrator, subject to requisition by the Elmore County EMA Director.

Funding for local emergency management organizations is authorized by Code of Ala. 1975, §§ 31-9-10, 31-9-24. Budgets are submitted as required by the political subdivision, and as specified in paragraph V.C.2c (2) of the *Alabama Emergency Management Agency Administrative Manual*, dated October 1, 1985, and revised December 15, 1988. Accounts to manage local funding are established within the local government's existing accounting system.

Under the Emergency Management Performance Grant (EMPG) Program, funds are provided by FEMA as authorized in Public Law 81-920 for the purpose of increasing operational capability at the local level. These funds can be expended for necessary and essential personnel and administrative expenses, including but not limited to salaries, benefits, travel, office supplies, equipment and administrative communications. The local governments must match, on a one-for-one basis, financial assistance provided for EMGP purposes. To be eligible to receive EMGP funds to support a local emergency management program, a political subdivision must meet the criteria as referenced in the *Alabama Emergency Management Agency Administrative Manual*, dated October 1, 1985, and revised December 15, 1988.

Local jurisdictions desiring project application funds and maintenance and services funds must follow the criteria as outlined in the *Alabama Emergency Management Agency Administrative Manual*, dated October 1, 1985, and revised December 15, 1988. County and local agencies will maintain such accounts, records, papers and other pertinent supporting materials, which will permit an accurate determination of the status of federal and other contributions as outlined in the *Alabama Emergency Management Agency Administrative Manual*, dated October 1, 1985, and revised December 15, 1988.

The Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014 documents the county's process for administering HMGP funds. While specifically intended as the primary guidance for county management of HMGP activities only, it represents the current administrative model for the county's acquisition and stewardship of funding mechanisms generally. The plan defines applicant eligibility criteria, the application process, and management procedures for distribution of funding under the program. These plans are used by the County EMA Staff and the county's Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group.

The county's current strategy is to access federal funds for qualifying initiatives and facilitate development of local funding sources through municipal and county entities to fund local match

requirements. To date, Elmore County has continually met the local match requirements associated with funding of federally sponsored programs, due in part to the continual financial support of the hazard mitigation programs and initiatives by local city and county governments. The county mitigation plan is also an umbrella for the local plans required for future mitigation grant programs. Mitigation planning begins at the local level, in communities, towns, and cities where impacts of damaging events are first felt, and the current county plan addresses this issue. Local mitigation planning focuses community attention on development issues prior to a disaster, ensuring participation in a more proactive sense. Active hazard mitigation in a community also contributes to public safety and welfare, economic development, and environmental protection. Following adoption of the initial *Elmore County Natural Hazard Mitigation Plan*, Elmore County began pre- and post-disaster mitigation efforts by accessing (or continuing to access) some of the following vehicles using local matching monies: Hazard Mitigation Grant Program (HMGP) - Some of the most significant mitigation in the county has been accomplished through the HMGP. FEMA uses a sliding scale to determine the amount of HMGP funds that it provides after a disaster. FEMA provides 15 percent of the first $2 billion spent in overall assistance. FEMA then provides 10 percent of each dollar between $2 billion and $10 billion and 7.5 percent for each dollar between $10 billion and $35.3 billion. If a state has an approved "enhanced" state hazard mitigation plan, it is eligible to receive up to 20 percent of the overall assistance. The Alabama EMA is working on approval of an Enhanced Plan.

HMGP funding, while not sufficient to accomplish all of the desired projects, continues to be the centerpiece of the county's hazard mitigation strategy. In Elmore County, local governments and/or participating agencies are currently the prime source of funding for the local match associated with this program.

Pre-Disaster Mitigation (PDM) – The Pre-Disaster Mitigation (PDM) Program was authorized by §203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 USC, as amended by §102 of the Disaster Mitigation Act of 2000. Funding for the program is provided through the National Pre-Disaster Mitigation Fund to assist local governments (to include Indian Tribal governments) in implementing cost-effective hazard mitigation activities that complement a comprehensive mitigation program.

The Public Assistance Program provides supplemental federal disaster grant assistance for the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The federal share of assistance is at least 75 percent of the eligible cost for emergency measures and permanent restoration. The state determines how the non-federal share (up to 25 percent) is split with the applicants. Eligible applicants include the local governments, Indian tribes and certain PNP organizations. The state EMA is the grant administrator for all funds provided under the Public Assistance Program. As grantee, the AEMA is responsible for administering the programmatic and grants management requirements of the Public Assistance Program. Key among the programmatic requirements is informing the applicants of the assistance available to them: what is eligible and how to apply for it. Grant management includes applying for federal assistance, monitoring and closing out the grant. The Elmore County EMA, AEMA, and FEMA work in partnership to provide prompt and consistent service to all applicants. Under the new Public Assistance Program, the state will have

many of the same roles and responsibilities as under the present system. AEMA recognizes that counties have different capabilities to perform their assigned duties. AEMA intends to work in partnership with those counties requiring technical assistance to serve the needs of their applicants. Once insurance requirements are established, FEMA will reduce otherwise eligible costs by the actual or anticipated insurance recoveries the applicant receives. The Elmore County EMA must notify AEMA/FEMA of any entitlement to insurance settlement or recoveries for a facility and its contents. For insurable buildings located in a special flood hazard area and damaged by flood, the reduction is the maximum amount of insurance proceeds the applicant would have received had the building and its contents been fully covered by a standard flood insurance policy under the National Insurance Program. The applicant is required to buy insurance in the amount of the eligible damages for flood and general hazards. For small projects, a grant is based on an estimate of the cost of the work. For large projects, a final grant is based on actual eligible costs. In large projects, the state disburses progress payments, as required. The dollar amount of a small or large project changes each fiscal year and is based on the Consumer Price Index. *The Economic Adjustment (Title IX) Program* helps local areas design and implements strategies for adjustments due to changes in their economic situation that are causing, or are threatening to cause, serious structural damage to the underlying economic base. Such changes may occur suddenly or over time, and result from, for example, industrial or corporate restructuring, new local/state/federal laws or requirements, reductions in EMA expenditures, and the depletion of natural resources.

By law, PDM project grants are dependent upon the local governments' demonstration that a comprehensive management process is in place after designated calendar dates. After November 1, 2003, AEMA/FEMA-approved local mitigation plans have been required as a condition of receiving PDM grants for local mitigation projects. A local government that does not have a plan in place is not eligible to receive project grants funded under the annual PDM appropriations. After November 1, 2004, the AEMA/FEMA-approved Standard County Mitigation Plan was required as a condition of receiving PDM project grants for local mitigation activities. The Standard County Mitigation Plan is also required for non-emergency assistance provided under the Stafford Act following a presidentially declared disaster, including Public Assistance restoration of damaged facilities (Categories C through G) and HMGP funding. Therefore, the development, maintenance, and updating of local multi-hazard mitigation plans is critical to maintaining eligibility for future FEMA funding.

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6.7 General Description and Analysis of the Effectiveness of Local Mitigation Policies, Programs and Capabilities

The county began the process of multi-jurisdictional local mitigation plan development in 2010 through planning. As a result of this effort, the Elmore County EMA is the central coordinating agency for local hazard mitigation planning. Planning funds have been awarded to the Elmore County EMA to update plans and develop advanced risk assessments and other mitigation planning analysis tools to strengthen local mitigation programs. Details on the status of local planning are contained in **Section 7.2**. The results of the mitigation plan development program in the county have tremendously increased the capabilities for local mitigation and community awareness.

The framers of Alabama's 1901 Constitution designed a system of state government that concentrates power at the state level. Alabama is not a "home rule" state - local authority must be granted by state acts, special legislation, or constitutional amendments. Due to the restraints placed in the Alabama Constitution, all but seven counties (Jefferson, Lee, Mobile, Madison, Montgomery, Shelby, and Tuscaloosa) in the state have little to no home rule. Instead, most counties in the state (including Elmore County) must lobby the Local Legislation Committee of the state legislature to get simple local policies such as waste disposal to land use zoning. Despite the constitutional limitations on home rule, local governments have been able to function adequately. As further described in **Section 6.5**, legislation has been enacted over the years to allow localities with the capabilities to implement planning and regulatory tools for hazard mitigation. In 1935, the state passed legislation that empowered any municipality to establish planning commissions, pursue comprehensive planning, and enforce zoning ordinances and subdivision regulations, among other planning activities. This planning enabling legislation, however, did not include unincorporated areas of counties. Only Jefferson, Shelby, and Baldwin Counties, have authority by special legislation to extend planning and zoning regulations into unincorporated areas of these counties only. By state act, all local governments have authority to enact floodplain management ordinances, building codes, and subdivision regulations. (See **Section 6.5** for more detailed explanation of those authorities). The capabilities of the jurisdictions to perform local mitigation measures and implement mitigation projects vary significantly among local governments. The following criteria can be used by each jurisdiction to evaluate its own capabilities:

☐ **Adopted Hazard Mitigation Plan –**

- Has the jurisdiction adopted a hazard mitigation plan that has been approved by FEMA?

☐ **National Flood Insurance Program –**

- Is the jurisdiction a regular member of the National Flood Insurance Program?

☐ **Community Rating System –**

- Does the jurisdiction participate in the Community Rating System Program, and if so, what is its class?

☐ **Comprehensive Plan –**

- Does the jurisdiction have a comprehensive plan that has been adopted in the last five years or is an update in progress?

☐ **Zoning –**

- Does the jurisdiction administer a zoning ordinance?

☐ **Subdivision Regulations –**

- Does the jurisdiction administer subdivision regulations?

☐ **Building Codes –**

- Does the jurisdiction administer building codes?

☐ **Capital Improvements Plan –**

- Does the jurisdiction program its annual capital expenditures on a multi-year capital improvements plan?

☐ **Building Code Effectiveness Grade Schedule –**

- What is the ISO classification of the jurisdiction under the Building Code Effectiveness Grade Schedule?

☐ **Property Protection Classification –**

- What is the ISO classification of the jurisdiction under the Property Protection Classification for fire protection?

☐ **Planner on Staff** –

- Does the jurisdiction have a full-time professional planner on staff?

☐ **Engineer on Staff –**

- Does the jurisdiction have a full-time professional engineer on staff?

☐ **Building Inspector on Staff –**

- Does the jurisdiction have a full-time building inspector on staff?

☐ **Certified Floodplain Manager –**

- Does the jurisdiction have a Certified Floodplain Manager on staff to administer its floodplain management ordinance?

☐ **Mitigation Project Experience** –

- What is the jurisdiction's level of experience with mitigation projects funded through a FEMA grant program?

For the most part, Elmore County and its municipal jurisdictions have rural populations and very limited revenue resources. Consequently, capabilities sometimes reflect those limitations. The following table is an overview of each municipality in Elmore County, as found under Section 3. County and Community Profiles:

Table 6.7-1 (See: Table 3.13-1) **Jurisdictional Overview**

N/A = Non-Applicable (Supporting Mitigation Authorities, Policies, Resources, & Capabilities)

Jurisdiction	Adopted Hazard Mitigation Plan	NFIP	Community Rating System/ Class	Master Plan	Zoning Regs	Sub-Division Regs	Building Codes	Capital Improve-ment Plan	Planner /Engineer on Staff	Building Inspector On Staff	Certified Flood-plain Mgr on staff	Mitigation Project Experience
Elmore County	Yes	Yes		No	No	Yes	No		Yes/Yes	No	Yes	Yes
Coosada, Town of	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No/No	No	No	Yes
Deatsville, Town of	Yes	No		No	No	Yes, Agree-ment with Elmore Co	No		No/No			Yes
Eclectic, Town of	Yes	Not Eligible	No	Yes	Yes	Yes	Yes	In Progress	No/No	Yes	No	Yes
Elmore, Town of	Yes	Yes		Yes	Yes	Yes	Yes	No	No/Yes	Yes	Yes	Yes
Millbrook, City of (Part)	Yes	Yes	No	Yes	Yes	Yes	Yes					Yes
Tallassee, City of (Part)	Yes	Yes	No	Yes	Yes	Yes	Yes	Y:es	No/No	Yes	No	Yes
Wetumpka, City of	Yes	Yes	Yes/9	Partial	Yes	Yes	Yes	No	Yes/No	Yes	No	Yes
Poarch Band of Creek Indians (PCI)	Yes	No	No	Yes	No	No	No	No	Yes/No	No	No	Yes
Central Elmore Water & Sewer	Yes	N/A	N/A	Eclectic, Wetumpka	N/A	N/A	N/A	Yes	No/Yes	No	No	Yes
Eclectic Water & Sewer	Yes	N/A	N/A	Eclectic	Eclectic	N/A	Eclectic	Yes	No/No			Yes
Elmore Water Authority	Yes	N/A	N/A	N/A	N/A	N/A	Elmore	Yes	No/No	No	No	No
Five Star Water Authority	Yes	N/A	N/A	N/A	N/A	N/A	N/A	Yes	No/No	No	No	No
Friendship Water Works	Yes	N/A	N/A	N/A	N/A	N/A	N/A		No/No			No
Holtville Water Systems, Inc.	Yes	N/A	N/A	N/A	N/A	N/A	N/A	No	No/No	No	No	No
Millbrook Water & Sewer Authority	Yes	N/A	N/A	Millbrook	N/A	N/A	Millbrook	No	No/No	Yes	Yes	No
Tri-Community Water System	Yes	N/A	N/A	N/A	N/A	N/A	Millbrook	No	No/No	No	No	No
Tallassee Water Dept.	Yes	N/A	N/A	N/A	N/A	N/A	Tallassee	No	No/No	Yes	No	Yes
Wetumpka Water Works & Sewer Board	Yes	N/A	N/A	Wetumpka	N/A		Elmore, Wetumpka		No/Yes			Yes

Elmore County Board of Education	Yes	N/A	N/A		Millbrook, Wetumpka		Millbrook, Wetumpka		No/No			Yes
Tallassee City Schools	Yes	N/A	N/A	N/A	Tallassee	N/A	Tallassee	Yes	No/No	No	No	Yes

Following is an overview of county-wide capabilities regarding:

- Staff and Organizational Capability
- Technical Capability
- Policy, Program and Ordinance Capability
- Fiscal Inventory and Capability
- Legal Authority
- Political Willpower

Staff and Organizational Capability

Elmore County is governed by a five-member Board of Commissioners which bears the responsibility of serving the people and improving the quality of life in Elmore County. The County Commission is an elected five-member governing body. The Commission appoints from its membership their presiding officer, County Commission Chairman. The Commission establishes county policy; approves and adopts the annual budget for all county operations; approves actual expenditures for each department; supervises the operations of Engineering (Public Works), Human Resources, Purchasing, Facilities, Grounds Maintenance; ensures county-wide compliance with numerous statutory requirements; acts as liaison with county boards, commissions, and other governmental entities.

Elmore County has the following organizations that help carry out day-to-day functions of the government:

- Elmore County Administrator
  - Personnel
  - Accounting
- Elmore County Revenue Commissioner's Office
  - Assessment
  - Collections
  - Mapping
  - Appraisal
- Elmore County Health Department
- Elmore County Volunteer Fire Departments (Elmore County Fire Fighters Association)*
- Elmore County E-911 Office
- Emergency Management Agency/Homeland Security Office
- Elmore County Highway Department - Engineering (Public Works)
- Elmore County Sheriff's Department
- Water Systems

- Planning (Central Alabama Regional Planning and Development Commission)

The *County Administrator is* an appointed official who is responsible for oversight of the County Commissioners' Office include, but are not limited to budget, accounting, purchasing, and personnel.

County Department's Connection to Hazard Mitigation: The County Administrator's office is connected to hazard mitigation in the event hazard mitigation strategies require funding, purchasing material (equipment) or a new position or a change in responsibilities of current positions. The appropriate department should coordinate with County Administrator in the event that funding, a new position or a change in position is required.

The *Deputy County Administrator* is an appointed official who is responsible for keeping accurate records of the orders, rules, and proceedings of the County Commission.
County Department's Connection to Hazard Mitigation: The Deputy County Administrator is indirectly connected to hazard mitigation in the event hazard mitigation strategies require funding, purchasing material (equipment) or a new position or a change in responsibilities of current positions. The appropriate department should coordinate with County Administrator and/or her/his Deputy in the event that funding, a new position or a change in position is required.

The *Elmore County Revenue Commissioner's Office:* The office is composed of four departments: Mapping, Appraisal, Assessment and Collection. The office is responsible for the administration of the ad valorem (or property) tax, including responsibility for assessment of real personal property and business property. The county is currently divided into approximately 38,000 parcels of real property covering approximately 630 square miles.

County Department's Connection to Hazard Mitigation: The Elmore County Revenue Commissioner's Office is indirectly connected to hazard mitigation and, therefore, has no responsibility for mitigation activities in Elmore County.

The *Elmore County Health Department* has been committed to providing public health services through its programs, public education and services. These services prevent epidemics and the spread of disease, protect against environmental hazards, promote healthy behaviors, prevent injuries and illness, assure the quality and accessibility of health services and monitor the health of the population. The Health Department regulates the drinking water supply, administers food preparation regulations, and environmental health, as well as administers the distribution of medical services in the event of a disaster.

County Department's Connection to Hazard Mitigation: The Health Department primary link to natural, technological, and/or human-related (man-made) hazards is in the area of preparedness and response. The Health Department monitors issues that pose immediate public health threats.

The *Elmore County Volunteer Fire Departments and Elmore County Fire Fighters' Association* are essential elements of the emergency response team within Elmore County. The fire service responds to fires, accidents, and other emergencies within their jurisdictions in Elmore County.

The Fire Fighters Association provides educational development, training and county-wide organization for the departments.
County Department's Connection to Hazard Mitigation: The respective fire departments primary responsibility is to respond to any and all emergencies in Elmore County. However, the departments and association have been very proactive in public education campaigns, updating training, and general outreach efforts to ensure the community at large is safe. Therefore, the departments and association are key players in hazard mitigation activities.

The *Elmore County Emergency Management Agency* is responsible for emergency contingency planning, public education, and emergency response coordination in Elmore County. The Emergency Management Agency is responsible for working towards fulfilling the four phases of emergency management for all of Elmore County through Preparedness, Response, Recovery and Mitigation. These activities include, but are not limited to, writing and updating the Emergency Operations Plan (EOP), conducting on-going public education related to emergency preparedness, emergency public information, and coordination of emergency assistance to the local jurisdictions when they are overwhelmed or do not possess the needed resources to respond to and recover from emergency or disaster situations. The Emergency Management Agency staff needs to have and currently possesses extensive training from AEMA, FEMA, and other bodies in emergency response, preparedness, mitigation, and overall emergency management.

County Department's Connection to Hazard Mitigation: The Emergency Management Agency is critical to hazard mitigation planning because their mission so closely coincides with that of hazard mitigation planning through protecting life and property of Elmore County citizens. They accomplish this task through the four phases of emergency management.

The *County Highway Department – (Engineer)* is responsible for the maintenance and repair of roads and associated rights-of-way, as well as bridge and other drainage structures in Elmore County. Routine and preventative maintenance includes applying gravel to rural roads, asphalt and concrete patching and sealing, roadside ditching, vegetation control, and bridge maintenance and repair. Traffic services provided include street signing, regulatory signing, dust control, and snow and ice control.

County Department's Connection to Hazard Mitigation: The County Highway Department – (Engineer) is an integral part of mitigation planning. How the department decides to build new roads, or maintain current infrastructure is intertwined with the overall mission of mitigation planning which is to protect and preserve life and property. Well engineered and designed subdivisions and road improvements serve as mitigation activities. Through their maintenance responsibilities the department will also be able to identify weaknesses in county infrastructure that could be adversely affected in the event of a natural, technological, or human-related (man-made) emergency or disaster. By identifying those things early on, mitigation funds could be used to protect that infrastructure.

The *Elmore County Sheriff's Department* – (Sheriff) is an elected official whose primary responsibility is to protect and preserve the general safety and welfare of Elmore County residents through effective law enforcement. Duties include patrolling the county, responding to calls for

service from the citizens of Elmore County, and investigating reported crimes. The Sheriff is also responsible for serving all criminal warrants and civil process papers issued to his department from the District Court.

County Department's Connection to Hazard Mitigation: The Sheriff's office plays a large role in general preparedness in the event of a natural, technological, or human-related (man-made) hazard. Ensuring that Elmore County is adequately staffed with law enforcement officers in the event of an emergency or disaster, in a timely manner, can be considered a mitigation activity (although AEMA/FEMA may call it preparedness) because these actions can serve to protect life and property. Additionally, should the emergency or disaster be the result of human-caused (man-made) activities, scene security and evidence protection would become major responsibilities of law enforcement.

The Elmore County *Water Systems* are responsible for distributing water throughout the county. The water districts in the county are responsible for developing new water supply infrastructure and maintaining existing infrastructure. There are 10 different water authorities or districts throughout Elmore County.

Water System's Connection to Hazard Mitigation: Regarding natural hazards, water districts are related to mitigation activities concerned with drought and flooding primarily. Connecting disparate water supplies so rural areas of the county have multiple water supplies in the event of an emergency is an important mitigation technique the districts can employ. Furthermore, protecting water supply infrastructure from floodwaters is an important task also under the purview of the district. Protecting water supplies from biological/chemical attacks is also related to mitigation activities.

There are several municipalities with sewer facilities: Coosada, Eclectic, Millbrook, Tallassee and Wetumpka. The *Sewer Districts* are responsible for the wastewater quality within Elmore County. This is done in order to improve and maintain the health and welfare of the residents of the county. The sewer districts suggest plans for improvement of existing facilities and the development of new ones. In addition, there are private systems along the lakes serving private developments.

Sewer System's Connection to Hazard Mitigation: The sewer districts are connected to mitigation directly since they are responsible for the health and safety of county citizens pertaining to sewer lines, lagoons and other similar infrastructure. Part of that responsibility must include protecting that infrastructure from natural, technological, and human-caused (man-made) threats and hazards and keeping things like lagoons from over-flowing in a flood event. Therefore, the development of new sewer infrastructure and the maintenance of existing infrastructure must take into account hazard mitigation techniques.

Municipalities within Elmore County include the: Town of Coosada, Town of Deatsville, Town of Eclectic, Town of Elmore, City of Millbrook, City of Tallassee, City of Prattville, and City of Wetumpka. Each has a mayor-council form of government, with their own administrative staffs. For information on each municipality see **Table 6.7-1** above and **Section 3**: Community Profiles.

The *Central Alabama Regional Planning and Development Commission (CARPDC)* provides assistance with planning, grants, administrative and oversight to all its member governments, which Elmore County is a member. Each municipality within Elmore County is a member of CARPDC. The 10-person staff includes an executive director, managers/specialists (weatherization, community development, special projects), a GIS technician, and an accounting assistant.

County Department's Connection to Hazard Mitigation: CARPDC may play a role in mitigation planning by assisting member governments within Elmore County with planning, enforcement of building regulations, interpreting zoning maps for proper development, and other associated tasks. Part of that responsibility is making sure the communities are positioned well to improve the overall quality of life. Mitigation planning is about protecting life and property, an integral part of improving the overall quality of life.

Technical Capability
Elmore County has extensive technical capabilities to implement hazard mitigation into the overall role of county government.

Technical Expertise
Elmore County has full-time engineers, emergency management staff, administrative staff and others to help guide and employ identified hazard mitigation strategies. Furthermore, the staff is backed by a computer system and information technology department that allows for quick and easy exchange of information, advanced Geographic Information Systems (GIS) capabilities, and other associated tasks. The county also is well prepared with well-equipped fire departments, contracted emergency medical services, and solid coordination between agencies and local jurisdictions. The county also has a good inventory of trucks and other vehicles necessary to maintain and build mitigation structures, should specific structures need building. The combination of a diverse range of skill sets and the necessary tools make Elmore County particularly suited to implement hazard mitigation strategies.

Policy Planning, and Program Capabilities
This part of the capabilities assessment is designed to summarize and evaluate existing plans, polices, programs, and ordinances that either increase or decrease the community's vulnerability to natural, technological, and human-related (man-made) hazards. (Ref: **Table 6.7-1**)

Zoning
Zoning ordinances in Elmore County exist within the municipalities, *with the exception of* the Town of the Deatsville. The ordinances exist in large part because zoning is seen as a method to control development in such a way as to keep the general population safe. Most zoning ordinances traditionally state that zoning "regulations are necessary for the purpose of promoting the health, safety, morals, comfort, or general welfare, and conserving the values of property throughout the community." Furthermore, the zoning ordinances were designed "to discourage development in areas where: desired services cannot be provided in a cost effective manner; and the safety of

citizens could be jeopardized due to the fact that the area is not readily accessible to fire protection, law enforcement and ambulance services." (Ref: **Table 6.7-1**)

While not explicitly defined as mitigation, the zoning ordinance has mitigation ideals imbedded in it. For instance, the regulation identifies part of its purpose as to protect the health, safety, and property of citizens. Mitigation is defined the same way.

All of the municipalities have zoning ordinances with the exception of the Town of Deatsville.

Subdivision
Similar to zoning regulations, subdivision regulations in Elmore County serve to "protect the public health and general welfare" of the community. Subdivision regulations do this by providing specific guidelines that new developments must meet in order to be in compliance with safety and management decisions. (Ref: **Table 6.7-1**)

All municipalities have subdivision regulations, with the exception of the Town of Deatsville which follows the Elmore County Subdivision Regulations.

Emergency Operations Plan (EOP)
The Emergency Operations Plan (EOP) is a perfect tool for outlining how a county will respond to emergencies and disasters. The EOP consists of specific directions of local government to undertake in the event of an emergency. While this is not considered mitigation, an EOP is an essential tool in helping reduce the threat of all hazards—natural, technological, and human-related (man-made). Furthermore, the EOP directs local authorities in cleaning up after an emergency or disaster. When this happens, local authorities can learn from these incidents/events as to what did and did not work and apply those lessons learned to existing mitigation strategies in the hazard mitigation plan as well as the EOP.

A soundly written and updated mitigation plan is an ideal companion to a soundly written and updated EOP.

Economic Development-Elmore County Economic Development Authority (ECEDA)
ECEDA's key objective is to enhance economic development throughout Elmore County. This can be achieved by:

- Increasing the number of qualified workers in our labor pool,
- Identifying, quantifying and monitoring the labor pool requirements necessary to attract, retain and grow businesses in Elmore County,
- Creating a vibrant technology commercialization environment that links investment grade technology to productive enterprises,
- Creating a vibrant entrepreneurial environment,
- Marketing Elmore County as a pro-positive development, new economy growth area, and as pro-development to existing businesses,

- Ensuring a quick, thorough response from government entities to development questions, through a "one-stop" environment, that provides in-depth information necessary for business (new or existing) to make investment decisions in Elmore County,
- Ensuring that local ordinances affecting development costs protect the environment, promote attractive development, and support growth initiatives,
- Supporting the continuation of a high quality-of-life environment required to recruit desired employees,
- Constructing and rehabilitating roadways that allow for greater and safer growth opportunities; Up-grading rail infrastructure and adding a rail freight terminal to enhance rail usage; Ensuring the existence of viable passenger air and freight travel for the area.

Certainly, many of these objectives are not directly related to mitigation, but several of them are pertinent, particularly objectives that pertain to supporting the quality of life in Elmore County and promoting development that will attract new business. Creating a safe community that is cognizant of threats involving natural, technological, and human-related (man-made) hazards and is prepared to mitigate against their negative impacts should attract employers and employees to the area. Therefore, economic development and mitigation while supposedly unattached, do have parallel courses.

National Flood Insurance Program

The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

Participation in the National Flood Insurance Program is a critical aspect of hazard mitigation planning for it provides communities with direct resources that can be used for controlling the potentially devastating impacts of floods. Furthermore, participation in the program helps communities more easily recover from flood impacts. Most communities in Elmore County are currently enrolled in the program thus giving them access to FEMA funds. Current exceptions include the Towns of Deatsville and Eclectic. (Note: The Town of Eclectic is not in a special flood hazard area and is therefore not subject to or eligible for participation in the NFIP). However, many communities are more prone to the devastating effects of floods because of their proximity to the floodplain. Current floodplain maps are necessary tools used to address the built community in flood, flash-flood-prone areas of the county.

On October 1, 2014, FEMA's Intergovernmental Affairs Division released an Advisory regarding the NFIP and the implementation of the Homeowner Flood Insurance Affordability Act and the Biggert-Waters Flood Insurance Reform Act. On March 21, 2014, President Obama signed the

Homeowner Flood Insurance Affordability Act (HFIAA) of 2014 into law. The law repeals and amends certain provisions of the Biggert-Waters Flood Insurance Reform Act of 2012 (Biggert-Waters) and the National Flood Insurance Act of 1968.

Building Codes

Most Elmore County municipalities have building codes in place. Enforcement of these codes is weak due to the lack of full time code enforcement officers. Building codes have a large impact on helping mitigate the effects of a natural, technological, and human-related (man-made) hazards on the built community. The establishment of codes requires builders to construct facilities that can better withstand certain types of hazards—natural, technological, and human-related--thus protecting the occupants and their property. Continual updates and revisions to the codes also helps protect the citizenry by requiring previously unavailable technologies better capable of protecting life and property to now be employed.

Summary

A summary of current policies, plans, and programs and their respective effectiveness for hazard mitigation is listed below.

Table 6.7-2

Current Policies, Plans, and Programs	Mitigation Effectiveness (High, Medium, Low)
Zoning Ordinances	High
Subdivision Regulations	Medium
Economic Development Planning	Medium
National Flood Insurance Program	High
Building Codes	High

Fiscal Inventory and Capabilities

In many counties in Alabama and the nation, budgets have been particularly hard to balance since the downturn in the nation's economy and the change in national priorities since September 11, 2001. However, Elmore County has managed to keep revenues in check with expenditures over the years. This is based on Elmore County's growth rate in population, Alabama's third fastest growing county. Under the Disaster Mitigation Act of 2000, FEMA has made special accommodations for "small and impoverished communities," which will be eligible for a 90% federal share, 10% non-federal cost split for projects funded through the Pre-Disaster Mitigation (PDM) Grant Program. Unfortunately, Elmore County does not qualify for this program because of the program's emphasis on communities of less than 3,000 people. Individual jurisdictions within Elmore County, such as the Towns of Coosada, Eclectic, Elmore, and Deatsville however, may qualify for this program.

Funding for mitigation programs can be raised or received in the following ways.

Local Funds - These funds come predominantly from property and sales tax revenues. These funds are generally allocated directly to school, public works, and other essential government

functions. While there may be little room for mitigation funding within this revenue stream, mitigation activities frequently will be a part of essential government functions. For instance, money that is allocated for a new school can be increased to fund stronger than normal roofs to help the school in the event of a tornado.
Non-Governmental Funds - Another potential source of revenue for local mitigation efforts could come from non-governmental organizations, such as churches, charities, community relief funds, the Red Cross, hospitals, for-profit businesses, and nonprofit organizations. These local organizations can be tapped to help carry out local hazard mitigation initiatives.

State and Federal Funds - There are many federal and state funding programs available to local governments for the purpose of implementing hazard mitigation plans. These programs include:

- Hazard Mitigation Grants,
- Flood Mitigation Assistance Programs and,
- Community Development Block Grants

The Hazard Mitigation Grant Program (HMGP) provides funding for mitigation measures following a presidential disaster declaration. The HMGP is funded in most part by the federal government and administered by respective state governments. HMGP funds can be used for such projects as acquisition or relocation, retrofitting, development of local mitigation standards and comprehensive mitigation plans, structural hazard control, and for the purchase of equipment to improve preparedness and response.

The Flood Mitigation Assistance Program (FMAP) is a federally funded program for mitigation assistance to states, communities and individuals for cost-effective measures to reduce or eliminate the long-term risk of flood damage to the built environment and to real property. Unlike the HMGP, FMAP is available to eligible communities on an annual basis. An eligible community must be a participant in the National Flood Insurance Program and must develop a flood mitigation plan. FMAP funds may be used for such projects as elevation and/or dry flood proofing of structures, acquisition of real property, relocation or demolition of structures, and minor structural projects.

The Community Development Block Grant (CDBG) is another source of funding for hazard mitigation initiatives. The objective of the CDBG program is to assist communities in rehabilitating substandard dwelling structures and to expand economic opportunities, primarily for low-to-moderate-income families. These funds are administrated locally by the state and applied for under a competitive process. However, as a result of a presidential declared disaster, CDBG funds may be used for long-term needs such as acquisition, reconstruction, and redevelopment of disaster-affected areas.

Legal Authority
Elmore County has at its disposal a variety of power given to it by the State of Alabama relevant to mitigation activities. (Some of these powers must be requested and granted under special legislation.) A brief review of these powers is listed below.

Regulation

Alabama has granted local governments broad regulatory powers in their respective districts. Regulatory powers that are most relevant to hazard mitigation are listed below.

- *Police Powers* - Since the police are responsible for protecting the overall public, local governments can add requirements pertinent to hazard mitigation.
- *Building Codes* - allows for building codes to be developed in order to protect the public good.
- *Land Use*
    - Planning and Zoning: local governments have the right to create and enforce planning and zoning regulations (Zoning must be requested for Elmore County – municipalities have this power)
    - Floodplain: local governments the right to create and enforce floodplain regulations.
    - Subdivision: local governments have the right to create and enforce subdivision regulations.

Acquisition

The power of acquisition can be a useful tool for pursuing mitigation goals. Local governments may find the most effective method for completely "hazard-proofing" a particular piece of property or area is to acquire the property (either in fee or a lesser interest, such as an easement), thus removing the property from the private market and eliminating or reducing the possibility of inappropriate development occurring. Alabama legislation empowers cities, towns, and counties to acquire property for public purpose by gift, grant, devise, bequest, exchange, purchase, lease or eminent domain.

Taxation

The power to levy taxes and special assessments is an important tool delegated to local governments by Alabama law. The power of taxation extends beyond merely the collection of revenue, and can have a profound impact on the pattern of development in the community. Many communities set preferential tax rates for areas, which are unsuitable for development (e.g., agricultural land, wetlands), and can be used to discourage development in hazardous areas. Local units of government also have the authority to levy special assessments on property owners for all or part of the costs of acquiring, constructing, reconstructing, extending or otherwise building or improving protective structures within a designated area. This can serve to increase the cost of building in such areas, thereby discouraging development. Because the usual methods of apportionment seem mechanical and arbitrary, and because the tax burden on a particular piece of property is often quite large, the major constraint in using special assessments is political. Special assessments seem to offer little in terms of control over land use in developing areas. They can, however, be used to finance the provision of necessary services within municipal or county boundaries. In addition, they are useful in distributing to the new property owners the costs of the infrastructure required by new development.

Spending

The fourth major power that has been delegated from the Alabama Legislature to local governments is the power to make expenditures in the public interest. Hazard mitigation principles

should be made a routine part of all spending decisions made by the local government. By tentatively committing itself to a timetable for the provision of capital to extend services, a community can control its growth to some extent especially where the surrounding area is such that the provision of on-site sewage disposal and water supply are unusually expensive. In addition to formulating a timetable for the provision of services, a local community can regulate the extension of and access to services. This tactic can help guide development away from high-hazard prone areas and thus be a mitigation activity.

Political Willpower

Elmore County has seen firsthand the effects of natural hazards from floods to tornados. People are well aware of the impacts to life and property these events have had on the community. The Elmore County Commission has been dedicated to hiring emergency management professionals and has allowed these personnel to establish and maintain a strong emergency management program. The local municipalities have been very supportive of working with the emergency management staff to better prepare, response, and recovery to natural hazard events. Due to this awareness, it is expected that the current and future political climates will remain favorable for supporting and advancing emergency management and strong mitigation strategies in Elmore County.

Another nation-wide community preparedness program that Alabama communities participate in is the National Weather Service's (NWS) Storm Ready Program (SRP). The SRP helps communities develop plans to handle all types of severe weather, including, but not limited to tornadoes and tsunamis. By providing emergency managers with clear guidelines on how to improve their hazardous weather operations, SRP encourages communities to take a proactive approach toward improving their weather operations. These guidelines help communities implement procedures that reduce the potential for disastrous, weather-related consequences. To become a Storm Ready community, several guidelines must be met. The guidelines include the following:

- Establish a 24-hour warning point and emergency operations center
- Have more than one way to receive severe weather warnings and forecasts and to alert the public
- Create a system that monitors weather local weather conditions
- Promote the importance of public readiness through community seminars and other outreach methods
- Develop a formal hazardous weather plan to include training severe weather spotters and conducing emergency exercises

Some benefits of being a Storm Ready community include increased scores on the Community Rating System (CRS) which in turn can lower NFIP insurance rates, along with maintaining local plans and increased public awareness and preparedness. Counties, communities, and supporters must be recertified every three years. Elmore County has been an active Storm Ready Community since 2010.

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6.8 Identification, Evaluation and Prioritization of Mitigation Actions

This section describes the county's process for identifying, evaluating and prioritizing the county's hazard mitigation goals, objectives and actions. Several local agencies provided recommendations for goals, objectives, and actions to be included in the plan. In 2010, the Hazard Mitigation Planning Committee (HMPC) was contacted in order to update the *Elmore County Natural Hazard Mitigation Plan*. This process is discussed in more detail in **Section 4** – Planning Process. While the agencies/organizations participating in the 2010 plan update remained the same, the representative individuals varied somewhat from the 2005 planning process. Additionally, agencies were provided lists of the actions and associated objectives identified in the 2010 plan for their review and comment. Agencies provided feedback on completed, in progress, deferred, and/or deleted actions. Further, the planning committee reviewed the local plan to verify that goals and objectives identified within the plan were compatible with the goals and objectives identified at the state level. In turn, county goals and objectives were determined to be reflective of state goals, objectives, and actions. Again, in 2012, the decision was made by the MAC Group to incorporate technological and man-made hazards into the plan, while expanding with the natural hazards already addressed in the plan, in an effort to more fully comply with the ***Post Katrina Emergency Management Reform Act of 2006***. Goals and objectives were once again reviewed, wording updated to reflect all-hazards vice natural hazards only. This local plan review is discussed in greater detail in **Section 7.3**.

For the purpose of this plan, proposed activities fall under six broad categories of mitigation:

- ☑ Prevention
- ☑ Life and Property Protection
- ☑ Natural Resources Protection
- ☑ Structural Projects
- ☑ Emergency Services Protection
- ☑ Public Information, Education, and Awareness
  (See 6.8.2 Mitigation Actions, Mitigation Implementation, Action Items for details.)

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6.8.1 Identification and Evaluation of Mitigation Actions

The process employed during the update of the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan's* mitigation actions was similar to that employed in 2010. First, the committee determined that each agency represented on the committee (and the various other organizations that were included in, and informed of, committee activities – see **Section 4**) should be allowed to provide input on goals, objectives, etc. at both the county-wide level as well as from the standpoint of the organizations they represent. To accomplish this, the Elmore County EMA developed a worksheet based on the goals, objectives, and actions from the 2010 Plan and provided the document to the committee. This worksheet was sent to all members of the existing committee and the other contact organizations, with a request to respond by the date given. Some organizations provided feedback as to whether the goals from the 2010 Plan were still relevant during the annual review process leading up to the 2015 plan update. Further, comments were solicited from the committee as to the potential need for additional goals to address any changing conditions. Secondly, the committee provided input on the status of the actions identified in the 2010 Plan using the developed worksheet that contained the goals, objectives, and specific actions identified in the plan and requested information from the agency on the progress made in implementing the project, including whether or not the project was completed or on-going, or if the action was deferred and if there were any specific reasons why it was deferred. Additionally, the agencies were requested to provide additional actions that they would like to see included in the 2015 update. The results of this input were compiled and included in the plan revision, currently under review by the committee. Thirdly, Elmore County EMA compiled existing information from the local level and reviewed them to identify goals, objectives, strategies, etc. The identification of mitigation actions has been shaped by the events that occurred over the past five years. Because of these events, the prioritization of actions has been re-evaluated. The updated prioritization of these mitigation actions are below.

The Elmore County HMPC/MAC Group reviewed all mitigation measures. Where necessary, they adjusted the priority based upon actions that were previously identified, and re-evaluated the grant funding programs. The committee assessed the availability of grant funds and the state/federal governments' prioritization of these potential grants in order to establish the priorities for Elmore County's planning strategy.

- A High ranking requires continuous action and participations from the entire community.
- A Medium ranking involves fewer people, effort, and area of the community.
- A Low ranking involves a small number of people and plans for a specific action.

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6.8.2 Mitigation Actions

How Recent Events have Influenced Mitigation Actions

Since the 2010 *Natural Hazard Mitigation Plan* update, Elmore County faced a series of potential natural hazard threats. Elmore County pursued, and continues to pursue, a variety of natural hazard mitigation measures that reduced the potential impact of these threats and the impact of future threats. Many of these same mitigation measures are applicable across the board—meaning, these same actions can also be applied toward mitigating the potential effects of technological and man-made threats and hazards as well.

Since the time of the 2010 Plan revision, there have been an additional 171 recorded events in Elmore County, as shown in **Table 6.8.2-1**. Two key points should be noted regarding this table:

1) The National Climatic Data Center (NCDC) Storm Events Database is not 100% inclusive of all events having impacted Elmore County throughout the years, rather only those known to and updated by database managers.
2) The Database reflects recorded events—its sole purpose. What the Database does not reflect, in and of itself, is an accurate account of the total number of days Elmore County has spent under countless weather advisories, watches and warnings. Only days with reportable damages or other types of hazardous weather impact are included. There is no mention of the countless days a county spends under these advisories, watches and warnings and thankfully, sustains no "reportable" damages/impacts…a phenomena blessedly referred to locally as having "dodged the bullet." Regardless of the outcome, governments, business, non-profits, citizens, visitors, etc., are all still encouraged and expected to execute their appropriate severe weather plans, taking pre-determined action steps and modifying their normal routines, as applicable, in response to the numerous advisories, watches and warnings that were issued for Elmore County.

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Table 6.8.2-1 Storm-Related Events in Elmore County between 1 Jan 2009 – 14 May 2014

Storm Events Database

Search Results for Elmore County, Alabama

All Available Event Types

Elmore County contains the following zones:
'Elmore'

171 events were reported between 01/01/2009 and 05/31/2014 (1977 days)

Summary Info:

Number of County/Zone areas affected:	2
Number of Days with Event:	105
Number of Days with Event and Death:	1
Number of Days with Event and Death or Injury:	4
Number of Days with Event and Property Damage:	39
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	16

Column Definitions:
'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								6	23	56.581M	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2009	03:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/13/2009	03:30	CST-6	Strong Wind	35 kts. EG	0	0	10.00K	0.00K

MILLBROOK	ELMORE CO.	AL	05/03/2009	14:08	CST-6	Thunderstorm Wind	50 kts. EG	0	0	6.00K	0.00K
COBBS FORD	ELMORE CO.	AL	05/03/2009	14:08	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
WETUMPKA	ELMORE CO.	AL	05/03/2009	14:20	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/07/2009	07:00	CST-6	Flash Flood		0	0	4.900M	0.00K
SANTUCK	ELMORE CO.	AL	06/14/2009	12:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	20.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/14/2009	12:09	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
COOSADA	ELMORE CO.	AL	06/14/2009	12:12	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
TUCKABATCHIE	ELMORE CO.	AL	06/15/2009	23:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
SYKES MILL	ELMORE CO.	AL	06/28/2009	17:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
NORTH ELMORE	ELMORE CO.	AL	07/05/2009	11:40	CST-6	Lightning		0	1	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/05/2009	17:11	CST-6	Thunderstorm Wind	39 kts. EG	0	0	1.00K	0.00K
SANTUCK	ELMORE CO.	AL	07/05/2009	17:16	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	07/05/2009	17:22	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	07/08/2009	14:20	CST-6	Hail	1.25 in.	0	0	0.00K	0.00K

MILLBROOK	ELMORE CO.	AL	07/26/2009	16:48	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/26/2009	16:48	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
WETUMPKA	ELMORE CO.	AL	08/04/2009	15:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
WETUMPKA	ELMORE CO.	AL	08/05/2009	13:22	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
MAN	ELMORE CO.	AL	08/05/2009	13:40	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
WETUMPKA	ELMORE CO.	AL	08/11/2009	18:05	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	09/19/2009	01:00	CST-6	Flash Flood		0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	11/09/2009	14:00	CST-6	Tropical Depression		0	0	5.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/24/2010	11:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/12/2010	10:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/10/2010	15:58	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	03/10/2010	16:10	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/30/2010	14:25	CST-6	Flash Flood		0	0	0.00K	0.00K
BUTTS MILL	ELMORE CO.	AL	06/15/2010	15:40	CST-6	Thunderstorm Wind	45 kts. EG	0	0	3.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/15/2010	15:43	CST-6	Lightning		0	0	5.00K	0.00K

DEXTER	ELMORE CO.	AL	06/19/2010	14:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
TALLASSEE	ELMORE CO.	AL	06/19/2010	14:22	CST-6	Thunderstorm Wind	39 kts. EG	0	0	1.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	06/21/2010	13:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/21/2010	13:46	CST-6	Thunderstorm Wind	60 kts. EG	0	0	20.00K	0.00K
COTTON	ELMORE CO.	AL	06/21/2010	13:47	CST-6	Lightning		0	0	10.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/21/2010	13:50	CST-6	Lightning		0	0	10.00K	0.00K
ECLECTIC	ELMORE CO.	AL	07/09/2010	13:45	CST-6	Thunderstorm Wind	40 kts. EG	0	0	10.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/09/2010	18:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
WALLSBURG	ELMORE CO.	AL	07/09/2010	19:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
WARE	ELMORE CO.	AL	07/23/2010	17:35	CST-6	Thunderstorm Wind	60 kts. EG	0	0	3.00K	0.00K
DEXTER	ELMORE CO.	AL	07/30/2010	16:20	CST-6	Thunderstorm Wind	55 kts. EG	0	0	1.00K	0.00K
NORTH ELMORE	ELMORE CO.	AL	08/04/2010	13:20	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.50K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/14/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/21/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	10/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	11/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	11/30/2010	10:13	CST-6	Thunderstorm Wind	50 kts. EG	0	0	4.00K	0.00K
WETUMPKA	ELMORE CO.	AL	11/30/2010	10:23	CST-6	Tornado	EF0	0	0	35.00K	0.00K
ECLECTIC	ELMORE CO.	AL	11/30/2010	10:45	CST-6	Thunderstorm Wind	45 kts. EG	0	0	5.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/15/2010	08:00	CST-6	Winter Weather		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/09/2011	13:15	CST-6	Ice Storm		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	02/01/2011	18:45	CST-6	Heavy Rain		0	0	0.00K	0.00K
WEOKA	ELMORE CO.	AL	02/01/2011	18:45	CST-6	Heavy Rain		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/04/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/09/2011	21:30	CST-6	Winter Weather		0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	02/28/2011	17:10	CST-6	Tornado	EF0	0	0	55.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K

MILLBROOK	ELMORE CO.	AL	03/26/2011	14:50	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/26/2011	14:53	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	03/27/2011	21:19	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	04/04/2011	20:18	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/04/2011	20:31	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/04/2011	20:37	CST-6	Thunderstorm Wind	50 kts. EG	0	0	7.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/05/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/05/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
COOSADA	ELMORE CO.	AL	04/11/2011	20:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
TITUS	ELMORE CO.	AL	04/15/2011	20:27	CST-6	Tornado	EF0	0	0	12.90K	0.00K
WEOKA	ELMORE CO.	AL	04/15/2011	22:17	CST-6	Tornado	EF2	0	0	1.330M	0.00K
WALLSBURG	ELMORE CO.	AL	04/27/2011	19:12	CST-6	Tornado	EF3	6	20	50.000M	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	05/10/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	05/26/2011	13:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	05/26/2011	13:21	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K

SYKES MILL	ELMORE CO.	AL	05/26/2011	13:41	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	06/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/11/2011	13:45	CST-6	Thunderstorm Wind	40 kts. EG	0	0	0.50K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/11/2011	14:04	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/11/2011	14:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/17/2011	12:49	CST-6	Thunderstorm Wind	45 kts. EG	0	0	1.00K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/17/2011	13:00	CST-6	Thunderstorm Wind	45 kts. EG	0	0	0.50K	0.00K
ELMORE CO.	ELMORE CO.	AL	06/26/2011	16:44	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/02/2011	15:30	CST-6	Thunderstorm Wind	35 kts. EG	0	0	1.00K	0.00K
CLAUD	ELMORE CO.	AL	07/03/2011	15:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	07/03/2011	15:30	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	08/02/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K

WETUMPKA	ELMORE CO.	AL	08/13/2011	16:20	CST-6	Thunderstorm Wind	43 kts. EG	0	0	5.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/05/2011	15:18	CST-6	Strong Wind	39 kts. EG	0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/05/2011	17:19	CST-6	Strong Wind	35 kts. EG	0	0	2.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	09/20/2011	14:30	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	10/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	11/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	11/16/2011	11:27	CST-6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	12/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	12/22/2011	14:14	CST-6	Tornado	EF0	0	0	5.00K	0.00K
TITUS	ELMORE CO.	AL	12/22/2011	14:16	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
TITUS	ELMORE CO.	AL	12/22/2011	14:23	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
SYKES MILL	ELMORE CO.	AL	12/22/2011	14:24	CST-6	Tornado	EF0	0	0	15.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	01/23/2012	07:48	CST-6	Tornado	EF1	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	03/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/23/2012	15:05	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	03/23/2012	15:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	05/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	06/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
SPEIGENER	ELMORE CO.	AL	06/05/2012	08:53	CST-6	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	06/11/2012	21:08	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MAN	ELMORE CO.	AL	06/11/2012	21:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLAUD	ELMORE CO.	AL	06/14/2012	17:00	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/14/2012	17:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLAUD	ELMORE CO.	AL	06/14/2012	17:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
FLOYD	ELMORE CO.	AL	06/14/2012	17:02	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	07/01/2012	12:00	CST-6	Heat		0	0	0.00K	0.00K

WARE	ELMORE CO.	AL	07/03/2012	14:48	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	07/10/2012	15:08	CST-6	Thunderstorm Wind	39 kts. EG	0	1	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/10/2012	15:54	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ECLECTIC	ELMORE CO.	AL	07/10/2012	16:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COTTON	ELMORE CO.	AL	07/17/2012	13:50	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WARE	ELMORE CO.	AL	07/17/2012	14:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	08/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	09/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	10/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	11/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
SYKES MILL	ELMORE CO.	AL	12/20/2012	10:33	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	12/20/2012	10:44	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
PRATTVILLE JCT	ELMORE CO.	AL	12/25/2012	21:05	CST-6	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/01/2013	00:00	CST-6	Drought		0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	01/30/2013	10:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K

TALLASSEE	ELMORE CO.	AL	01/30/2013	11:48	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	02/01/2013	00:00	CST-6	Drought		0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	03/05/2013	14:52	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	03/18/2013	15:58	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
MARTIN LAKE SOUTH	ELMORE CO.	AL	03/18/2013	16:00	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
MILLBROOK	ELMORE CO.	AL	03/18/2013	16:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/17/2013	15:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
SEMAN	ELMORE CO.	AL	06/27/2013	17:05	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COTTON	ELMORE CO.	AL	06/27/2013	17:18	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
RED HILL	ELMORE CO.	AL	06/27/2013	17:22	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	06/28/2013	11:53	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/28/2013	12:00	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	06/28/2013	12:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K

MARTIN LAKE SOUTH	ELMORE CO.	AL	06/28/2013	12:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COBBS FORD	ELMORE CO.	AL	07/23/2013	14:39	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
JORDAN LAKE	ELMORE CO.	AL	07/23/2013	14:39	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	07/23/2013	14:40	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
HOLTVILLE	ELMORE CO.	AL	07/23/2013	14:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	07/23/2013	14:50	CST-6	Thunderstorm Wind	54 kts. MG	0	0	0.00K	0.00K
COOSADA	ELMORE CO.	AL	07/23/2013	15:10	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
TALLASSEE	ELMORE CO.	AL	07/23/2013	15:20	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
WEOKA	ELMORE CO.	AL	07/24/2013	17:45	CST-6	Flash Flood		0	0	0.00K	0.00K
ROBINSON SPGS	ELMORE CO.	AL	08/14/2013	14:54	CST-6	Flash Flood		0	0	0.00K	0.00K
MAN	ELMORE CO.	AL	12/22/2013	17:50	CST-6	Flood		0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/06/2014	23:00	CST-6	Cold/wind Chill		0	0	0.00K	0.00K
DEATSVILLE	ELMORE CO.	AL	01/11/2014	06:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
WALLSBURG	ELMORE CO.	AL	01/11/2014	07:08	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	01/28/2014	06:57	CST-6	Winter Storm		0	0	0.00K	0.00K

ELMORE (ZONE)	ELMORE (ZONE)	AL	04/07/2014	04:40	CST-6	Strong Wind	40 kts. EG	0	1	0.00K	0.00K
ELMORE (ZONE)	ELMORE (ZONE)	AL	04/18/2014	06:50	CST-6	Strong Wind	39 kts. EG	0	0	4.00K	0.00K
MILLBROOK	ELMORE CO.	AL	04/30/2014	02:40	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
WETUMPKA	ELMORE CO.	AL	04/30/2014	02:50	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
Totals:								6	23	56.581M	0.00K

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The above severe weather events, along with a history of and potential for myriad other "human-related" (man-made) and "technological" incidents/threats/hazards have all played a significant role in shaping the hazard mitigation priorities within Elmore County over the last five years. Experienced gained through each actual disaster, incident, and event or through education, training and exercises, has revealed strengths and weaknesses within the hazard mitigation program, and the county adjusted its subsequent mitigation actions to address these weaknesses accordingly.

For instance, in the face of the severe weather threat the county continually encounters, the EMA stepped up its effort encouraging the increase of safe room capacity—both community and individual—throughout Elmore County. In the past five years, several community and individual safe rooms have been applied for using HMGP funds, most of them awarded by FEMA. As a result of the April 27, 2011 tornado event (DR-1971), HMGP funding supported the installation of the county's first three community safe rooms (in the Town of Coosada) and an additional 91 individual safe rooms—bringing the total number of individual safe rooms to 121 in Elmore County. As of the writing of this plan, the City of Tallassee recently awarded the bid for their community safe room (HMGP-funded), which will bring the total number of community safe rooms to five in Elmore County. In addition to the HMGP grant recipients mentioned above, as a direct result of the heavy publicity, outreach and education on severe weather hazard mitigation, in particular high-wind events, a number of citizens purchased individual safe rooms at their own expense, offering protection to countless other citizens from the impacts of straight-line and tornadic wind events.

Mitigation Implementation

Action Items (mitigation measures) from the 2010 *Natural Hazard Mitigation Plan* have been refined and revised in the 2015 plan update to: 1) better communicate mitigation measures in Elmore County and to 2) include verbiage that reflects *all-hazards* mitigation planning measures versus natural hazards mitigation planning measures only.

As stated in **Section 5**: Hazard Identification and Risk Assessment, Elmore County is subject to the below threats and hazards. It is impossible however, to predict exactly when these disasters/events/incidents will occur or the extent to which they will affect the County.

Hazards

For the purpose of this plan, hazards are aligned under one of three broad headings:

Natural, Technological, or Human-Related (man-made).

Natural Hazards relate to: weather hazards, hydrological hazards, ecological hazards, and geological hazards.

Technological Hazards relate to: industrial hazards and infrastructure problems.

Human-Related Hazards (man-made) relate to: civil unrest/disturbances, nuclear attack, public health emergencies, terrorism, and criminal activities.

The following outline summarizes the significant hazards covered in **Section 5** of the plan that fall under one of the above headings:

Natural Hazards: thunderstorms/severe thunderstorms; lightning; hail, tornadoes and high wind events; flooding (includes flash flooding & river flooding); hurricanes and tropical storms; extreme temperatures – heat & cold; winter storms; drought; wildfire; landslides; sinkholes and land subsidence; earthquakes; dam failure; dense fog; and celestial impact (includes space weather).

Technological Hazards: transportation system failures; hazardous materials.

Human-Related Hazards (man-made): human pandemic & animal disease; riot, demonstrations, violent protest, illegal assembly; adversarial threats—terrorism, radiological dispersal device/nuclear attack, biological attack-non-food, biological/chemical food contamination, chemical attack-non-food, aircraft accident/as weapons, explosive devices, armed assault, and cyber attack.

With the above in mind, the following three **Tables, 6.8.2-2, 6.8.2-3, and 6.8.2-4** illustrate the natural, technological, and human-related (man-made) threats and hazards Elmore County, by jurisdiction, is subject to:

Table 6.8.2-2 Natural Hazards

Elmore County Natural Hazard Concerns by Jurisdiction	Natural Hazards															
	Flooding (includes Flash & River)	Thunderstorms/ Severe Thunderstorms	Tornados/High Wind	Hail	Lightning	Wildfires (includes grass fires)	Drought	Hurricanes/ Tropical Storms	Winter Storms	Extreme Temperatures (Heat & Cold)	Landslides	Sinkholes & Land Subsidence	Earthquakes	Dam Failure	Dense Fog	Celestial Impact (including Space Weather)
Elmore County	√+	√	√	√	√	√+	√	√	√	√	√+	√	√	√+	√	√
Coosada, Town of	√+	√	√	√	√	√+	√	√	√	√	√	√	√	√+	√	√
Deatsville, Town of	√	√	√	√	√	√+	√	√	√	√	√	√	√	√	√	√
Eclectic, Town of	√	√	√	√	√	√+	√	√	√	√	√	√	√	√	√	√
Elmore, Town of	√+	√	√	√	√	√+	√	√	√	√	√	√	√	√+	√	√
Millbrook, City of	√+	√	√	√	√	√	√	√	√	√	√	√	√	√+	√+	√
Tallassee, City of	√+	√	√	√	√	√	√	√	√	√	√+	√	√	√+	√+	√
Wetumpka, City of	√+	√	√	√	√	√	√	√	√	√	√+	√	√	√+	√+	√
Central Elmore Water & Sewer	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Eclectic Water Works & Sewer	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Elmore Water Authority	√+	√	√	√	√+	√	√+	√	√	√	√	√	√	√	√	√
Five Star Water Authority	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Friendship Water Works	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Holtville Water Systems, Inc.	√	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Millbrook Water & Sewer Authority	√+	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Tri-Community Water System	√+	√	√	√	√+	√	√+	√	√	√	√	√	√	√	√	√
Tallassee Water Dept.	√+	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Wetumpka Water Works & Sewer Board	√+	√	√	√	√+	√	√+	√	√	√	√	√	√	√+	√	√
Elmore County Board of Education	√	√	√+	√	√	√	√	√	√	√	√	√	√	√	√+	√
Tallassee City Schools	√	√	√+	√	√	√	√	√	√	√	√	√	√	√	√+	√

Note: A "+" means jurisdiction has an enhanced vulnerability to the natural hazard.

Table 6.8.2-3 Technological Hazards

Elmore County Technological Hazard Concerns by Jurisdiction	**Technological Hazards**	
	Transportation System Failures	Hazardous Materials Releases
Elmore County	√	√
Coosada, Town of	√	√
Deatsville, Town of	√	√
Eclectic, Town of	√	√
Elmore, Town of	√	√
Millbrook, City of	√	√
Tallassee, City of	√	√
Wetumpka, City of	√	√
Central Elmore Water & Sewer	√	√
Eclectic Water Works & Sewer	√	√
Elmore Water Authority	√	√
Five Star Water Authority	√	√
Friendship Water Works	√	√
Holtville Water Systems, Inc.	√	√
Millbrook Water & Sewer Authority	√	√
Tri-Community Water System	√	√
Tallassee Water Dept.	√	√
Wetumpka Water Works & Sewer Board	√	√
Elmore County Board of Education	√	√
Tallassee City Schools	√	√

Table 6.8.2-4 Human-Related (man-made) Hazards

Elmore County Human-Related Hazard Concerns by Jurisdiction	**Human-Related**									
	Human Pandemic & Animal Disease	Riot, Violent Protest Demonstrations, Illegal Assembly	Terrorism	Radiological Dispersal Device/Nuclear Attack	Biological Attacks/ Contamination	Chemical Attacks /Contamination	Aircraft Accidents / Used as Weapons	Explosive Devices	Armed Assault	Cyber Attack
Elmore County	√	√	√	√	√	√	√	√	√	√
Coosada, Town of	√	√	√	√	√	√	√	√	√	√
Deatsville, Town of	√	√	√	√	√	√	√	√	√	√
Eclectic, Town of	√	√	√	√	√	√	√	√	√	√
Elmore, Town of	√	√	√	√	√	√	√	√	√	√
Millbrook, City of	√	√	√	√	√	√	√	√	√	√
Tallassee, City of	√	√	√	√	√	√	√	√	√	√
Wetumpka, City of	√	√	√	√	√	√	√	√	√	√
Central Elmore Water & Sewer	√	√	√	√	√	√	√	√	√	√
Eclectic Water Works & Sewer	√	√	√	√	√	√	√	√	√	√
Elmore Water Authority	√	√	√	√	√	√	√	√	√	√
Five Star Water Authority	√	√	√	√	√	√	√	√	√	√
Friendship Water Works	√	√	√	√	√	√	√	√	√	√
Holtville Water Systems, Inc.	√	√	√	√	√	√	√	√	√	√
Millbrook Water & Sewer Authority	√	√	√	√	√	√	√	√	√	√
Tri-Community Water System	√	√	√	√	√	√	√	√	√	√
Tallassee Water Dept.	√	√	√	√	√	√	√	√	√	√
Wetumpka Water Works & Sewer Board	√	√	√	√	√	√	√	√	√	√
Elmore County Board of Education	√	√	√	√	√	√	√	√	√	√
Tallassee City Schools	√	√	√	√	√	√	√	√	√	√

Action items are designed to reduce risk in Elmore County. Action items listed in this plan include an estimate of the timeline for implementation. Some action items are identified "immediate" while others are identified "long-term".

- ★ *Immediate action items (IA)* include those mitigation measures the county may implement with existing resources and authorities within one to two years.
- ★ *Long-term action items (LT)* included those mitigation measures the county may implement with new and/or additional resources or authorities, and may take between one to five years to implement.

During the review of the current 2010 *Natural Hazard Mitigation Plan* and given the six broad categories of mitigation: Prevention, Life and Property Protection, Natural Resources Protection, Structural Projects, Emergency Services Protection, and Public Information, Education, and Awareness, the members of the Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group were asked to consider the following criteria in drafting the Plan update: Funding Options, Political Support, Public Support, Project Legality, Preservation of the Environment, Staff Capability, and potential Cost/Benefit Ratio. Direct costs and benefits of each action item were considered, along with indirect costs and benefits of the following criteria: Social, Technical, Administrative, Legal, Economics, and Environment. If a projects benefit outweighed its proposed costs, the project was considered to be an eligible action item for the local jurisdictions.

Mitigation Plan Categories

Plan goals help guide the direction of future activities aimed at reducing risk and preventing loss from natural, technological, and human-related (man-made) threats and hazards. The goals serve as checkpoints as agencies and organizations begin implementing mitigation action items. All of the action items and projects from the 2010 plan were re-evaluated and determined valid projects for the 2015 plan update. Many activities/projects were initiated during the lifespan of the 2010 Plan, while others are ongoing projects. No measures/activities were deleted during the 2015 update process.

The proposed mitigation activities fall under the following six broad categories of mitigation.

Prevention

- Development of ordinances to protect life and property and to prevent the elimination of natural buffers.
- The establishment of local policies and guidelines that control and limit development within known hazard areas.
- The creation of guidelines that recommend the removal of dead or diseased trees (vegetation).
- Fiscal planning and management controls for the organized acquisition of equipment or infrastructure improvements.

These activities are designed to keep hazard specific issues from endangering the lives of more people. Examples:

- Public awareness of *all-hazards* events
- Continued participation in the NFIP
- Zoning, Subdivision Regulations, and Land Use Planning
- Open-space preservation
- Floodplain regulations
- Drainage systems maintenance
- Capital Improvement Planning (CIP)

Protect Life

- Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventative measures for existing development in areas vulnerable to natural, technological, and human-related (man-made) hazards.

These activities are designed to modify existing structures to be more resilient to the impacts of natural, technological, and/or human-caused threats/hazards. Examples include:

- Acquisition of properties located in known hazards areas
- Relocation assistance from known hazards areas
- Elevation of existing structures
- Retrofitting (i.e. single-wide garage door to a double-wide garage door)
- Educating the public more on insurance needs
- Encouraging the public to install individual safe rooms and work with local agencies, community groups, and civic organizations to install community safe rooms

Natural Systems

- Balance watershed planning, natural resource management, and land use planning with natural, technological, and human-related (man-made) hazards mitigation to protect life, property, and the environment.
- Preserve, rehabilitate, and enhance natural systems to serve as natural, technological, and human-related (man-made) hazards mitigation functions.

These mitigation activities involve the protection of natural areas of the county, helping them become more resilient to the effects of natural, technological, and human-related (man-made) hazards. For instance, keeping wetlands rather than developing them to help with flood control. Other examples include:

- Floodplain protection
- Encourage fire-resistant landscaping
- Improve erosion control programs

- Wetland preservation and restoration
- Improve tree management near utility lines

Structural Projects

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resilient to the impacts of natural, technological, and human-related (man-made) hazards.

Structural projects protect an area from a natural, technological, or human-related (man-made) hazard by modifying the natural surroundings to change the progression of a hazardous event. Examples include:

- Installing backup power generators on critical facilities
- Maintenance of retention ponds and installation of new retention ponds if needed
- Continuing to improve storm water management

Emergency Services

- Enhance emergency warning systems.
- Enhance information dissemination and communications (emergency services and public) before, during, and after a hazard event.
- Enhance damage reporting systems throughout the county after hazard events.
- Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.
- Continue enhancing capability of the Elmore County Emergency Operations Center (EOC).
- Continue strengthening emergency operations of all public safety agencies by enhancing communications, collaboration, and coordination among public agencies, non-profit organizations, business, and industry.
- Continue promoting and enhancing the county-wide emergency response system through ensuring operational ability during hazardous events.
- Coordinate and integrate natural, technological, human-caused (man-made) hazards mitigation activities, where appropriate, with emergency operations plans and procedures.

Emergency services often fall under the heading *preparedness* rather than mitigation, though they are closely related. These actions take place immediately preceding a natural, technological, or human-related (man-made) hazardous event, during the hazardous event, or immediately following the hazardous event. Examples include:

- Warning systems
- Improve and enhance damage reporting after hazard events
- Local weather media outlets
- Specialized emergency equipment/vehicles
- Continue to enhance county-wide Emergency response system

Public Information, Education, and Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural, technological, and human-related (man-made) hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist with implementing mitigation activities.
- Strengthen participation, communication, collaboration, and coordination among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local, county-wide, and regional hazard mitigation activities.

Examples:

- Professional speakers/demonstrations
- Hazards map information widely accessible to the public
- Real estate disclosures
- Library resources
- Local websites informing people what to do in the event of a hazard
- Media partnership with local emergency management officials

Each of the above listed six categories of mitigation activities can be found throughout the mitigation activity table that follows. As the planning process undergoes updates, other categories may be added or newer and better examples may become a part of the preceding list. Throughout the following proposed mitigation activity tables, the reader will often see one broad objective listed with several more specific actions listed under it.

Natural Hazard Mitigation Plan Action Items

The mitigation plan identifies immediate and long-term action items developed through data collection and research, and the public participation process. Mitigation plan activities may be considered for funding through federal and state grant programs, and when other funds are made available through the Elmore County and municipalities. Action items address multi-hazard (MH) and hazard specific issues. To help ensure activity implementation, each action item includes information on the timeline and coordinating organizations. Upon implementation, the coordinating organizations may look to partner organizations for resources and technical assistance. Action items and projects from the 2010 plan update were re-evaluated and deemed still valid projects and were therefore retained as current projects. Many projects have been initiated, some have been completed, while others are considered on-going in status.

Stated earlier, during the review of the current *Natural Hazard Mitigation Plan*, the members of the Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group were asked to consider the following criteria that were used in drafting the current Plan: Funding Options, Political Support, Public Support, Project Legality, Preservation of the Environment, Staff

Capability, and Potential Cost/Benefit Ratio. Direct costs and benefits of each action item were considered, along with indirect costs and benefits of the following criteria: Social, Technical, Administrative, Legal, Economics, and Environment. If project benefits outweighed its proposed costs, the project was considered to be an eligible action item for the local jurisdictions.

Also stated earlier, the action items in the initial Elmore County Hazard Mitigation Plan were reviewed and some were kept in place and carried forward as valid and deferred action items. Some action items were deleted as they were no longer applicable or those items were determined not to be a priority at this time. The action items have been arranged somewhat in order as to the priority of need, but it is understood that the priority may change due to several factors (i.e. funding, new information, etc.) affecting the mitigation activity related to a certain natural hazard.

- **Coordinating Organization** - The coordinating organization is the organization that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. Coordinating organizations may include local, county, or regional agencies that are capable of or responsible for implementing activities and programs.
- **Timelin**e - Action items include both immediate and long-term activities. Each action item includes an estimate of the timeline for implementation. *Immediate Action* items (IA) are activities that Elmore County and municipal agencies may implement with existing resources and authorities within one to two years. *Long-Term* action items (LT) may require new or additional resources or authorities and may take between one and five years to implement.
- **Ideas for implementation -** Each action item includes ideas for implementation and potential resources that may include grant programs or human resources.
- **Plan goals addressed -** The plan goals addressed by each action item are included as a way to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins.

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Table 6.8.2-5
Evaluation of Proposed Mitigation Action Items by Elmore County Local Jurisdictions

Proposed Action	Criteria						
	Social	Technical	Administrative	Political	Legal	Economic	Environmental
Prevention							
• Public awareness of hazardous events	X		X	X	X	X	
• Continued participation in the NFIP	X			X	X	X	
• Ordinances for zoning, subdivision regulations and land use planning		X	X	X	X	X	X
• Open space preservation		X			X	X	
• Floodplain regulations		X					
• Drainage system maintenance					X	X	
• Capital Improvement Planning (CIP)		X					
Protect Life							
• Acquisition	X	X	X	X	X	X	
• Relocation	X		X	X		X	
• Raising building elevation					X	X	
• Retrofitting (i.e. single-wide garage door to a double-wide garage door)					X		X
• Safe rooms (individual and community)			X				X
Natural Systems							
• Floodplain protection and education programs	X	X	X	X	X	X	X
• Fire resistant landscaping	X	X			X	X	X
• Improve erosion control programs	X	X	X	X	X	X	X
• Wetland preservation and restoration	X	X		X			X
• Improve tree management near utility lines	X	X		X			X
Structural Projects							
• Installation of backup power generators		X	X	X		X	X
• Maintenance and installation of retention ponds		X	X	X		X	X
• Continuing to improve storm water management		X	X	X		X	
Emergency Services							
• Improve information dissemination and communications systems with emergency services and the public							

• Warning systems		X	X	X		X	X
• Improve and enhance damage reporting after hazardous events		X	X	X		X	X
• Improve relationships with local media outlets	X		X	X		X	
• Continue to enhance the Elmore County EOC	X			X			
• Specialized emergency equipment/vehicles	X	X	X	X	X	X	X
• County-wide emergency response system			X	X		X	
			X	X			
	X	X	X	X	X	X	X
Public Information, Education, and Awareness							
• Professional speakers/demonstrations	X	X				X	
• Make hazard map information accessible to the public		X	X	X			
• Public education on insurance							
• Library resources		X	X		X		
• Local websites informing people what to do in the event of an emergency or disaster			X			X	
• Media partnership with local emergency management officials			X				X
					X		X

Action Items

Action items include both immediate and long-term activities. Each action item includes an estimate of the timeline for implementation. ***Immediate Action*** **items (IA)** are activities that Elmore County and municipal agencies may implement with existing resources and authorities within one to two years. ***Long-Term*** **action items (LT)** may require new or additional resources or authorities, and may take between one and five years to implement.

The Action items are listed in this section as they have been prioritized by members of the Hazard Mitigation Planning Committee (HMPC)/Multi-Agency coordination (MAC) Group.
Action items are preceded by a descriptive number as described below, such as ***IA-MH****#1*.

- The first set of two letters will be either ***IA*** for "Immediate Action" or *LT* for "Long-Term" [action].
- The second set of two letters will be ***MH*** for "Multi-Hazard" if related to two or more of the natural, technological, and/or human-related (man-made) hazards addressed in the Elmore County All-Hazards Mitigation Plan.
- Relating specifically to the natural hazards addressed in this *All-Hazards Plan*:

  - ***SW*** relates to strong wind hazards such as: thunderstorms/severe thunderstorms, high wind events, hurricanes, tropical storms, and tornadoes.

    - ***FL*** relates to hazards associated with flooding such as: flooding, flash flooding, and river flooding.
    - ***WF*** relates to hazards associated with wildfire, including grass fires.
  - The **#** sign is then followed by a number assigned to that specific action item within a specific mitigation category.

Multi-Hazard (*MH*) Action Items are those activities that pertain to two or more of the natural, technological, and/or human-related (man-made) hazards in the mitigation plan. There are six *immediate* and three *long-term multi-hazard action items* described below.

The Action Items in the initial Elmore County Hazard Mitigation Plan were reviewed and were kept in place and carried forward as valid and deferred Action Items. Some Action Items were deleted as they were no longer applicable or those items were determined not to be a priority at this time.

Prevention

IA-MH#1 (*Immediate Action*-Multi-Hazard #1): Integrate the goals and action items from the 2015 *Elmore County All-Hazards Mitigation Plan* into existing regulatory documents and programs, where appropriate.

Ideas for Implementation:

- Work with municipal governments, county government, and other organizations to ensure the 2015 *All-Hazards Mitigation Plan* is consistent with their goals and framework.
- Use the mitigation plan to help the Elmore County and municipalities regarding land use planning, designed to protect life and property from natural, technological, and human-related (man-made) disasters and hazards through planning strategies that restrict development in areas of known hazards.
- Integrate the county's mitigation plan into current Capital Improvement Plans (CIP) to ensure that development does not encroach on known hazards areas.
- Work with local jurisdictions and agencies to promote the usage of codes that are more disaster-resistant: building, tree ordinances, zoning to sub-division regulations.
- Partner with other organizations and governmental agencies with similar goals.
- Involve private businesses throughout the municipalities and Elmore County in mitigation planning.

Coordinating Organization: Local municipal council or County Commission and/or County Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group
Timeline: On-going
Plan Goals Addressed: Partnerships and Implementation

IA-MH#2 (*Immediate Action*-Multi-Hazard #2): Identify and pursue funding opportunities to develop and implement local and county mitigation activities.

Ideas for Implementation:

- Continue to seek funding opportunities for municipal and county government, citizens, and businesses to be able to fund mitigation activities.
- Allocate county and/or municipal resources and assistance to mitigation projects, when possible.
- Develop incentives for municipal and county governments, citizens, and businesses to pursue hazard mitigation projects.
- Partner with other organizations and agencies in Elmore County to identify grant programs and foundations that may support mitigation activities.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission and the Elmore County Emergency Management Agency
Timeline: On-going
Plan Goals Addressed: Partnerships and Implementation

LT-SW#3 (*Long-Term*-Strong Wind #3): Map and publicize locations in Elmore County that have the highest incidence of high wind events and ensure proper notification of agencies charged with responding to those areas of the potential risk.

Ideas for Implementation:

- Educate all pertinent agencies on the process of reporting storm data to the Elmore County Emergency Management Agency. Data collected should include:
    - Wind & storm data (sustained wind speeds, gusts, storm durations) for localities throughout the county
    - Maps of the locations within Elmore County that are most vulnerable to high winds
    - Injuries, fatalities, and property damage estimates, per location
- Require fire department notification of new business applications to ensure that appropriate fire plans have been developed.
- Encourage the development of unifying organizations to ensure communication and dissemination of *all-hazards* mitigation information.
- Develop partnerships between utility providers and municipal and county public works agencies to document known hazards areas and to identify public infrastructure and facilities subject to damages or closures during events.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission and the Elmore County Emergency Management Agency
Timeline: 5 years
Plan Goals Addressed: Public Awareness, Protect Life and Property, Partnerships and Implementation

IA-MH#4 (*Immediate Action*-Multi-Hazard #4): Establish a formal role for the Elmore County *All-Hazards* Mitigation Committee to develop a sustainable process for implementing, monitoring, and evaluating county-wide mitigation activities.

Ideas for Implementation:

- Establish clear roles for participants, meeting regularly to pursue and evaluate implementation of mitigation strategies.
- Oversee implementation of the mitigation plan.
- Monitor hazard mitigation implementation by jurisdiction and participating organizations through surveys and other reporting methods.
- Develop updates for the Natural Hazards Mitigation Plan based on new information.
- Conduct a full review of the Natural Hazards Mitigation Plan every 5 years by evaluating mitigation successes, failures, and areas that was not addressed.
- Provide training for Committee members to remain current on developing issues in the natural hazard loss reduction field.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission and the Elmore County Emergency Management Agency
Timeline: On-going
Plan Goals Addressed: Partnerships and Implementation

IA-WF#5 (*Immediate Action*-Wildfire #5): Identify and pursue opportunities to develop and implement local and county-wide wildfire prevention mitigation activities.

Ideas for Implementation:

- Encourage local zoning and planning entities to work closely with landowners and/or developers who choose to build in the wild/urban interface to identify and mitigate conditions that cause wild/urban interface wildfire hazards, including:
  - Limited access for emergency equipment due to width and grade of roadways,
  - Inadequate water supplies and the spacing, consistency, and species of vegetation around structures,
  - Inadequate fuel breaks, or lack of defensible space,
  - Highly flammable construction materials,
  - Building lots and subdivisions that are not in compliance with state and local land use and fire protection regulations, and
  - Inadequate entry/escape routes.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, local fire services agencies, and the Elmore County Emergency Management Agency
Timeline: On-going
Plan Goals Addressed: Partnerships and Implementation

Protect Life

IA-MH#1 (*Immediate Action*-Multi-Hazard #1): Encourage construction of individual and community safe rooms.

Ideas for Implementation

- Coordinate with individuals, municipalities, communities and the county on the funding, management, installation, and granting of individual or community safe rooms.
- Distribute information regarding individual and community safe rooms to the general public.

Coordinating Organization Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission and the Elmore County Emergency Management Agency
Timeline: 1-2 years and On-going
Plan Goals Addressed: Protect Life and Property, Emergency Services

IA-FL#2 (*Immediate Action*-Flood #2): Recommend revisions to regulations for development within the floodplain, where appropriate.

Ideas for Implementation

- Evaluate elevation requirements for new residential and non-residential structures in the unincorporated floodplain area.
- Explore raising the base elevation requirement for new residential construction to two or three feet above base flood elevation or greater. (Note: An increased elevation standard is one activity the county can engage in to receive credit from the NFIP Community Rating System Program.)
- Identify opportunities to upgrade Federal Insurance Rate Map (F.I.R.Ms), and arrange for Cooperative Technical Partnership mapping upgrades for select areas.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency, and the Elmore County Floodplain Coordinator
Timeline: 1-2 years
Plan Goals Addressed: Protect Life and Property

LT-FL#3 (*Long-Term Action*-Flood #3): Enhance data and mapping for floodplain information within Elmore County and identify and map flood-prone areas outside of designated floodplains.

Ideas for Implementation

- Apply for FEMA's cooperative technical partnership using the 2-foot contour interval floodplain mapping data acquired by Elmore County GIS.

- Use inventory and mapping data to update the flood-loss estimates for Elmore County.
- Encourage the development of floodplain maps for all local streams not currently mapped on Flood Insurance Rate Maps (F.I.R.Ms) or county maps, with special attention focused on mapping rural and unincorporated areas. The maps should show the expected frequency of flooding, the level of flooding, and the areas subject to inundation. The maps can be used for planning, risk analysis, and emergency management.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency, Elmore County Floodplain Coordinator and other public and private agencies
Timeline: 3 years and On-going (as funding allows)
Plan Goals Addressed: Protect Life and Property

Natural Systems

IA-SW#1 (*Immediate Action*-Strong Wind #1): Develop and implement programs to keep trees from impacting public infrastructure, affecting lives and property during natural hazards/high wind events.

Ideas for Implementation

- Identify vegetation mitigation opportunities, especially around power lines in urban areas.
- Encourage adoption of municipal ordinances regarding the planting of new vegetation—preventing planning near power lines and critical infrastructure that could be potentially impacted in the future.
- Discourage the spread of invasive species.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency, and municipal, county and state public works agencies
Timeline: 2 to 5 years
Plan Goals Addressed: Emergency Services, Partnerships and Implementation

LT-SW#2 (*Long-Term Action*-Strong Wind #2): Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from natural, technological, and human-related (man-made) hazardous events.

Ideas for Implementation

- Increase the use of underground utilities where possible.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency, all public works agencies and all utilities
Timeline: On-going
Plan Goals Addressed: Natural Systems, Partnerships and Implementation

LT-MH#3 (*Long-Term Action*-Multi-Hazard #3): Use technical knowledge of natural ecosystems and events to link natural resource management and land use organizations to mitigation activities and technical assistance.

Ideas for Implementation:

- Review ordinances for opportunities to further enhance protective measures of natural systems and resources through mitigation from natural, technological, and human-related (man-made) hazards.
- Pursue vegetation and restoration practices that assist in enhancing and restoring the natural and beneficial functions of the watershed.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, and the County Commission
Timeline: On-going
Plan Goals Addressed: Natural Systems

LT-WF#4 (*Long-Term Action*-Wildfire #4) Encourage implementation of wildfire mitigation activities in a manner consistent with the goals of promoting sustainable ecological management and community stability.

Ideas for Implementation:

- Employ mechanical thinning and prescribed burning to abate the risk of catastrophic fire and restore the more natural regime of high frequency, low-intensity burns. Prescribed burning can provide benefit to ecosystems by thinning hazardous vegetation and restoring ecological diversity to areas homogenized by invasive plants.
- Clear trimmings, trees, brush, and other debris completely from sites when performing routine maintenance and landscaping to reduce fire risk.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC), Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency and the Elmore County Fire Fighters' Association
Timeline: On-going
Plan Goals Addressed: Natural Systems

Structural Projects

IA-MH#1 (*Immediate Action*-Multi-Hazard #1): Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.

Ideas for Implementation:

- Identify critical facilities at risk from natural, technological, and human-related (man-made) hazardous events.

- Identify critical facilities and infrastructure that are vulnerable to power outages and establish priorities for obtaining the needed backup power generation equipment. Pursue grant funding to obtain needed generators and other equipment whenever possible.
- Continue to develop strategies to mitigate risks to critical facilities and infrastructure or to utilize alternate facilities should natural, technological, or human-related (man-made) hazards cause damages to the facilities in question.
- Identify bridges at risk from all hazards, whether natural, technological, or human-related (man-made), such as floods or other specified hazards; identify enhancements, and implement projects needed to reduce the risks.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency, Elmore County Fire Fighters' Association, and other public and private agencies
Timeline: 1-2 Years
Plan Goals Addressed: Protect Life and Property, Partnerships and Implementation

LT-FL#2 (*Long-Term Action*-Flood #2): Identify surface water drainage obstructions for all parts of Elmore County.

Ideas for Implementation

- Map culverts in all areas of the County.
- Prepare an inventory of culverts that historically create flooding problems and target them for retrofitting.
- Prepare an inventory of major urban drainage problems, and identify causes and potential mitigation actions for urban drainage problem areas.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency, and municipal, county and state public works agencies
Timeline: On-going
Plan Goals Addressed: Protect Life and Property

LT-SW#3 (*Long-Term Action*-Strong Wind #3): Encourage development and enforcement of wind-resistant building construction codes.

Ideas for Implementation

- Evaluate current building codes, subdivision regulations and plan development to encourage the construction of individual and/or community safe rooms in houses, apartment complexes and mobile home parks.
- Evaluate current building codes for efficiency in protecting structures from wind damage.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission and the Elmore County Emergency Management Agency

Timeline: On-going
Plan Goals Addressed: Public Awareness, Protect Life and Property

Emergency Services

IA-MH#1 (*Immediate Action*-Multi-Hazard #1): Develop better warning systems.

Ideas for Implementation

- Coordinate with appropriate organizations to evaluate the need for additional warning systems and enhancements to current warning systems.
- Coordinate with appropriate organizations to evaluate the need for more river/stream gauges.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission and the Elmore County Emergency Management Agency
Timeline: On-going
Plan Goals Addressed: Protect Life and Property, Emergency Services

LT-MH#2 (*Long-Term Action*-Multi-Hazard #2): Strengthen emergency services preparedness and response by linking emergency services with *all-hazards* mitigation programs including natural, technological, and human-related (man-made) hazards.

Ideas for Implementation:

- Familiarize public officials of requirements regarding public assistance for disaster response.
- Continue to enhance the countywide emergency medical system.
- Continue maintenance of emergency transportation routes through communication among the municipal, county and state departments of transportation or public works.
- Continue to enhance the Elmore County Emergency Operations Center (EOC).
- Continue to work with local organizations to establish community response teams.
- Continue to improve the damage reporting system from all local jurisdictions after hazardous events.
- Continue to improve relationships with local media outlets.
- Identify opportunities for partnering with citizens, private contractors, and all jurisdictions to increase availability of equipment and manpower for efficiency of response efforts.
- Develop a process to encourage private property owners to upgrade their bridges to support the weight of fire trucks and emergency vehicles.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency, Elmore County Fire Fighters' Association, and other public and private agencies
Timeline: On-going
Plan Goals Addressed: Emergency Services

IA-WF#3 (*Immediate Action*-Wildfire #3): Inventory alternative firefighting water supply sources and encourage the development of additional sources.

Ideas for Implementation:

- Advocate for additional water distribution capabilities to be established and installation of additional hydrants for fire protection.
- Develop a protocol for fire jurisdictions and water districts to communicate all hydrant outages and water shortage information.
- Improve communication between state, county, and municipal public works agencies to work together to prioritize and identify strategies to deal with water supply problems.
- Continue to enhance the communications between public utility providers and emergency services providers to assure rapid response to natural, technological, and human-caused (man-made) hazardous events.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency and the Elmore County Fire Fighters' Association, local public works agencies, and State agencies
Timeline: 1-2 years
Plan Goals Addressed: Protect Life and Property

IA-SW#4 (*Immediate Action*-Strong Wind #4): Enhance strategies for debris management events.

Ideas for Implementation

- Development of a Debris Management Plan for all local jurisdictions.
- Develop coordinated management strategies for clearing roads of fallen trees, and clearing debris from public property, prioritizing critical infrastructure.
- Identify debris staging, storage, reduction, and disposition sites and obtain required permits.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency, and municipal, county and state public works agencies
Timeline: 2 years
Plan Goals Addressed: Emergency Services, Partnerships and Implementation

IA-WF#5 (*Immediate Action*-Wildfire #5): Enhance emergency services to increase the efficiency of wildfire response and recovery activities.

Ideas for Implementation:

- Enhance the capability of the fire service resources to better and more efficiently respond to wildfires.

- Develop the capability to contact at-risk urban/wildland interface residents in all local jurisdictions in Elmore County in the event an evacuation is ordered.
- Inventory bridges on evacuation routes and assess the bridges for their ability to support fire apparatus ingress; encourage replacement of unstable bridges.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency and the Elmore County Fire Fighters' Association
Timeline: 2 years
Plan Goals Addressed: Emergency Services

IA-WF#6 (*Immediate Action*-Wildfire #6): Educate agency personnel on federal cost-share and grant programs, mutual aid agreements, and other related programs so the full array of assistance available to local agencies is understood.

Ideas for Implementation:

- Investigate potential funding opportunities for individual mitigation projects.
- Develop, approve, and promote mutual agreements and partnerships to clarify roles and responsibilities and to provide for fire mitigation activities and suppression preparedness.
- Inform the local jurisdictions of various grant programs and other opportunities to assist in mitigating wildfires.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency and the Elmore County Fire Fighters' Association
Timeline: 1-2 years
Plan Goals Addressed: Protect Life and Property, Public Awareness

Public Information, Education, and Awareness

LT-MH#1 (*Long-Term Action*-Multi-Hazard #1): Develop, enhance, and implement education programs aimed at mitigating *all-hazards*—natural, technological, and human-related (man-made) hazards, reducing risks to citizens, public agencies, private property owners, businesses, and schools on a county-wide basis.

Ideas for Implementation:

- Make the *Elmore County All-Hazards Mitigation Plan* available to the public by publishing the plan electronically on municipal, county and emergency management websites.
- Enhance capabilities by creating a website that includes information specific to Elmore County residents, including site-specific hazards information, building codes information, insurance needed for residents, and educational information on damage prevention.
- Continue to distribute information about natural, technological, and human-related (man-made) hazards related to insurance for property owners in areas identified to be at-risk through hazard mapping.

- Develop and complete a baseline survey to gather perceptions of private citizens and the business community regarding natural, technological, and human-related (man-made) hazards risks and identify mitigation needs. Repeat the survey in five years to monitor successes and failures of hazard mitigation programs.
- Continue to encourage individual and family preparedness through public education projects such as all-hazards preparedness and safety fairs.
- Develop outreach programs to business organizations that must prepare for natural, technological, and human-related (man-made) hazardous events.
- Develop adult and child educational programs to be used by local radio and cable stations.
- Distribute information regarding warning systems to the general public.
- Use local radio and cable stations as a conduit for advertising public forums.
- Develop curriculum for school programs and adult education on reducing risk and preventing loss from natural, technological, and human-related (man-made) hazards.
- Conduct *all-hazards* awareness programs in schools and community centers and for civic organizations, including natural, technological, and human-related (man-made) hazards.
- Conduct workshops for public and private sector organizations to raise awareness of mitigation activities and programs.
- Develop outreach materials for mitigation, preparedness, response and recovery.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency, Elmore County Fire Fighters' Association, all area schools, and other public and private agencies
Timeline: On-going
Plan Goals Addressed: Public Awareness, Protect Life and Property

LT-WF#2 (*Long-Term Action*-Wildfire #2): Enhance outreach and education programs aimed at mitigating wildfire (includes grassfire) hazards and reducing or preventing the exposure of citizens, public agencies, private property owners, and businesses to natural, technological, and human-related (man-made) hazards.

Ideas for Implementation:

- Encourage residents to have fire plans and practice evacuation routes.
- Encourage fire inspections in residential homes by fire departments to increase awareness among homeowners and potential first responders.
- Encourage the public to evaluate access routes to rural homes for fire fighting vehicles and to develop passable routes if they do not exist.
- Visit urban interface neighborhoods and rural areas and conduct education and outreach activities.
- Continue to enhance the relationships between the first responder community at the local level and the Alabama Forestry Commission.

- Establish neighborhood "drive-through" activities that pinpoint site-specific mitigation activities by fire service personnel to give property owners personal suggestions and assistance.
- Perform public outreach and information activities at Elmore County fire stations by creating "Wildfire Awareness Week" activities. Fire stations can hold open houses and allow the public to visit, see the equipment, and discuss wildfire mitigation with the station crews.

Coordinating Organization: Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group, Local Municipal Councils, the County Commission, the Elmore County Emergency Management Agency and the Elmore County Fire Fighters' Association
Timeline: On-going
Plan Goals Addressed: Protect Life and Property, Public Awareness

Mitigation Success in Elmore County

The Plan's *Goals and Objectives* have been implemented by various projects by each local jurisdiction. These activities have been carried out either individually or through the collective efforts of multiple jurisdictions. These mitigation activities (projects) have included:

- **Education & Awareness Outreach Activities**: Scores of activities have been conducted throughout Elmore County for the general public, various schools, civic groups, faith-based organizations, private sector, businesses, first responder agencies, and other organizations, to include numerous television interviews & radio talk-shows. The highlight (specifically covering preparedness and mitigation activities) is EMS's annual "Preparedness Fair & Safety Saturday," now in its 6th year, conducted in conjunction with Lowe's of Wetumpka as part of National Preparedness Month (NPM) each September. Dozens of federal, state, regional, and local partnering agencies join EMA promoting emergency & disaster preparedness, safety, and mitigation efforts. See **Figure 6.8.2-1** for the 2014 event recap. EMA also partners annually with (2) Walgreens retail stores in the county, along with the WSFA Doppler 12 StormVision Team, to program, on average, about six hundred (600) NOAA *All-Hazards* Weather Radios during each programming event. EMA hands out countless articles of emergency preparedness information, such as the *Alabama All Hazards Awareness* Pamphlet and scores of FEMA's free *Ready*.gov brochures. Additionally, EMA hosts an annual SKYWARN Basic Storm Spotter Course each spring with the National Weather Service (NWS) Weather Forecast Office (WFO), Birmingham, graduating upwards of 300 citizens from not only Elmore, but Autauga, Montgomery, Chilton, Tallapoosa, and Coosa Counties, as well.
- **Training Exercises**: Based on historical records, a total of 35 have been conducted in Elmore County to date, ranging from tabletops to full-scale exercises, completing 15 exercises from the date of the plan's last update.
- **Individual Safe Rooms**: Four (4) additional HMGP grant applications were approved, awarding funds for an additional 91 individual safe rooms to be installed, resulting in a total of 121 "FEMA funded" individual safe rooms installed in Elmore County. Currently,

there are nearly 160 interested citizens on EMA's "Individual Safe Room Waitlist," pending notification of the availability of new HMGP funding for potential individual safe room applications.

- **Community Safe Rooms**: A total of four (4) additional HMGP grant applications were approved in Elmore County—three (3) for the Town of Elmore, resulting in the installation of three (3) 100-person community safe rooms, and one (1) for the City of Tallassee, in which the bid process is underway as of the writing of this update.
- **Outdoor Warning Sirens** - All-Hazards: A total of 63 sirens have been installed in the County to date, 21 under HMGP and 42 under other funding sources.
- **Backup Power Generators**: Two (2) HMGP grant applications were approved, awarding funds to procure backup power generation for three water treatment facilities in Elmore County.
- **Polygon Warning System**: Funding was awarded under the HMGP to procure an updated system that allows for "storm-based" vs. "county-based" warnings.
- ***SWIFTReach Swift911* Emergency Alerting System**: HMPG funding was awarded for an initial 3-year contract on this emergency alerting and notification system. (Additional information below)
- **Mobile Command Post**: Purchased, equipped, maintained, and operational.
- **Weather Radios**: Single HMGP grant awarded for the purchase and delivery of 80 NOAA Weather Radios for county dispatch offices, hospitals, schools, nursing homes, fire stations, police stations, and city halls.
- **First Responder Equipment**: Funds awarded for the purchase of equipment to enhance the response capabilities of county law enforcement and fire service agencies.
- **Emergency Alert & Notification**:
    - Use of *SWIFT*Reach *SWIFT* 9-1-1: Near instantaneous telecommunications technology allows for emergency messaging to be sent to pre-registered recipients via landlines and/or cellular telephones as voice and/or text messaging. Examples of county-wide uses thus far include: notifications to Multi-Agency Coordination (MAC) Group members regarding upcoming severe weather threats and briefings, hazardous roadways conditions, road closures, and cautionary statements on exceptionally hazardous roadway conditions to first responder agencies, (last two as *test* messages only).
    - Use of email communications with all partnering local (tri-county) media contacts to notify them of emergency/critical public information such as: hazardous roadways conditions, road closures/openings, reported storm damages/injuries/confirmed fatalities, openings/closings of American Red Cross shelters, openings/closings of county "*Safer Places,*" calls for/against disaster recovery volunteers/donated goods, openings/closings of Volunteer Reception Center(s) (VRC), Disaster Recovery Centers (DRC), etc.
    - Use of email communications with county stakeholders (primarily members of the Elmore County Multi-Agency Coordination ((MAC)) Group) to notify them as quickly as possible regarding: severe weather threats and

briefings, hazardous roadways conditions, road closures, cautionary statements on exceptionally hazardous roadways conditions to first responder agencies, and shelter-in-place and evacuation orders, etc.

- Use of the Elmore County EMA Website (i.e., posting critical/emergency public information such as: Watches, Warnings, hazardous roadways conditions, road closures, openings/closings of American Red Cross shelters, openings/closings of "*Safer Places*," shelter-in-place and evacuation orders, etc. (Note: Elmore County EMA is currently working toward adding Facebook as an option to disseminate emergency alert and notification information.)

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Figure 6.8.2-1 2014 Elmore County EMA "Preparedness Fair & Safety Saturday" Event Recap

Elmore County Emergency Management Agency & Homeland Security Office
& Lowe's of Wetumpka are Sponsoring our
"6th Annual Preparedness Fair & Safety Saturday"
September 27, 2014 10:00am to 1:00pm
in the parking lot of Lowe's, 4501 U.S. HWY 231, Wetumpka, AL 36092

As of 0805hrs, Sept 29, 2014: The following participants & events were part of the 2014 **6th Annual Preparedness Fair**:

Hey Y'all! I'm Elmore County's ***Ready* Teddy.** I'm *ready* for an emergency or disaster. Are You?

Elmore County Emergency Management Agency & Homeland Security Office
Lowe's of Wetumpka, w/Kid's Build and Grow Clinic (Fire Truck Kit)
Elmore County's Emergency Preparedness Mascot, ***Ready* Teddy**
McGruff the Crime Dog (WPD)
FEMA's (New) *Ready.gov/Kids Campaign* (Info/Displays)
Federal Bureau of Investigations (FBI), Montgomery (Info)
National Weather Service, Weather Forecast Office, Birmingham (Weather Radio Programming)
Alabama Department of Public Health (ADPH)
Alabama Department of Public Safety (Critical Response Team)
Alabama Emergency Management Agency (AEMA)
Alabama Forestry Commission
Alabama State Fire Marshall's Office
Serve Alabama Disaster Preparedness and Response *(Be Ready!)*
Poarch Band Creek Indians Tribal Fire & Rescue
Poarch Band Creek Indians – *Wind Creek* Hospitality
Elmore County Sheriff's Department Special Operations Unit (SOU)
Millbrook Police Department
Tallassee Police Department School Resource Officer (SRO)
Wetumpka Police Department
Coosada Volunteer Fire Department
Elmore Volunteer Fire Department
Emerald Mountain Volunteer Fire Department
Holtville/Slapout Volunteer Fire Department
Kowaliga Volunteer Fire Department
Millbrook Volunteer Fire Department – Ladder Truck, American Flag
Real Island Volunteer Fire Department
Red Hill Volunteer Fire Department
Redland Volunteer Fire Department
Santuck Volunteer Fire Depart w/BullEx Live-Fire Extinguisher Training & "Try-On" Turn Out Gear

Seman Volunteer Fire Department
Tallassee Volunteer Fire Department's – Fire Safety Trailer
Wetumpka Fire Department
Search and Rescue of Elmore County (SARELCO)
Elmore County Amateur Radio Society (ECARS)
Elmore County E 9-1-1, Help 9-1-1 Help You Program
Elmore County EMA/HS Support Volunteers, includes Face Painting
Elmore County Extension Office
Elmore County Fire Fighters' Association
Elmore County Hazardous Materials Team
Elmore County Highway Department
Elmore County Partnership for Children (Inflatables)
Elmore County Voluntary Organizations Active in Disaster (VOAD)
Elmore County Yellow Dot Program
Alabama Gas (Pipeline Safety)
Alabama Operation Lifesaver Program (Rail Safety)
American Red Cross (Emergency Response Vehicle)
Community Collaborative Rain, Hail & Snow (CoCoRAHS) Network
CSX Railroad (Rail Safety)
First Baptist Church of Tallassee - Disaster Relief Team
HandsOn River Region/2-1-1 Connects (South Central Alabama)
Haynes Ambulance
Haynes Life Flight Helicopter (Flyover only for opening ceremony)
Invited Distinguished Guests: Local, County, and State Elected Officials
Wetumpka High School Jr. ROTC (18 cadets assisting with the Kid's Build & Grow Clinic)
WSFA Storm Tracker 12 with Meteorologist Amanda Curran

Schedule of Events & "Don't Miss" Highlights:

10:00 am: **Official Start** of "6th Annual Preparedness Fair & Safety Saturday"
Playing of the National Anthem, Raising of the American Flag (Millbrook's newest Ladder truck), and Haynes Life Flight Helicopter Flyover
Followed Immediately by Arrival of ***Ready*** Teddy and McGruff, escorted by ECSO & WPD Lowe's Kid's Build and Grow Clinic (Fire Truck Kit)

On-Going: ***Ready*** **Teddy**, McGruff the Crime Dog, Lowe's Kid's Clinic (fire truck), Weather Radio Programming, BullEx Live-Fire Extinguisher Training, National Weather Service PSAs, "Smoke House" Fire Safety Trailer Tours, Information, Demonstrations on all Resources: Personnel, Fire Apparatuses, Law Enforcement Vehicles, EMS, Boats, Command Posts, Support Vehicles, Trailers, Remote-Controlled Attractions (*Sparky*

& *Pluggie*), Emergency/Disaster Skills Info & Demos (Ex. Roof Tarping, "Mud Out," Cribbing & Leveraging, Victim Extrication, Building Emergency Supply Kits, Chain Saw Ops, Wildfire/Grass Fire Home Mitigation), "Preparedness Challenge"— Children's Emergency Supply Kit Scavenger Hunt, Family "Safe Room *READY* Race", Inflatables, Face Painting, Turn-Out Gear Try-On, Various Agency Informational Handouts & Safety Briefings/Demo's, and "Ask Our Experts", and FREE food and drinks!

Free Inflatable Jump Houses (Generously provided by the Elmore County Partnership for Children)
Free Pop Corn & Soft Drinks (Generously provided by Buffalo Rock)
Free Hot Food & Drinks (Generously provided by Poarch Creek Hospitality)

Drawings: 10:30, 11:00, 11:30, 12:00, 12:30, **1:00 (Grand Prize)** (Must be present for all drawings **EXCEPT** the Grand Prize Drawing at 1:00) **EVERYONE** is eligible to register!

Please Note: All of our participating first-responders are subject to real-world mission requirements which would preempt their participation in the Preparedness Fair if called upon.

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Mitigation – 2015 and Beyond

At this time, Elmore County has chosen not to delete any projects from the 2010 Plan for future consideration. Projects and Activities listed prior under "Mitigation Successes in Elmore County" reflect completed and/or on-going mitigation measures in the county.

See: Table 6.8.2-6 Hazard Mitigation Project Opportunities, By Jurisdiction.

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Table 6.8.2-6

	Hazard Mitigation Project Opportunities, By Jurisdiction																	
Jurisdictions	Flood Control	Stabilize stream banks/stream improvement projects	Continued participation in the NFIP	Improve storm water management system	Improve information sharing and communication capabilities and systems	Clear debris from streams	Purchase backup power generators for critical facilities	Install additional hydrants	Emergency Warning System / Community Warning System	Conduct *all-hazards* public education, outreach, and awareness activities	Catch basins or ponds to reduce flooding	Retrofit critical facilities for alternate power source	Construction/installation of community safe rooms	Construction/installation of individual safe rooms	NOAA all-hazards weather radio program for citizens	Forest Management Program	Vegetative/Tree Risk Management Plan	Structure purchase and removal
Elmore County	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	
Coosada, Town of	X	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X
Deatsville, Town of				X	X	X	X	X	X	X		X	X	X			X	
Eclectic, Town of				X	X	X	X	X	X	X		X	X	X		X	X	
Elmore, Town of	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Millbrook, City of	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tallassee, City of	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wetumpka, City of	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 6.8.2-6.2

Hazard Mitigation Project Opportunities, By Jurisdiction																		
Jurisdiction	Flood Control	Stabilize stream banks/stream improvement projects	Continued participation in the NFIP	Improve storm water management system	Improve information sharing and communication capabilities and systems	Clear debris from streams	Purchase backup power generators for critical facilities	Install additional hydrants	Emergency Warning System / Community Warning System	Conduct *all-hazards* public education, outreach, and awareness activities	Catch basins or ponds to reduce flooding	Retrofit critical facilities for alternate power source	Construction/installation of community safe rooms	Construction/installation of individual safe rooms	NOAA all-hazards weather radio program for citizens	Forest Management Program	Vegetative/Tree Risk Management Plan	Structure purchase and removal
Tallassee Water Dept.	x	x	x	x	x		x					x	x	x			x	
Wetumpka Water Works & Sewer Board	x	x	x	x	x		x					x	x	x			x	
Elmore County Board of Education	x	x	x	x	x				x	x		x	x	x	x		x	
Tallassee City Schools	x	x	x	x	x				x	x		x	x	x	x		x	

Table 6.8.2-6.1

Hazard Mitigation Project Opportunities, By Jurisdiction																		
Jurisdiction	Flood Control	Stabilize stream banks/stream improvement projects	Continued participation in the NFIP	Improve storm water management system	Improve information sharing and communication capabilities and systems	Clear debris from streams	Purchase backup power generators for critical facilities	Install additional hydrants	Emergency Warning System / Community Warning System	Conduct *all-hazards* public education, outreach, and awareness activities	Catch basins or ponds to reduce flooding	Retrofit critical facilities for alternate power source	Construction/installation of community safe rooms	Construction/installation of individual safe rooms	NOAA all-hazards weather radio program for citizens	Forest Management Program	Vegetative/Tree Risk Management Plan	Structure purchase and removal
Central Elmore Water & Sewer	x	x	x	x	x		x					x	x	x			x	
Eclectic Water Works & Sewer	x	x		x	x		x					x	x	x			x	
Elmore Water Authority	x	x	x	x	x		x					x	x	x			x	
Five Star Water Authority	x	x	x	x	x		x					x	x	x			x	
Friendship Water Authority	x	x	x	x	x		x					x	x	x			x	
Holtville Water Systems, Inc.	x	x	x	x	x		x					x	x	x			x	
Millbrook Water & Sewer Authority	x	x	x	x	x		x					x	x	x			x	
Tri-Community Water System	x	x	x	x	x		x					x	x	x			x	

Section 7 – Coordinating Local Planning

Contents of this Section

7.1 FR Requirement for Coordination of Local Mitigation Planning
7.2 Development and update of local mitigation plans
7.3 Process by which local plans are reviewed, coordinated, linked to the State Plan
7.4 Criteria for prioritizing jurisdictions to receive funds under existing programs

What has been updated?

The 2010 *Elmore County Natural Hazard Mitigation Plan* was completely revised during the 2015 plan update process. For the 2015 update, the Plan underwent a *major* re-write, was completely restructured and reformatted, and vastly broadened to include *all* hazards relative to Elmore County--natural, technological, and human-related (man-made)--thus warranting the new title: *Elmore County All-Hazards Mitigation Plan*.

Certain informational elements of the 2010 Plan were retained and carried forward into the 2015 plan update, like various maps, storm events data, census data, facilities, methodologies, strategies, action items, etc. All retained informational elements were refreshed and updated as appropriate and expanded where applicable. Numerous informational elements were added to the Plan to support the newly incorporated technological and human-related (man-made) threats and hazards, as well as additional natural hazards not previously covered, such as fog, sinkholes, and land subsidence.

Given the broad scope of changes resulting from this update, users are highly encouraged to read this plan "cover to cover," expecting numerous differences between the *2010* and *2015* editions. The scope of change contained herein extends far beyond the typical, minor, or expected changes one might see in a standard plan update.

The primary driving factors behind the complete "over-haul" of this Plan include:

- ✓ The desire to standardize its structure to more closely aligned it with that of the governing Final Rule (FR), thus improving its organization, cohesiveness, and flow;

- ✓ The desire to incorporate a number of threats and hazards not previously addressed in the Elmore County HMP; and

- ✓ The desire to more closely mirror the Alabama State Hazard Mitigation Plan, Updated April 2013.

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7.2 Development and Update of Local Mitigation Plan

This section describes the on-going efforts to assist in the completion of the development of local mitigation plan as well as the initial efforts being undertaken to begin the plan update process at the local level.

7.2.1 Development of Local Hazard Mitigation Plan

The Elmore County Emergency Management Agency (EMA) made a concerted effort to assist with local plan development by:

- Securing funding for plan development
- Coordinating with the State and Federal Emergency Management Agency on local plan development and review issues

The EMA is responsible for coordinating with the Elmore County Multi-Agency Coordination (MAC) Group for coordination, communication and collaboration of the emergency management functions and phases in the county. The MAC Group is made up of leaders and representatives of jurisdictional/stakeholder agencies and organizations in the county to include municipal, county, state government and tribal agencies and departments; volunteer, non-profit and faith-based organizations and the private sector, and school and water districts.

The MAC Group is organized in sections as follows Policy, Operations, Community Service, Infrastructure, Planning/External Affairs, Logistics, and Finance/Administration.

The Elmore County HMPC is composed of representatives of the MAC Group. The MAC Group assists with the development and maintenance of critical plans, all necessary to an effective Emergency Management Program in the County. This includes the *Elmore County Multi-Jurisdictional All Hazards Mitigation Plan, December 2014.*

In addition to local in-kind funding, the Elmore County EMA provided assistance to local participants. Prior to and during the revision of the local plan, the Elmore County EMA conducted Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group meetings.

In addition to assistance provided by the Elmore County EMA, the AEMA provided a review process and timeframe for draft local plan development. The state will review the county plan for applicability to the FR requirements prior to FEMA's formal review. The process and timeframe employed by the state for review is:

Step 1: The initial draft of a local county plan is sent to the AEMA for review within a 45-day timeframe and then forwarded with AEMA comments to FEMA.

Step 2: FEMA completes its review within 45 days and forwards their comments to AEMA. AEMA immediately forwards AEMA and FEMA review comments to the county.

Step 3: The county has a 30-day period to address both AEMA and FEMA comments. The county submits the corrected final draft to the AEMA.

Step 4: Within 30 days, the AEMA checks the corrected final draft and forwards it to FEMA for review of corrections.

Step 5: FEMA completes its second review within 45 days and if all comments were satisfactorily addressed in the corrected final draft of the plan, a letter stating that the plan is adoptable is mailed to AEMA and the county. In the cases where comments have not been addressed satisfactorily, the county again addresses the comments and repeats the process, thereby delaying the timeframe for approval and adoption.

Step 6: The plan is then formally adopted by all participating jurisdictions within the county within a reasonable period that allows for local review, public participation, legal notices, public hearings, and governing body adoptions. The local adoption process should be completed within a 30 to 60-day timeframe.

Step 7: The plan is officially approved. The timeframe from the county's submission of the initial draft plan to adoption of the final approved plan can take over 210 days to complete.

7.2.2 Update of Local Hazard Mitigation Plans

The Disaster Mitigation Act of 2000 (DMA2K) and the FR require local hazard mitigation plans to be updated every five years in order for the local jurisdiction to remain eligible for mitigation funds. The first of the initial plans was approved and adopted in 2005 indicating that the first updates would not be required until 2010. The Elmore County EMA works to improve the county's risk assessments and strengthen their mitigation strategies. Local efforts to update the plan are summarized below:

- ★ Responsible Entity for Local Plan Revision: Elmore County EMA
- ★ Council Name/County Name: Elmore County Hazard Mitigation Planning Committee (HMPC)/Multi-Agency Coordination (MAC) Group
- ★ Status of Funding as of 2014: 1971-HMGP Funds Applied For

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7.3 Process for Reviewing, Coordinating and Linking the State and Local Plans

This section provides a description of the county's process and timeframe for reviewing, coordinating, and linking local plans to the state plan during the initial plan development process and the ongoing plan updates process as well as plans to ensure that this coordination continues into the future.

7.3.1 Review and Incorporation of Local Plan Information into Initial State Plan

In the development of the county plan, the Elmore County EMA was aware of the importance of on-going local planning efforts and the need for the county plan to be reflective of the state plan and visa versa. The process utilized in the development of the initial county plan builds upon local risks, goals, strategies and actions to encompass the range of hazards, mitigation strategies and actions identified across the entire county. As previously discussed in **Section 7.2**, the state plan revision was developed and approved by FEMA; therefore, the county plan is mirrored after the state plan.

The Elmore County *Natural Hazard Mitigation Plan Annual Review Worksheet* and the *Elmore County Threat and Hazards Survey*

Two primary tools were developed and distributed to jurisdictions/stakeholders over the course of the plan update process for the purpose of acquiring input regarding local risks assessments and local mitigation strategies and actions. The tools were the *Elmore County Natural Hazard Mitigation Plan Annual Review Worksheet* and the *Elmore County Threat and Hazards Survey*.

Elmore County EMA first began working the plan update process in November 2010, beginning with a business letter contact to various jurisdictions/stakeholder agencies/HMPC members requesting their participation in the first annual review of the *Elmore County Natural Hazard Mitigation Plan, dated October 2009*. Attached to the letter was the Elmore County EMA/HS Office *Natural Hazard Mitigation Plan Annual Review Worksheet, dated November 4, 2010.* All recipients were asked to conduct a review of the Plan and to complete and return the worksheet to EMA not later than February 20, 2011. Further, the letter stated the input provided by each jurisdiction/stakeholder would determine the next course of action, but that all actions regarding the first annual review should be completed not later than May 2011. By March 2011, nine entities returned completed *Natural Hazard Mitigation Plan Annual Review Worksheets* to the Elmore County EMA.

During October and November, 2012, a series of sectional Multi-Agency Coordination (MAC) Group meetings were convened. Jurisdictions/stakeholders were provided copies of *the Elmore County Threat and Hazards Survey* and asked to have at least one member from their organization complete it and bring it with them to their designated MAC Group meeting. The responses from the questions relevant to risk assessment and mitigation strategies were analyzed and utilized to develop a general idea of the hazards that affect the county and the associated risks, as well as the mitigation actions and strategies being considered to mitigate those risks.

By the time MAC Group meetings were convened in November and December of 2013, the decision was made to take a "new direction" in mitigation planning. In an effort to more fully comply with the ***Post Katrina Emergency Management Reform Act of 2006***, for the first time, Elmore County would approach mitigation planning from an *all-hazards* perspective, addressing not only the natural hazards, but the technological and man-made hazards that could potentially impact the county. In an effort to gain insight and input from jurisdictions/stakeholders, all MAC Group members in attendance were provided copies of the Elmore County *Natural Hazard Mitigation Plan Annual Review Worksheet, dated November 4, 2010;* a copy of the current Plan's **Section 5**. Natural Hazards Goals and Action Items, **Table 5.1** *Project Opportunities*; and each entity's portion of the Plan's Appendix A: Critical Facilities – Elmore County listing, in order to conduct their reviews and document update actions on. The difference in completing the worksheet this time was stakeholders were all asked to conduct their plan review and update the worksheet from an *all-hazards* perspective, not merely from a natural hazards perspective.

Evaluation of Local Plans

The results were utilized as the basis for the county-wide hazard identification and risk analysis, as well as the development of the county-wide mitigation goals, strategy, and actions. This ensured that the county plan was reflective of additional local plans.

Coordination with Elmore County HMPC/MAC Group

As discussed in **Section 7.2**, a large majority of the plan was developed through the Hazard Mitigation Planning Committee (HMPC), which later evolved into the Elmore County Multi-Agency Coordination (MAC) Group. The Elmore County EMA was included as part of the committee/group and served as a conduit for information sharing between the locals and the state to ensure that the local plan was being developed in coordination with the revised state plan. EMA also facilitated coordination, as required, by allowing local and state planners to share information and maintain an open dialogue regarding local and statewide risks and potential mitigation strategies.

Public Meetings

In addition to the process outlined above, the Elmore County EMA sponsored public meetings to discuss the results of the county planning efforts. The meetings had two objectives:

- Involve the public in the county process
- Obtain concurrence and/or feedback on the information garnered from the local participants

Full details of the planning process are outlined in **Section 4.5** Description of the Planning Process.

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7.3.2 Review and Incorporation of Local Plan Information into the Alabama State Hazard Mitigation Plan Update, dated April 2013, Section 5: Risk Assessment

Elmore County EMA reviewed the types of hazards identified in the newly updated *Alabama State Hazard Mitigation Plan Update, Dated April 2013*, found in **Section 5**: Risk Assessment.
The plan identifies only natural hazards, as follows:

- 5.2.1 Flooding
- 5.2.2 High Winds (Hurricanes, Tornados and Windstorms)
- 5.2.3 Winter Storms
- 5.2.4 Landslides
- 5.2.5 Sinkhole and Land Subsidence
- 5.2.6 Earthquake
- 5.2.7 Drought
- 5.2.8 Hail
- 5.2.9 Wildfire
- 5.2.10 Extreme Temperatures
- 5.2.11 Lightning
- 5.2.12 Dam Failure
- 5.2.13 Tsunamis
- 5.2.14 Sea Level Rise

In contrast, the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* includes the following list of identified natural, technological, and human-related (man-made) threats/hazards included in **Section 5**, Hazard Identification and Risk Assessment, of the updated *Plan*:

5.2.1. Thunderstorms/Severe Thunderstorms
5.2.2. Lightning
5.2.3. Hail
5.2.4. Tornadoes and High Wind Events
5.2.5. Flooding (includes Flash Flooding, River Flooding)
5.2.6. Hurricanes and Tropical Storms
5.2.7. Extreme Temperatures – Heat and Cold

5.2.8. Winter Storms
5.2.9. Drought
5.2.10. Wildfire
5.2.11. Landslides
5.2.12. Sinkholes and Land Subsidence
5.2.13. Earthquakes
5.2.14. Dam Failure
5.2.15. Dense Fog
5.2.16. Celestial Impact (Includes Space Weather)
5.2.17. Hazardous Materials
5.2.18. Transportation System Failures
5.2.19. Epidemiological/Public Health
5.2.20. Civil Unrest and
5.2.21. Adversarial Threats (Includes: Terrorism, Radiological Dispersal Device/Nuclear Attack, Biological Attack-Non-Food, Biological/Chemical Food Contamination, Chemical Attack-Non-Food, Aircraft Accident/as Weapons, Explosive Devices, Armed Assault, Cyber Attack)

With the exception of sea-level rise and tsunamis, the local plan mirrors the state plan regarding identified *natural hazards* that affect or could affect Elmore County. Again, the state plan does not address technological and man-made hazards at this time.

Potential Loss Estimates
During the planning process, Elmore County EMA initially conducted a review of the loss estimates contained in the 2010 plan and asked members of the MAC Group to provide updated data as applicable for the 2015 update. Very limited updated information was provided for the purpose of updating loss estimates. As with many other local plans, the contractor/developer of Elmore County's 2010 plan also used a wide range of methodologies, requiring the support of various resources (i.e., HAZUS, SheildUS) to determine these potential loss estimates and was only able to include loss estimates for hazards for which there was ample historical data. Typically, these hazards were tornadoes, severe storms, flood, and winter storms. According to the State's HMP, the same was true in the development of their plan in regard to the review conducted on the local plans. In addition, a number of local plans included loss estimates in terms of dollar losses per event as opposed to dollar losses per year. Therefore, each plan was reviewed again to extract the potential annual loss estimates, or projected annual losses, for each of these hazards. The results of this review are summarized in a variety of figures found in **Section 5.4** of this plan. All figures were converted to dollar losses per year by the plan reviewers.

Mitigation Goals and Actions
Lastly, Elmore County EMA reviewed the mitigation strategy, goals, and actions of the local plan. The Plan was reviewed to determine if the actions in the local plan met the goals as defined in the state plan and conversely, to determine if the county hazard mitigation goals were reflective of state goals, objectives and actions. The county hazard mitigation goals **(See: Section 6.3)** are as follows:

Goal 1. Increase Elmore County's capabilities in order to mitigate the effects of all hazards --natural, technological, and human-caused (man-made)--identified in the Plan, occurring in or impacting Elmore County.
Goal 2. Design, enhance, or amend County policies aimed at reducing the impact the identified hazards could have on Elmore County.
Goal 3. Protect the County's most valuable assets and vulnerable populations through cost effective and feasible mitigation activities and projects whenever financially possible.
Goal 4. Increase the public's awareness of all hazards in Elmore County in order to make the public a partner in hazard mitigation.
Goal 5. Ensure that future development in the County is as "hazard proof" as possible by contributing to the sustainability of the community.

The following is extracted from the Alabama State Hazard Mitigation Plan Update, April 2013:

"6.3 State Hazard Mitigation Goals

When the first plan was drafted in 2004, the SHMT identified six goals supporting the State of Alabama's overall mitigation strategy. These goals are accompanied by objectives and actions that are designed to support the implementation of the goals. A multi-stage process was used to identify, evaluate and prioritize the goals, objectives and actions. The process is described in Section 6.8. With each plan update, the State Plan Goals are revisited (as required) by the State Hazard Mitigation Team Meeting. Minor changes were made in the 2007, 2010 and 2013 updates. The purpose of the review is to determine if the goals are still valid. Several minor changes were made to the wording of the goals and objectives to best reflect the state's intent and continuing update process. The changes were suggested and agreed upon through a process of discussion and voting led by the project consultant. Similar to the mitigation strategy statement, the word "risk" was replaced with the word "vulnerability." This change resulted in Goal 2 being identical to (former) Goal 4. Therefore, the former Goal 4 was deleted and the objectives were added to Goal 2 as Objective 2.5 and Objective 2.6. Lastly, the goal numbering was updated. Former Goal 5 became Goal 4 and former Goal 6 become Goal 5. This changes are also reflected in the mitigation action plan. The refined goals and objectives and added objectives are as follows:

Goal 1: Enhance the comprehensive statewide hazard mitigation system.
Objective 1.1: Improve local and state capability to study natural hazards
Objective 1.2: Improve the statewide availability of risk information, particularly in GIS format
Objective 1.3: Reduce the impact of hazard events (i.e., loss of service) for state departmental functions
Objective 1.4: Enhance flood mitigation efforts
Objective 1.5: Enhance hurricane mitigation efforts
Objective 1.6: Enhance earthquake mitigation efforts
Objective 1.7: Enhance landslide mitigation efforts
Objective 1.8: Enhance sinkhole mitigation efforts

Objective 1.9: Ensure that State, county and local officials have most current data regarding RL and SRL properties

Goal 2: Reduce the State of Alabama's vulnerability to natural hazards.
Objective 2.1: Reduce the threat of injury and loss of life from natural hazards
Objective 2.2: Reduce natural hazard impact on individual properties, businesses and public facilities
Objective 2.3: Reduce natural hazard impact on natural resources
Objective 2.4: Reduce vulnerability to RL and SRL properties Statewide
Objective 2.5: Improve the state's ability to prepare for a natural or man-made disaster
Objective 2.6: Improve the state's ability to respond to a natural or man-made disaster

Goal 3: Reduce vulnerability of new and future development.
Objective 3.1: Improve the State's ability to protect new and future residential and commercial structural Assets
Objective 3.2: Reduce the probability that new or future residential and commercial structural assets will be affected by hazards

Goal 4: Foster public support and acceptance of hazard mitigation.
Objective 4.1: Increase stakeholder awareness about the hazards identified in the State Plan
Objective 4.2: Increase stakeholder awareness about the hazard identified in the State Plan

Goal 5: Expand and Promote interagency hazard mitigation cooperation.
Objective 5.1: Integrate hazard mitigation into all state and local response / recovery activities
Objective 5.2: Long-term recovery following a disaster**"**

Elmore County *All-Hazards* Mitigation Goals 1-5 mirror, at least in part, Goals 1-5 of the State Plan. This review demonstrated the local mitigation goals, objectives and actions are consistent with the state mitigation goals; and conversely, that the state hazard mitigation goals are reflective of the local goal, objectives and actions.

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7.3.3 Future Local Plan Review and Incorporation

The review and incorporation of local plan information during the development of the initial county plan (**Section 7.3.1**), as well as this plan update (**Section 7.3.2**), resulted in this plan update being reflective of local hazard, risks, goals, mitigation strategies and actions. However, these evolve over time. In addition, DMA2K and the Final Rule (FR) require local plans to be updated every five years. In fact, as discussed in **Section 7.2**, local plans are currently being updated in light of the natural disasters that have occurred over the last five years. Future county plan updates, which will be performed on a five-year cycle, will continue to incorporate the latest information regarding local risk assessment and mitigation actions.

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7.4 Criteria for Prioritizing Jurisdictions to Receive Funds under Existing Programs Background

Final Rule (FR) subsection 201.6 (c)(3)(iii) states that the County Hazard Mitigation Plan must include "An action plan describing how the actions identified in paragraph (c)(2)(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." The sub-sections below discuss the state's four criteria.

Applicants must demonstrate that their risk is sufficient to merit grant funds, particularly when compared to the project cost, but there is often considerable uncertainty in risk determinations. For this and other reasons, the State considers a variety of factors in addition to risk and benefit-cost (BC) analysis in determining its priorities for mitigation grants.

At the time of adoption of the initial State Plan in 2004, no formal procedures or criteria were in place to prioritize projects for funding. However, the State considered a variety of factors, such as local needs, vulnerability to natural hazards, NFIP status, CRS participation, risk to critical facility, and adopted regulatory tools, among others. The 2004 State Plan recommended that a "more rigorous" process is developed. Following the State's HMGP allocation under Hurricane Katrina (Federal Disaster Declaration 1605) in 2005, AEMA adopted an annex to the mitigation section of the State Emergency Operations Plan (EOP). The annex to the State EOP established an HMGP Administrative Plan. The following excerpt from the Administrative Plan describes its scope and purposes:

This plan document has been incorporated as a separate annex to the mitigation section of the State Emergency Operation Plan and is the State of Alabama's process for administering the hazard mitigation grants funded under the provisions of Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), Public Law 100-707, as implemented by 44 CFR, Part 206. This Administrative Plan defines the eligibility criteria for an applicant, describes the application process, and outlines resources and procedures for management of Hazard Mitigation Grant Program (HMGP) projects and their associated program funding.

The Administrative Plan presents a process for review and prioritizing projects, as follows: *Applications… may be forwarded to the Project Application Review Committee (PARC) for technical review and prioritization. …*
a. Jurisdictions with the highest risk
b. Cost effectiveness of the project or action (usually through benefit-cost analysis)
c. Commitment of community to mitigation
d. Inclusion of (flood) repetitive loss properties as identified through NFIP records
e. Participation in Community Rating System (CRS)
f. Participation in the National Flood Insurance Program (NFIP)
g. Status of Local Hazard Mitigation Plan
h. Consideration of long-term economic development

i. Development pressure on the community
j. Adoption and enforcement of zoning and building codes
k. Priority of the project as identified in Local Hazard Mitigation Plan
l. General conformance with the mitigation strategy for reducing risk as identified in Local Hazard Mitigation Plan

7.4.1 Jurisdictions with Highest Risk

One of the primary purposes of the *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014* is to identify the areas within the county with the highest risk of damage from natural hazards. As described in detail in the Hazard Identification and Risk Assessment (**Section 5**), jurisdictions, mostly those with the greatest populations and numbers of structures (especially critical facilities), are at the greatest risk.

Although Elmore County does not have a formal system established to evaluate and prioritize potential mitigation projects on the basis of risk, this plan update is partly intended to identify those jurisdictions with the greatest risk. In general, the county will continue to direct mitigation grant funds to the areas with the highest risk. However, in many cases, more localized risk assessments (often produced in the local mitigation planning process), as well as risk assessments and BC analyses done in support of applications, could demonstrate many cases of high vulnerability outside the higher-risk jurisdictions identified in this plan.

Most successful mitigation projects are products of both risk and the effectiveness of a project in mitigating that risk. Although risk is clearly a good initial indicator of mitigation potential, the county will also carefully consider the cost effectiveness and the potential beneficial impacts of projects in determining funding priorities.

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7.4.2 Repetitive Loss Properties

Although the Flood Mitigation Assistance (FMA), Severe Repetitive Loss (SLR), and Repetitive Flood Claims (RFC) programs emphasize repetitive loss properties, FEMA currently has no formal requirement that grants funded through the HMGP or PDM address repetitive losses. However, in response to the federal emphasis on reducing the burden of repetitive losses on the NFIP, the county/state presently considers the repetitive loss status of properties in determining the grants it will support (i.e. forward to FEMA for consideration and funding). The FMA program and the new SLR and RFC programs mandate that grant funds be directed to NFIP repetitive loss properties, and the county/state will continue to comply with this requirement, as they have since the inception of the FMA program.

The National Flood Insurance Reform Act (NFIRA) of 2004 was signed into law by the president on June 30, 2004. NFIRA reforms the NFIP to create a disincentive to property owners to live in repetitively flooded areas. Rather than continue to rebuild, the program would provide repeatedly flooded homeowners assistance in either elevating or moving their homes away from flood waters. Those who refuse mitigation assistance would incur the long term losses associated with living in high risk areas.

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7.4.3 Most Intense Development Pressure

As mentioned earlier in this section, at the time the initial version of this Plan was developed in 2005, Alabama had no formal process for evaluating potential mitigation grants. It has since developed a more rigorous review and recommendation process that includes development pressure as a review criterion. Development pressure is clearly a potential factor in any risk determination, however, development undertaken in accordance with effective comprehensive planning and plan implementation tools, such as building codes, zoning ordinances, subdivision regulations, floodplain management ordinances, and capital improvements programming should in many cases be less risky than existing developed areas. The county/state recognizes that increased development does cause new population settlements, construction of new buildings, and expansion of infrastructure. These development pressures could increase exposure of population, buildings, and infrastructure to the risks of natural hazards. Although development and growth are in themselves not risks, local mitigation planning fully integrated into a community's comprehensive planning and regulatory program can reduce exposure of new development to natural hazards risks. A community's planning responses to manage growth and development is essential to effective local mitigation, and these factors are carefully considered by the county/state in their project review process.

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7.4.4 Maximizing Benefits According to Benefit-Cost Review of Local Projects

The regulations that apply to all FEMA mitigation grant programs require all mitigation projects to be cost effective. Under some pre-established conditions, certain projects may be exempt from this regulation, but in most cases projects are provided a benefit-cost analysis either prior to submission to AEMA and FEMA for funding consideration, or during the grant evaluation process. The PDM program, instituted in 2003-2004, further emphasizes the role of cost effectiveness by making the benefit-cost ratio the single most important criterion in project rating and evaluation.

For the HMGP, FMA, SRL, and RFC programs, the regulations require only that proposed mitigation projects are cost-effective, not that they are the most cost-effective of projects that the County/State/FEMA is considering. In most cases, grant applications are either accompanied by a BC analysis, or AEMA or FEMA perform one in accordance with FEMA and OMB regulations. Projects that do not achieve the required 1.0 BC ratio and are not exempt from BC analysis are rejected from funding consideration. This is the case for all FEMA mitigation grant programs.

The Elmore County HMPC/MAC Group considered the benefits that would result from the mitigation actions versus the cost of those actions. The following were considered: 1) Assessing the economic impact of one action compared to another; 2) Considering how one type of action costs more than another to achieve the same benefit; 3) Assessing the availability of funding for the projects; and 4) Demonstrating which projects better serve the economic goals of the community.

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7.4.5 Prioritization of Communities to Receive Planning Grants

In determining priorities for which communities will receive mitigation planning grants, AEMA considers the following criteria:

1. Quality and completeness of the community's existing mitigation plan. Communities whose mitigation plans need the most work will be given priority.

2. The degree of risk in the community, as determined by identifying the potential effects of natural hazards on population, buildings, and infrastructure.

3. Existing capability, (i.e. if the community resources to create or update its plan and to implement the plan).

4. Potential for the Plan to support or enhance community mitigation efforts.

These criteria consider the most important factors for determining the expenditure of limited funds to most effectively help communities improve their mitigation planning activities.

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Section 8. Plan Maintenance

Source: Michigan Hazard Mitigation Plan (Update 2014)
Source: Cullman County Natural Hazards Mitigation Plan, March 15, 2010

This section of the Plan addresses requirements of Final Rule (FR) Section 201.6 and (d). A copy of the FR is provided for reference in Appendix B of this document.

Contents of this Section

8.1 Final Rule Requirements for Plan Maintenance Process
8.2 Method for Monitoring, Evaluating and Updating the Plan
8.3 System for Monitoring Mitigation Measures and Project Closeouts
8.4 System for Reviewing Progress on Achieving Goals
8.5 System for Reviewing Progress on Activities and Projects in the County Mitigation Strategy

What has been updated?

The 2010 *Elmore County Natural Hazard Mitigation Plan* was completely revised during the 2015 plan update process. For the 2015 update, the Plan underwent a *major* re-write, was completely restructured and reformatted, and vastly broadened to include *all* hazards relative to Elmore County--natural, technological, and human-related (man-made)--thus warranting the new title: *Elmore County Multi-Jurisdictional All-Hazards Mitigation Plan, December 2014*.

Certain informational elements of the 2010 Plan were retained and carried forward into the 2015 plan update, like various maps, storm events data, census data, facilities, methodologies, strategies, action items, etc. All retained informational elements were refreshed and updated as appropriate and expanded where applicable. Numerous informational elements were added to the Plan to support the newly incorporated technological and human-related (man-made) threats and hazards, as well as additional natural hazards not previously covered, such as fog, sinkholes, and land subsidence.

Given the broad scope of changes resulting from this update, users are highly encouraged to read this plan "cover to cover," expecting numerous differences between the *2010* and *2015* editions. The scope of change contained herein extends far beyond the typical, minor, or expected changes one might see in a standard plan update.

The primary driving factors behind the complete "over-haul" of this Plan include:

- ✓ The desire to standardize its structure to more closely aligned it with that of the governing Final Rule (FR), thus improving its organization, cohesiveness, and flow;

- ✓ The desire to incorporate a number of threats and hazards not previously addressed in the Elmore County HMP; and

- ✓ The desire to more closely mirror the Alabama State Hazard Mitigation Plan, Updated April 2013.

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8.1 Final Rule Requirements for Plan Maintenance Process

The Final Rule (FR) Subsection 201.6 (c) (4) requires the County Hazard Mitigation Plan to include a section that describes the Plan Maintenance Process. "(The County Hazard Mitigation Plan shall include a) section on the *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."

The FR Subsection 201.6 (d) (3) (4) requires the County Hazard Mitigation Plan to be revised and updated every five years. "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 5 years in order to continue to be eligible for mitigation project grant funding…..Managing states will review the plans within 45 days of receipt of the plans, whenever possible, and provide a copy of the approved plans to the Regional Office."

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8.2 Method for Monitoring, Evaluating and Updating the Plan

8.2.1 Background

The Elmore County Emergency Management Agency (EMA) is responsible for maintaining the local Hazard Mitigation Plan, including all monitoring, evaluation, and updating activities. As part of this plan update process, the Elmore County EMA reviewed the strategy detailed in the 2010 Plan for monitoring, evaluating, and updating the plan and compared it to the plan maintenance activities that actually occurred since plan adoption in 2010.

The 2010 Plan calls for Elmore County EMA to initiate an annual review of the county plan by the Elmore County Hazard Mitigation Planning Committee (HMPC), later known as the Elmore County Multi-Agency Coordination (MAC) Group. The HMPC/MAC Group reviewed the plan to include the mitigation goals, priorities and actions as part of this plan update process, and it was determined that the mitigation priorities of the county had not been substantially altered and are still valid. This process has been revised to provide greater flexibility to the Elmore County EMA and the HMPC/MAC Group in their efforts to maintain the plan. This section of the plan describes the method by which the Elmore County EMA will accomplish this task.

In addition to the efforts described herein, the following specific actions and resources should further enhance the monitoring, evaluating, and updating of the plan:

- Effective February 2015, the Elmore County EMA launched a new website and will utilize the website to post the *Elmore County All-Hazards Mitigation Plan Public Participation Survey* (and other HMP-related documents) online. Posting the survey online will provide a perpetual means for visitors of the website to participate in the on-going planning process.

- The HMPC/MAC Group will continue to identify and invite additional stakeholders to participate in the plan update process, such as the: Alabama Department of Environmental Management (ADEM); Alabama Historic Commission State Historic Preservation Office (SHPO); Alabama State Fire Marshall; Alabama Department of Conservation and Natural Resources; and Alabama Department of Economic Development and Community Affairs (ADECA), to name a few. Although these stakeholders were not specifically involved in the plan update process, most have been active coordination partners on all former Hazard Mitigation Grant Program (HMGP) applications.

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8.2.2 Method for Monitoring the Plan

Regular plan monitoring will be achieved through Elmore County EMA's efforts annually to track mitigation activities. These activities are described in **Sections 8.3** through **8.5**. The Elmore County EMA Director is the responsible person for the review of the plan to include monitoring, evaluating, and updating of the plan, reconvening the committee/group only if additional information is available or the EMA Director requires assistance. Although the entire plan's progress will be monitored, evaluated, and updated on a continuous basis throughout the five-year timeframe, the annual review will begin by the Elmore County EMA Director emailing a worksheet/survey form to the Elmore County HMPC/MAC Group members asking them for their input and giving them a two-week deadline on returning the information to the Elmore County EMA Director. Following the two-week deadline, the EMA Director will consolidate the worksheets/survey forms and act upon the findings as needed and in the methods described below.

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8.2.3 System for Evaluating the Plan

The Elmore County EMA will conduct an annual evaluation of the plan, reconvening the committee only if additional information is available or the EMA Director requires assistance. The Elmore County EMA Director will document the annual evaluation and note the findings. Criteria that will be used to evaluate the plan include but are not necessarily limited to:

1. The relevance and appropriateness of the plan goals and objectives in relation to current conditions;
2. The nature, scope and magnitude of hazard-related problems in the county, state and country;
3. The type and amount of resources available to implement the plan;
4. The current and projected capabilities of the assigned implementing agencies;
5. Relevant deadlines, priorities, and other consideration of the scarcity of available resources;
6. Plan implementation problems that have occurred or that may occur, such as technical, political, legal, social, or coordination issues;
7. The overall success of actions that have been implemented;
8. Progress on mitigation actions (including project closeouts) and/or new mitigation actions that the county is considering;
9. Changes in the composition of the Hazard Mitigation Committee (HMC)/Multi-Agency Coordination (MAC) Group; and
10. Major changes to the multi-jurisdictional hazard mitigation plan

In addition, the Elmore County EMA may initiate the review process under any of the following conditions:

- After a major disaster declaration
- At the request of the Elmore County Commission or Alabama EMA (AEMA)
- When significant new risks or vulnerabilities are identified

Additionally, as described separately in **Section 7.2**, Elmore County EMA will contact local agencies (and other individuals and organizations as appropriate) to determine if updates have been made to certain elements of the local plans as part of the annual review process. The purpose of this effort is to ensure that local information about risk, goals, projects, and mitigation strategies included in the plan remains current.

In the event modifications to the plan are warranted as a result of the annual review or other conditions, the Committee/Group will oversee and approve all revisions to the plan. Conditions which might warrant revisions to this plan are reflected above and would include, but not be limited to, special opportunities for funding, a response to a natural disaster, and changes in jurisdictions' capabilities to implement the plan. Before any revisions are submitted to the

jurisdictions for adoption, a notice will be placed in the local newspaper or publicly posted, allowing an opportunity for the public to review the proposed amendments at the EMA office, submit written comments, and present comments at a public meeting. The Committee/Group will then submit all revisions for adoption by jurisdictions affected by the changes. A copy of the plan revisions will be submitted to all holders of the original plan in a timely manner.

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8.2.4 System for Updating the Plan

The plan will be updated and re-submitted to AEMA/FEMA for re-approval every five years, as required by law. The plan may also be subject to interim updates if any of the following conditions apply:

1. At the request of the EMA Director
2. The nature, magnitude, and/or type of risk(s) has/have changed
3. If the findings of the annual/post-disaster review and evaluation warrant an update
4. There are implementation problems, such as technical, political, legal, or coordination issues with other agencies

The two sub-paragraphs below describe the procedures for interim and five-year updates, respectively.

Updates Resulting from Interim Evaluations
The nature of plan updates will be determined by the evaluation process described above. In general, Elmore County EMA will notify the HMPC/MAC Group that the agency is initiating an interim plan update, and describe the circumstances that created the need for the update. EMA will determine if the full committee/group should be consulted regarding the potential changes. If it is determined that the committee/group should be involved, the nature of the involvement will be at the discretion of Elmore County EMA. When interim updates are completed, EMA will advise all HMPC/MAC Group members that the plan has been updated, and describe the nature of the update.

Updates Related to the Required Five-year Plan Review (by FEMA)
As required by law, every five years the plan will be updated for re-submission and re-approval by AEMA/FEMA. In those years, the evaluation process will be substantially more rigorous, and will examine all aspects of the plan in detail. It is anticipated that several meetings of the committee/group will be required, and that the plan will be formally re-adopted by the commission. Based on the 2015 deadline for this plan update, AEMA anticipates that the submission date for the next plan update will be 2020. Between 18 and 24 months prior to 2020, Elmore County EMA will initiate the plan update process by contacting committee/group members and other appropriate agencies and organizations to determine a schedule and process for updating the plan.

The update process will involve a detailed and structured re-examination of all aspects of the original plan, followed by recommended updates. The recommendations will be presented to the committee/group for consideration and approval.

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8.3 System for Monitoring Mitigation Measures and Project Closeouts

The Elmore County EMA uses the following system for monitoring mitigation measures and project closeouts.

8.3.1 Monitoring Mitigation Measures

Mitigation projects are generally monitored as follows:

- Each mitigation project or activity (such as planning) has an established period of performance that Elmore County EMA and AEMA monitor throughout the development and execution of the activity.
- Every calendar quarter, Elmore County EMA sends a quarterly report to the AEMA on all open projects (i.e. ones that have been funded but are not completed), that includes a project progress update and percent completed.

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8.3.2 Monitoring Project Closeouts

Mitigation project closeouts occur in the following sequence. These procedures were established in accordance with FEMA Hazard Mitigation Grant Program (HMGP) guidelines as set out in the HMGP Desk Reference and the State of Alabama HMGP Administrative Plan.

- Sub-grantee indicates in a quarterly project progress report that a mitigation project is 100 percent complete.
- AEMA reconciles FEMA Smart Link account for the project (by disaster).
- AEMA initiates an internal financial audit of the project.
- AEMA resolves any issues discovered in the audit.
- AEMA sends FEMA Region IV a closeout letter that delineates the final eligible cost of the project, and delineates any de-obligations that are required, as well as any monies that will be recovered from the sub-grantee.

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8.4 System for Reviewing Progress on Achieving Goals

In order to track progress on achieving the goals identified in this plan, Elmore County EMA will ensure that both the annual and five-year plan evaluations include a review and analysis of the goals, and the various actions that are intended to achieve them. This process will be substantially more rigorous and detailed during the formal plan update process. **Section 6** of the plan describes hazard mitigation goals, and includes a detailed table that lists various strategies and actions that the county is undertaking or considering addressing the goals. As part of this plan update, this table has been modified to include a column indicating the status of the various actions and a general indication of progress.

The system for reviewing progress on achieving goals will remain the same as it has proved successful over the last five years.

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8.5 System for Reviewing Progress on Activities and Projects in the Local Mitigation Strategy

As part of the annual evaluation, Elmore County EMA will conduct a preliminary review and analysis of progress on activities listed in the mitigation strategy section. The results of this review will be included in brief summary report submitted to the committee.

As part of the five-year update to the plan, Elmore County EMA will initiate a more detailed review and evaluation of all activities and projects noted in the mitigation strategy. Elmore County EMA will report its findings to the committee/group at meetings held as part of the plan update process.

The results of these findings will be included in the table of mitigation goals and actions included in **Section 6**.

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Appendix A

Disaster Mitigation Act of 2000

Public Law 106-390—Oct 30, 2000

PUBLIC LAW 106–390—OCT. 30, 2000

DISASTER MITIGATION ACT OF 2000

Public Law 106–390
106th Congress

An Act

Oct. 30, 2000
[H.R. 707]

To amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act to authorize a program for predisaster mitigation, to streamline the administration of disaster relief, to control the Federal costs of disaster assistance, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Disaster Mitigation Act of 2000.

42 USC 5121 note.

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Disaster Mitigation Act of 2000".

(b) TABLE OF CONTENTS.—The table of contents of this Act is as follows:

Sec. 1. Short title; table of contents.

TITLE I—PREDISASTER HAZARD MITIGATION

Sec. 101. Findings and purpose.
Sec. 102. Predisaster hazard mitigation.
Sec. 103. Interagency task force.
Sec. 104. Mitigation planning; minimum standards for public and private structures.

TITLE II—STREAMLINING AND COST REDUCTION

Sec. 201. Technical amendments.
Sec. 202. Management costs.
Sec. 203. Public notice, comment, and consultation requirements.
Sec. 204. State administration of hazard mitigation grant program.
Sec. 205. Assistance to repair, restore, reconstruct, or replace damaged facilities.
Sec. 206. Federal assistance to individuals and households.
Sec. 207. Community disaster loans.
Sec. 208. Report on State management of small disasters initiative.
Sec. 209. Study regarding cost reduction.

TITLE III—MISCELLANEOUS

Sec. 301. Technical correction of short title.
Sec. 302. Definitions.
Sec. 303. Fire management assistance.
Sec. 304. Disaster grant closeout procedures.
Sec. 305. Public safety officer benefits for certain Federal and State employees.
Sec. 306. Buy American.
Sec. 307. Treatment of certain real property.
Sec. 308. Study of participation by Indian tribes in emergency management.

TITLE I—PREDISASTER HAZARD MITIGATION

42 USC 5133 note.

SEC. 101. FINDINGS AND PURPOSE.

(a) FINDINGS.—Congress finds that—

(1) natural disasters, including earthquakes, tsunamis, tornadoes, hurricanes, flooding, and wildfires, pose great danger to human life and to property throughout the United States;

(2) greater emphasis needs to be placed on—

(A) identifying and assessing the risks to States and local governments (including Indian tribes) from natural disasters;

(B) implementing adequate measures to reduce losses from natural disasters; and

(C) ensuring that the critical services and facilities of communities will continue to function after a natural disaster;

(3) expenditures for postdisaster assistance are increasing without commensurate reductions in the likelihood of future losses from natural disasters;

(4) in the expenditure of Federal funds under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.), high priority should be given to mitigation of hazards at the local level; and

(5) with a unified effort of economic incentives, awareness and education, technical assistance, and demonstrated Federal support, States and local governments (including Indian tribes) will be able to—

(A) form effective community-based partnerships for hazard mitigation purposes;

(B) implement effective hazard mitigation measures that reduce the potential damage from natural disasters;

(C) ensure continued functionality of critical services;

(D) leverage additional non-Federal resources in meeting natural disaster resistance goals; and

(E) make commitments to long-term hazard mitigation efforts to be applied to new and existing structures.

(b) PURPOSE.—The purpose of this title is to establish a national disaster hazard mitigation program—

(1) to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters; and

(2) to provide a source of predisaster hazard mitigation funding that will assist States and local governments (including Indian tribes) in implementing effective hazard mitigation measures that are designed to ensure the continued functionality of critical services and facilities after a natural disaster.

SEC. 102. PREDISASTER HAZARD MITIGATION.

(a) IN GENERAL.—Title II of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5131 et seq.) is amended by adding at the end the following:

"SEC. 203. PREDISASTER HAZARD MITIGATION.

President.
42 USC 5133.

"(a) DEFINITION OF SMALL IMPOVERISHED COMMUNITY.—In this section, the term 'small impoverished community' means a community of 3,000 or fewer individuals that is economically disadvantaged, as determined by the State in which the community is located and based on criteria established by the President.

"(b) ESTABLISHMENT OF PROGRAM.—The President may establish a program to provide technical and financial assistance to States and local governments to assist in the implementation of

predisaster hazard mitigation measures that are cost-effective and are designed to reduce injuries, loss of life, and damage and destruction of property, including damage to critical services and facilities under the jurisdiction of the States or local governments.

"(c) APPROVAL BY PRESIDENT.—If the President determines that a State or local government has identified natural disaster hazards in areas under its jurisdiction and has demonstrated the ability to form effective public-private natural disaster hazard mitigation partnerships, the President, using amounts in the National Predisaster Mitigation Fund established under subsection (i) (referred to in this section as the 'Fund'), may provide technical and financial assistance to the State or local government to be used in accordance with subsection (e).

"(d) STATE RECOMMENDATIONS.—

"(1) IN GENERAL.—

"(A) RECOMMENDATIONS.—The Governor of each State may recommend to the President not fewer than five local governments to receive assistance under this section.

"(B) DEADLINE FOR SUBMISSION.—The recommendations under subparagraph (A) shall be submitted to the President not later than October 1, 2001, and each October 1st thereafter or such later date in the year as the President may establish.

"(C) CRITERIA.—In making recommendations under subparagraph (A), a Governor shall consider the criteria specified in subsection (g).

"(2) USE.—

President.

"(A) IN GENERAL.—Except as provided in subparagraph (B), in providing assistance to local governments under this section, the President shall select from local governments recommended by the Governors under this subsection.

"(B) EXTRAORDINARY CIRCUMSTANCES.—In providing assistance to local governments under this section, the President may select a local government that has not been recommended by a Governor under this subsection if the President determines that extraordinary circumstances justify the selection and that making the selection will further the purpose of this section.

"(3) EFFECT OF FAILURE TO NOMINATE.—If a Governor of a State fails to submit recommendations under this subsection in a timely manner, the President may select, subject to the criteria specified in subsection (g), any local governments of the State to receive assistance under this section.

"(e) USES OF TECHNICAL AND FINANCIAL ASSISTANCE.—

"(1) IN GENERAL.—Technical and financial assistance provided under this section—

"(A) shall be used by States and local governments principally to implement predisaster hazard mitigation measures that are cost-effective and are described in proposals approved by the President under this section; and

"(B) may be used—

"(i) to support effective public-private natural disaster hazard mitigation partnerships;

"(ii) to improve the assessment of a community's vulnerability to natural hazards; or

"(iii) to establish hazard mitigation priorities, and an appropriate hazard mitigation plan, for a community.

"(2) DISSEMINATION.—A State or local government may use not more than 10 percent of the financial assistance received by the State or local government under this section for a fiscal year to fund activities to disseminate information regarding cost-effective mitigation technologies.

"(f) ALLOCATION OF FUNDS.—The amount of financial assistance made available to a State (including amounts made available to local governments of the State) under this section for a fiscal year—

"(1) shall be not less than the lesser of—

"(A) $500,000; or

"(B) the amount that is equal to 1.0 percent of the total funds appropriated to carry out this section for the fiscal year;

"(2) shall not exceed 15 percent of the total funds described in paragraph (1)(B); and

"(3) shall be subject to the criteria specified in subsection (g).

"(g) CRITERIA FOR ASSISTANCE AWARDS.—In determining whether to provide technical and financial assistance to a State or local government under this section, the President shall take into account—

"(1) the extent and nature of the hazards to be mitigated;

"(2) the degree of commitment of the State or local government to reduce damages from future natural disasters;

"(3) the degree of commitment by the State or local government to support ongoing non-Federal support for the hazard mitigation measures to be carried out using the technical and financial assistance;

"(4) the extent to which the hazard mitigation measures to be carried out using the technical and financial assistance contribute to the mitigation goals and priorities established by the State;

"(5) the extent to which the technical and financial assistance is consistent with other assistance provided under this Act;

"(6) the extent to which prioritized, cost-effective mitigation activities that produce meaningful and definable outcomes are clearly identified;

"(7) if the State or local government has submitted a mitigation plan under section 322, the extent to which the activities identified under paragraph (6) are consistent with the mitigation plan;

"(8) the opportunity to fund activities that maximize net benefits to society;

"(9) the extent to which assistance will fund mitigation activities in small impoverished communities; and

"(10) such other criteria as the President establishes in consultation with State and local governments. President.

"(h) FEDERAL SHARE.—

"(1) IN GENERAL.—Financial assistance provided under this section may contribute up to 75 percent of the total cost of mitigation activities approved by the President.

"(2) SMALL IMPOVERISHED COMMUNITIES.—Notwithstanding paragraph (1), the President may contribute up to 90 percent of the total cost of a mitigation activity carried out in a small impoverished community.

"(i) NATIONAL PREDISASTER MITIGATION FUND.—

"(1) ESTABLISHMENT.—The President may establish in the Treasury of the United States a fund to be known as the 'National Predisaster Mitigation Fund', to be used in carrying out this section.

"(2) TRANSFERS TO FUND.—There shall be deposited in the Fund—

"(A) amounts appropriated to carry out this section, which shall remain available until expended; and

"(B) sums available from gifts, bequests, or donations of services or property received by the President for the purpose of predisaster hazard mitigation.

"(3) EXPENDITURES FROM FUND.—Upon request by the President, the Secretary of the Treasury shall transfer from the Fund to the President such amounts as the President determines are necessary to provide technical and financial assistance under this section.

"(4) INVESTMENT OF AMOUNTS.—

"(A) IN GENERAL.—The Secretary of the Treasury shall invest such portion of the Fund as is not, in the judgment of the Secretary of the Treasury, required to meet current withdrawals. Investments may be made only in interest-bearing obligations of the United States.

"(B) ACQUISITION OF OBLIGATIONS.—For the purpose of investments under subparagraph (A), obligations may be acquired—

"(i) on original issue at the issue price; or

"(ii) by purchase of outstanding obligations at the market price.

"(C) SALE OF OBLIGATIONS.—Any obligation acquired by the Fund may be sold by the Secretary of the Treasury at the market price.

"(D) CREDITS TO FUND.—The interest on, and the proceeds from the sale or redemption of, any obligations held in the Fund shall be credited to and form a part of the Fund.

"(E) TRANSFERS OF AMOUNTS.—

"(i) IN GENERAL.—The amounts required to be transferred to the Fund under this subsection shall be transferred at least monthly from the general fund of the Treasury to the Fund on the basis of estimates made by the Secretary of the Treasury.

"(ii) ADJUSTMENTS.—Proper adjustment shall be made in amounts subsequently transferred to the extent prior estimates were in excess of or less than the amounts required to be transferred.

"(j) LIMITATION ON TOTAL AMOUNT OF FINANCIAL ASSISTANCE.—The President shall not provide financial assistance under this section in an amount greater than the amount available in the Fund.

"(k) MULTIHAZARD ADVISORY MAPS.—

"(1) DEFINITION OF MULTIHAZARD ADVISORY MAP.—In this subsection, the term 'multihazard advisory map' means a map

Appendix B

Final Rule

(44 CFR Parts 201 and 206

Hazard Mitigation Planning and

Hazard Mitigation Grant Program)

Plan," OMB approval number 1660–0075.

I. Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

FEMA has reviewed this rule under Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, published November 9, 2000). In reviewing the portion of the rule which streamlines the mitigation planning requirements affecting Indian tribal governments, FEMA finds that, while it does have "tribal implications" as defined in Executive Order 13175, it will not have a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.

J. Executive Order 12630, Governmental Actions and Interference With Constitutionally Protected Property Rights

FEMA has reviewed this rule under Executive Order 12630, "Governmental Actions and Interference with Constitutionally Protected Property Rights" (53 FR 8859, published March 18, 1988) as supplemented by Executive Order 13406, "Protecting the Property Rights of the American People" (71 FR 36973, published June 28, 2006). This rule will not effect a taking of private property or otherwise have taking implications under Executive Order 12630.

K. Executive Order 12988, Civil Justice Reform

FEMA has reviewed this rule under Executive Order 12988, "Civil Justice Reform" (61 FR 4729, published February 7, 1996). This rule meets applicable standards to minimize litigation, eliminate ambiguity, and reduce burden.

List of Subjects in 44 CFR Part 78

Flood insurance, Grant programs.

■ Accordingly, for the reasons stated in the preamble, the interim rule amending 44 CFR part 78 which was published at 62 FR 13346 on March 20, 1997, is adopted as final, with the following changes:

PART 78—FLOOD MITIGATION ASSISTANCE

■ 1. The authority citation for part 78 is revised to read as follows:

Authority: 6 U.S.C. 101; 42 U.S.C. 4001 *et seq.*; 42 U.S.C. 4104c, 4104d; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

§ 78.1 [Amended]

■ 2. In § 78.1, paragraph (b), remove the word "insurable" and add, in its place, the word "insured".

Dated: October 24, 2007.

Harvey E. Johnson, Jr.,

Deputy Administrator/Chief Operating Officer, Federal Emergency Management Agency.

[FR Doc. E7–21263 Filed 10–30–07; 8:45 am]

BILLING CODE 9110–41–P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

44 CFR Parts 201, 204, and 206

[Docket ID FEMA–2007–0004]

RIN 1660–AA17

Hazard Mitigation Planning and Hazard Mitigation Grant Program

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Final rule.

SUMMARY: The Federal Emergency Management Agency (FEMA) is adopting as final, without substantive changes, interim rules that establish requirements for hazard mitigation planning and the Hazard Mitigation Grant Program (HMGP) pursuant to sections 322 and 323 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

DATES: This final rule is effective November 30, 2007.

FOR FURTHER INFORMATION CONTACT: Karen Helbrecht, Risk Analysis Division, Mitigation Directorate, Federal Emergency Management Agency, 500 C Street, SW., Washington DC, 20472, (phone) 202–646–3358, (facsimile) 202–646–3104, or (e-mail) *Karen.helbrecht@dhs.gov.*

SUPPLEMENTARY INFORMATION:

I. Background

This rulemaking finalizes, without substantive changes, interim rules implementing sections 322 and 323 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) (42 U.S.C. 5165), enacted by section 104 of the Disaster Mitigation Act of 2000 (DMA 2000), (42 U.S.C. 5121 note). Section 322 requires, as a condition of receipt of federal hazard mitigation grant assistance, hazard mitigation planning and is implemented in the Emergency Management and Assistance regulations at 44 CFR part 201 (Mitigation Planning). Section 323 requires, as a condition of receipt of disaster loans or grants distributed under the Hazard Mitigation Grant Program (HMGP) that minimum repair and construction codes, specifications, and standards are followed. Section 323 is implemented at 44 CFR part 206 (Federal Disaster Assistance for Disasters Declared On Or After November 23, 1988), Subpart N (Hazard Mitigation Grant Program).

Parts 201 and 206 outline mitigation planning and hazard mitigation grant requirements, respectively, for State, Indian tribal, and local entities. To be eligible for FEMA mitigation and public assistance grant funds (except for emergency assistance), State, local, or Indian tribal governments must have a FEMA-approved hazard mitigation plan. All hazard mitigation plans must be submitted to FEMA for final review and approval. FEMA will review and comment on the plan within 45 days, whenever possible. Once approved, local plans are to be revised and resubmitted to FEMA every 5 years, State plans are to be revised and resubmitted to FEMA every 3 years, and Indian tribal governments may either apply directly to FEMA, thereby assuming the responsibilities of a State, or may apply through a State, thereby assuming the responsibilities of a local government.

Additionally, for States that complete FEMA requirements for enhanced mitigation planning, the amount of HMGP funds available increases from 15 percent of the Federal share of disaster assistance for that event to 20 percent of the Federal share of disaster assistance for that event. Up to 7 percent of hazard mitigation grants may be used to develop State, tribal, and/or local mitigation planning activities outlined in 44 CFR part 201.

There have been four interim rules (IRs) and one correction published in this rulemaking action. On February 26, 2002, FEMA published an IR at 67 FR 8844 implementing section 322 of the Stafford Act. This first IR addressed State mitigation planning, identified new local mitigation planning grant requirements, authorized HMGP funds for planning activities, and increased the amount of HMGP funds available to States that develop a comprehensive, enhanced mitigation plan.

On October 1, 2002, FEMA published a second IR at 67 FR 61512. This IR amended the February 26, 2002, IR to

extend the date by which State and local governments must develop mitigation plans as a condition of grant assistance in compliance with 44 CFR part 201 from November 1, 2003 to November 1, 2004.

On October 28, 2003, FEMA published a third IR at 68 FR 61368. This IR clarified that the November 1, 2003 effective date for the planning requirement applied only to Pre-Disaster Mitigation (PDM) grant funds awarded under any Notice of Availability of Funding Opportunity issued after that date. It also updated the mitigation planning requirements identified in 44 CFR part 204 (Fire Management Assistance Grant Program), as well as 44 CFR part 206, subpart H (Public Assistance Eligibility) to bring those sections into conformity with the existing planning requirements in 44 CFR part 201.

On November 10, 2003, FEMA published a correcting amendment to the third IR at 68 FR 63738, correcting a paragraph reference.

On September 13, 2004, FEMA published a fourth IR at 69 FR 55094. This IR provided a mechanism for Governors or Indian tribal leaders to request a 6 month extension of the plan approval deadline for State-level mitigation plans, up to May 1, 2005. The IR also allowed mitigation planning grants provided through the PDM program to continue to be available to State, Indian tribal, and local governments after November 1, 2004. The IR also made technical amendments and adjusted the general major disaster allocation for HMGP from 15 percent to 7.5 percent to be consistent with statutory mandates.

With respect to docket management, the Regulatory Identifier Number (RIN) listed in the first two IRs was 3067–AD22. Since FEMA became a component of the Department of Homeland Security (DHS), FEMA's RINs were renumbered and 3067–AD22 became 1660–AA17.

II. Discussion of Public Comments

FEMA received 17 public comments on the February 26, 2002 IR, and 3 comments on the October 1, 2002 IR. FEMA received no comments on the October 28, 2003 or September 13, 2004 IRs. Fourteen State emergency management agencies, three organizations, two local governments, and one independent group submitted comments. The comments received, together with FEMA's response, are set forth below. The "Multi-Hazard Mitigation Planning Guidance under DMA2000" (also known as the Mitigation Planning "Blue Book") and the FEMA "How-To" series for Mitigation Planning (FEMA 386) are posted on the FEMA Web site (*http://www.FEMA.gov/library*). Unless otherwise stated, these are the documents referred to in FEMA's response when references to program policy or guidance are made.

Comments on the First Interim Rule

Mitigation Planning Requirement Support; Timeline: Six commenters indicated support for the hazard mitigation planning process, agreeing that the process is necessary for effective, sustained mitigation programs. Thirteen commenters wrote that there was not enough time for State and local governments to comply with the planning requirements, and that the timeframe should either be extended or the requirements eased in over time.

FEMA's response: FEMA recognized that not enough time was originally allowed to prepare the plans and issued another interim rule on October 1, 2002 that extended the planning requirement for State Mitigation Plans from November 1, 2003 to November 1, 2004. FEMA also extended the local planning requirement under the HMGP to November 1, 2004. In addition, FEMA published an interim rule on September 13, 2004 which provided a mechanism for Governors or Indian tribal leaders to request a 6 month extension of the effective date for State level mitigation plans (to May 1, 2005). All 50 States, the District of Columbia, and 6 Territories had approved hazard mitigation plans by May 1, 2005. Currently, all 50 States, the District of Columbia, 7 territories, and 33 Indian tribal governments have approved State level mitigation plans. In addition, over 11,000 jurisdictions now have approved local level mitigation plans. FEMA believes the timeframes to implement hazard mitigation plans have been sufficient.

Technological Hazards: Five commenters wrote that plans should be required to address manmade or technological hazards.

FEMA's response: Section 322 of the Stafford Act specifically requires mitigation planning for natural hazards, and FEMA decided that it was not appropriate to require planning for manmade or technological hazards. However, FEMA does support plans that address both natural and technological or manmade hazards. A State, Indian tribal, or local mitigation plan can be approved under the Stafford Act without consideration of technological hazards. However, FEMA's planning guidance can be used to assist in developing and evaluating plans that include manmade and technological hazards as part of a comprehensive mitigation strategy. More specifically, FEMA has developed a guidebook titled: "Integrating Manmade Hazards into Mitigation Planning" as part of the Planning "How-To" guidance series. This document is number seven in that series (FEMA 386–7).

Number of hours necessary to prepare a plan: Two commenters wrote that FEMA underestimated the average number of hours necessary to prepare a local mitigation plan.

FEMA's response: When FEMA published the February 26, 2002, interim rule, FEMA's original estimate of the number of hours necessary to prepare a local mitigation plan was based on planning done under the Flood Mitigation Assistance (FMA) program. FEMA published an estimate of 300 hours per plan to develop State or local mitigation plans under part 201. After several years of implementing the planning regulations, this estimate was adjusted to 2,080 hours to develop new State, local, or Indian tribal plans and 320 hours for plan updates to more accurately reflect the amount of time States and local communities actually spent in developing new plans or updating plans to meet the 3- or 5-year update requirements.

Level of information required to develop plans: Six commenters wrote that the level of detail required to develop local mitigation plans may be unreasonable, that the costs necessary to develop the plans result in an unfunded mandate, and that communities will be reluctant to develop plans because of a fear of liability in the event that problems are identified and mitigation measures are not implemented.

FEMA's response: The February 26, 2002 interim rule established new requirements for hazard mitigation planning. FEMA worked to ensure that appropriate guidance was developed for those responsible for developing, evaluating, and reviewing the plans. FEMA believes that the level of detail is reasonable and necessary to ensure that the statutory purposes of the mitigation planning provision are met and result in meaningful and effective mitigation planning. FEMA hosted a series of workshops in both 2002 and 2003 at each FEMA Region at which every State was represented. These workshops provided an opportunity to clarify the planning requirements identified in the regulation and to answer questions regarding these requirements. During the workshops, FEMA clarified the level of information required by the regulations in developing risk assessments for local mitigation plans. FEMA also issued policy related to the

possible lack of hazard specific risk information, which allows planners to use the "best available information" that is currently available in doing the risk assessment, and document how that information would be improved over time.

FEMA recognized that many jurisdictions did not budget for the costs associated with the development of mitigation planning. FEMA made an effort to ensure that the existing mitigation grant programs (HMGP, PDM, and FMA) were available to assist as many jurisdictions as possible. Through these programs, FEMA has approved over 1,400 planning grants between February 2002 and March 2007 with an obligated Federal share of over $157,000,000. As stated above, all 50 States, the District of Columbia, 7 territories, and 33 Indian tribal governments have approved State level mitigation plans. In addition, over 11,000 jurisdictions have approved local level mitigation plans. In fact, over 50 percent of the population of the United States is covered by an approved local level mitigation plan. Since these regulations were originally published in 2002, over 1,400 planning grants have been awarded and over 14,000 jurisdictions are covered by an approved mitigation plan. Due to the volume of plans being developed and approved, it appears that the issue of liability has not been a significant reason for communities to not undertake development of a mitigation plan.

Significant regulatory action: Two commenters disagreed with FEMA's conclusion that the rule is not an economically significant regulatory action because the nationwide cost projection of less than $100 million annually to implement the rule is not realistic.

FEMA's response: FEMA disagrees. For the reasons cited in the Executive Order 12866 section below, FEMA asserts that this is not an economically significant regulatory action. The annual impact of this rule on the economy is approximately $46 million. This regulation's effect on the economy is below the $100 million threshold to qualify as an economically significant action. Furthermore, this final rule makes no significant change to the interim rules which have been in place, and the regulated industry has been following, since 2002.

Coordination among FEMA Regions: Two commenters wrote that coordination within the 10 FEMA Regions is needed to ensure consistency for plan review and other aspects relating to regulation implementation.

FEMA's response: FEMA has worked to ensure that the regulation has been implemented in a fair and consistent manner. The agency has held several workshops, meetings, and training sessions to bring together FEMA staff and State representatives to identify areas of concern and to develop policy and guidance to resolve these issues. For example, a FEMA course entitled "Mitigation Plan Review" has been delivered at FEMA's Emergency Management Institute (EMI) in Emmitsburg, Maryland, and in almost all FEMA Regions, as well as in many States. FEMA will continue to work towards a nationally consistent application of the planning requirements.

Flexibility in implementing the requirements: Four commenters wrote that it is necessary for hazard mitigation plans and the hazard mitigation planning process to be flexible to meet the needs of diverse communities, to address mitigation issues based on actual circumstances, and to meet post-disaster mitigation needs.

FEMA's response: FEMA understands the commenters' concerns. To emphasize the importance and flexibility of the planning process, FEMA has taken, to the extent possible, a "performance standard" approach rather than a "prescriptive" approach to the planning requirements. In other words, hazard mitigation planning requirements are designed to generally identify what should be done in the process and documented in the plan, rather than specify exactly how it should be done. This approach recognizes and appreciates the inherent differences that exist among State, Indian tribal, and local governments with respect to size, resources, capability, and vulnerability. In addition, FEMA recognizes that flexibility is necessary in the post-disaster environment, and that individually-tailored mitigation plans can be very useful tools in the recovery process.

Benefit-cost and planning: Eight commenters wrote and asked what level of effort is required to prioritize cost-effective projects in the State level plan and in the local level action plan where "benefits are maximized according to a cost benefit review of the proposed projects and their associated costs."

FEMA's response: Local mitigation plans do not require a formal benefit-cost calculation to be included within the plan document. However, one consideration in deciding what type of mitigation action(s) to pursue is an economic assessment of the particular action. This (and other considerations) should be debated and discussed as part of the planning team's and/or larger community's decision-making process. A possible result of these local discussions could be the decision to complete a formal benefit-cost evaluation of the various mitigation approaches that are technically appropriate for the situation. However, this is not required to be included in the plan. It is sufficient if economic considerations are summarized in the plan document as part of the comprehensive range of specific mitigation actions of projects being considered. Once funding is sought for the particular mitigation action, a detailed benefit-cost calculation would be required as described under the various grant program regulations. A similar evaluation should be done as part of the State planning process. The plan is required to document the process by which projects and activities will be prioritized and ranked, and this process must include cost effectiveness. In addition, FEMA intends to release additional guidance to help clarify the requirements.

Definition of Critical facility: Two commenters requested a definition of the term "critical facility."

FEMA's response: The list of assets that are most important to protect, as well as the criticality of any given facility, can vary widely from community-to-community. Thus, there is no universal definition of a critical facility, nor is one associated with FEMA's planning requirements. For planning purposes, a jurisdiction should determine criticality based on the relative importance of its various assets for the delivery of vital services, the protection of special populations, and other important functions. FEMA's Mitigation Planning How-To Guide, "Understanding Your Risks: Identifying Hazards and Estimating Losses" (FEMA 386–2) provides guidance on how to identify critical facilities. Based on a hazard-by-hazard identification of facilities that may be at risk, the Guide's emphasis on determining priorities for inventory data collection will help planners identify assets that are most critical to the jurisdiction. The companion publication "Integrating Manmade Hazards into Mitigation Planning" (FEMA 386–7) details how asset inventory can be tailored to focus on high-risk facilities such as critical infrastructures and key resources. In addition, the inventory information available with FEMA's HAZUS–MH loss estimation software can assist in identifying critical facilities. HAZUS–MH databases include information on essential facilities such as hospitals,

police and fire stations, emergency operations centers, shelters, and schools; transportation systems; utility lifelines; high potential loss facilities such as potable water, wastewater, oil, natural gas, electric power, and communication systems; and hazardous material facilities.

Other sources provide additional guidance on identifying facilities that may be critical. FEMA's "Public Assistance Guide" (FEMA 322) states that "[c]ritical facilities are those that serve as emergency shelters; contain occupants who are not sufficiently mobile to avoid death or injury, such as hospitals; house emergency operation or data storage that may become lost or inoperative; are generating plants and principal points of utility lines; or that produce, use, or store volatile, flammable, explosive, toxic, or water reactive materials." The related regulation at § 206.226, Restoration of damaged facilities, refers to facilities that provide critical services, "which include power, water * * * sewer services, wastewater treatment, communications, emergency medical care, fire department services, emergency rescue, and nursing homes." Further, the National Infrastructure Protection Plan (NIPP), issued in 2006, provides a framework for a national strategy that includes State, local, Tribal and regional identification of risks and the protection of "critical infrastructure" and "key resources." Critical Infrastructure is defined in the NIPP as "[a]ssets, systems, and networks, whether physical or virtual, so vital to the United States that the incapacity or destruction of such assets, systems, or networks would have a debilitating impact on security, national economic security, public health or safety, or any combination of those matters," and Key Resources is defined as "publicly or privately controlled resources essential to the minimal operations of the economy and government." Mitigation planning is identified in the NIPP as an activity that can help achieve protection of these assets.

The hazard mitigation plan should provide enough information regarding critical facilities to enable the jurisdiction to identify and prioritize appropriate mitigation actions. However, some information may be deemed highly sensitive and should not be made available to the public. Such information that the jurisdiction considers sensitive should be treated as an addendum to the mitigation plan so that it is still a part of the plan, but access can be controlled. For more information on protecting sensitive information *See*, "Integrating Manmade Hazards into Mitigation Planning" (FEMA 386–7).

FEMA notes that in § 201.4(c)(2)(ii), the regulation contains the phrase "State owned critical or operated facilities," when in fact FEMA intended to use the phrase "State owned or operated critical facilities." This typographical error is corrected in this final rule.

Coordination of FEMA's planning requirements: Four commenters requested that FEMA coordinate its planning requirements, especially between FMA and the new regulations at part 201.

FEMA's response: It was FEMA's intent to create a single local mitigation plan requirement in publishing the planning regulations at part 201. Since part 201 has been in effect, FEMA has realized that there are few areas of difference between the FMA plans and the part 201 plans. FEMA plans to revise part 201 to clarify that part 201 contains FEMA's mitigation plan requirements for all mitigation grant programs.

Plan adoption: Three commenters asked for clarification on how the State plan is "formally adopted." One comment specifically requested that the plan be approved by the "Governor's Authorized Representative."

FEMA's response: An appropriate body in the State must adopt the plan. Depending on the State's established procedures, this could be the State Legislature or the Governor. States with hazard mitigation teams or councils may choose to use these bodies to adopt the plan. At a minimum, the plan must be endorsed by the director of the State agency responsible for preparing and implementing the plan, as well as the heads of other agencies with primary implementation responsibilities. The plan must include a copy of the resolution of adoption, indicating the State's formal adoption of the plan. It is recommended that the plan be formally adopted after FEMA has reviewed the plan and determined that it meets all the other requirements of part 201.

Consultation with Indian tribal governments: One commenter wrote that FEMA did not fulfill its requirement to consult with Indian tribal governments prior to issuing this rule.

FEMA's response: Before FEMA developed the interim rule, the agency met with representatives from State and local governments and the Bureau of Indian Affairs to discuss the new planning requirements of section 322 of the Stafford Act. The same opportunity for comment was offered to all parties. FEMA received valuable input from all attendees, which helped FEMA to develop the interim rule. Also, since FEMA published the interim rule, it has coordinated more directly with Indian tribal governments, and with the organizations that represent them. For example, in conjunction with the National Congress of American Indians, FEMA hosted a Tribal Mitigation Conference in October 2002 at the Ak-Chin Indian Community, Arizona. This conference provided FEMA with an opportunity to better understand its responsibilities relating to Indian tribal governments and to build a working relationship with many of the Indian tribal representatives. A follow-up conference was held at the Salish Kootenai Community, Montana in August 2003. As a direct result of these conferences, FEMA developed an EMI resident course titled "Mitigation for Tribal Officials." This course provides a direct opportunity for coordination and information sharing between Indian tribal representatives and FEMA, resulting in refinements to FEMA's Indian tribal policy and guidance.

Indian tribal governments and mitigation planning: Three commenters wrote that the interim rule contributes to a loss of sovereignty of Indian tribal governments.

FEMA's response: FEMA sees no impact on the sovereignty of Indian tribal governments as a result of these regulations. FEMA recognizes that Native American Tribes are sovereign States. Although § 201.2 states that Indian tribal governments who chose to act as subgrantees are accountable to the State grantee, Indian tribal governments are not required to act as subgrantees. Furthermore, in § 201.3(e), Indian tribal governments may interact directly with the Federal government, or may choose to apply through a State as a subgrantee. This allows for an Indian tribal government to have the flexibility of either applying directly to FEMA for mitigation assistance, or, where the Indian tribal government has a working relationship with a State, apply through the State as a subgrantee. Some Indian tribal governments have participated on local level multi-jurisdictional plans, which have allowed them to participate in FEMA's mitigation programs while they gain expertise and management capability. It is entirely at the discretion of the Indian tribal government and the State whether funding should be sought by Indian tribal governments directly from FEMA or through the State.

Edits to § 206.434(d): One commenter requested that in § 206.434(d), FEMA make available 7 percent of any unspent HMGP funds currently available to the

States regardless of declaration date, and remove the word "tribal."

FEMA's response: Section 322 of the Stafford Act (42 U.S.C. 5165) limits 7 percent of the HMGP funds to be spent on mitigation planning, and since Indian tribal governments are eligible for mitigation funding, FEMA is unable to make them ineligible for HMGP planning grants.

Technical assistance: One commenter wrote that mitigation planning has great public value for Indian tribes; however, Indian tribes do not have the financial resources or the technical capacity to undertake such exercises, and that the rule seems to overlook the role of technical assistance.

FEMA's response: FEMA believes that technical assistance is critical to successful mitigation at all levels of government. FEMA has been working to technically assist all Federally-recognized Indian tribal governments regarding the availability of grant funding, training opportunities, as well as program requirements.

The definition of "Indian tribe:" One commenter wrote that the term "Indian tribe" should be clarified to identify if FEMA means all Indian tribes, just Federally-recognized Indian tribes, or those tribes with either Federal or State recognition.

FEMA's response: The term "Indian tribe" means all Federally recognized Indian tribes. Section 201.2 includes the definition for Indian tribal government: "* * * any Federally recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian tribe" under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a.

Enhanced State Mitigation Plans: Six commenters asked for additional clarification regarding Enhanced State Mitigation Plan requirements.

FEMA's response: In July 2002, FEMA provided guidance titled "Multi-Hazard Mitigation Planning Guidance under the Disaster Mitigation Act of 2000" on the development of Enhanced State Mitigation Plans, FEMA revised that guidance in March 2004. These documents are available through FEMA regional offices, and the 2004 guidance, which retains the 2002 guidance but includes more explanations and examples, is available on the FEMA Web site at *http://www.fema.gov/plan/mitplanning/index.shtm.* These documents provide guidance on implementing each section of the enhanced plan requirements. FEMA established the criteria for enhanced plans to provide a more qualitative and less quantitative basis for evaluating the plans. In addition, FEMA's policy for reviewing enhanced plans has been to establish a panel consisting of two State representatives, staff from two FEMA Regions, and two FEMA Headquarters staff to review and evaluate the plan. This practice makes the plan review process more transparent and fair and provides States with an opportunity to see how the process works. As of August 2007, there are 9 States with approved Enhanced Mitigation Plans.

Confusion regarding § 201.5(b)(4): Commenters wrote that there is confusion regarding § 201.5(b)(4), which states: "Demonstration that the State is committed to a comprehensive state mitigation program, which might include any of the following."

FEMA's response: The list of items in § 201.5(b)(4)(i) through (vi) are provided as examples of that commitment, and are not expected to be addressed in every plan.

State ability to satisfy NEPA requirements: One commenter wrote that States should not be required to ensure that all environmental reviews (categorical exclusions, environmental impact statements, etc.) are completed because they are incapable of performing an environmental assessment or environmental impact statement.

FEMA's response: Section 201.5(b)(2)(iii)(B) requires States to prepare and submit accurate environmental reviews and benefit-cost analyses. FEMA concurs that it is FEMA's responsibility to develop the environmental documentation, in compliance with the National Environmental Protection Act (NEPA). However, FEMA's position is that the State is responsible for and is capable of ensuring that all appropriate information necessary to prepare the NEPA documentation is provided with project applications.

Documentation of capability to manage HMGP: One commenter expressed concern regarding how the Enhanced State Mitigation Plan requirement in § 201.5(b)(2)(iii), "[d]emonstration that the State has the capability to effectively manage the HMGP as well as other mitigation grant programs, including a record of the following," would be implemented.

FEMA's response: FEMA recognized that it would be difficult for States to provide documentation of their capability in this section, so FEMA developed a policy that allows the Region and State to work together to complete the documentation for this requirement. This policy appears in the "Multi-Hazard Mitigation Planning Guidance under DMA2000, Part 2 Enhanced State Mitigation Plans, Program Management Capability," which can be found at: *http://www.fema.gov/library.* For the initial Enhanced Plan approval, a State would be evaluated on their capability to effectively manage the HMGP as well as other mitigation grant programs over the previous four quarters. For subsequent plan update approvals, the State would be evaluated based on demonstrated capability for the full 3 years the plan had been in effect.

Private Nonprofit entities: One commenter asked for more clarification regarding the planning requirements for private nonprofit entities (PNPs).

FEMA's response: Private nonprofit (PNP) organizations, especially those that may be eligible applicants for hazard mitigation projects under 44 CFR part 206, should participate in the development of the local mitigation plan. If a PNP has fully participated in the development and review of the local plan, it is not necessary for the PNP to approve/adopt the plan, as long as it is adopted by the local jurisdiction. PNP applicants for HMGP project grants do not need to have an approved multi-hazard mitigation plan in order to receive HMGP project funds. However, FEMA has developed a policy for PNP project applications; in order for the applications to be approved, the jurisdiction in which the project is located should have an approved plan, and the project must be consistent with the plan's goals and objectives. For FEMA's PDM program, PNPs are not eligible subapplicants, but an eligible local government could apply for a grant to mitigate a PNP facility.

Rural Electric Cooperatives: One commenter wrote that a discrepancy exists regarding rural electric cooperatives. The commenter wrote that public power States with electrical services provided by districts administered by elected officials cover multiple local jurisdictions. These types of cooperatives do not conform to the definition of local jurisdictions and potentially multiple districts would have to be included in every local plan to qualify for future funding. This problem must be addressed in the rule.

FEMA's response: Multi-jurisdictional utility PNPs, including Rural Electric Cooperatives (RECs), which sometimes span several counties, are eligible subapplicants for assistance under HMGP. Their infrastructure often sustains damage from severe snow and ice storms, and they frequently seek HMGP funding after disaster declarations from these storms to mitigate future similar losses. RECs are

treated as PNPs for the purposes of disaster assistance provided by FEMA under the Stafford Act. They are not considered local governments. This distinction is important, because current regulations provide only for local governments, not PNPs, to meet the planning requirement by submitting a local mitigation plan (LMP) to FEMA. For PNPs such as RECs or other multi-jurisdictional utilities, FEMA is identifying two ways in which RECs may meet the mitigation planning requirements to ensure that projects funded by HMGP are consistent with the mitigation strategies of the State, Tribal, and/or local jurisdiction in which the project is located: the local jurisdiction(s) within which the REC mitigation project is located must have FEMA approved LMPs, or the FEMA approved State Mitigation Plan must address RECs. Further guidance is available on this topic on FEMA's Web site at *http://www.fema.gov.*

Small and impoverished communities: One commenter wrote that FEMA should identify criteria it will use to determine if a State identified community qualifies as "small and impoverished."

FEMA's response: The term "small and impoverished communities" is defined in § 201.2. This definition combines the term in section 203 of the Stafford Act, as amended by the Disaster Mitigation Act of 2000, with criteria for "economically disadvantaged" communities as used by the U.S. Environmental Protection Agency under their National Watershed Initiative. Communities can compare their per capita income to the Bureau of Economic Analysis's per capita income for the U.S. as a whole, issued annually; local unemployment data can be compared with the national unemployment rate according to the U.S. Bureau of Labor Statistics, also issued annually. Further guidance on FEMA's criteria for determining small and impoverished communities can be found on pages 1–10 of the FY 2007 Pre-Disaster Mitigation Program Guidance, which can be found at *http://www.fema.gov/library/viewRecord.do?id=2095.*

State authority: Two commenters wrote that FEMA was taking away the State's authority to administer and manage mitigation programs. The commenters wrote that States should be able to approve local mitigation plans and prioritize mitigation funding decisions.

FEMA's response: FEMA believes it is important to establish a national standard for local mitigation plans and to ensure that local jurisdictions are being evaluated based on the same criteria across the Nation. States may introduce additional criteria for their localities, but FEMA may only enforce the requirements of this rule. FEMA has worked to establish a solid baseline for mitigation plans, especially at the local level, and FEMA continues to work to ensure that plans are being evaluated in a fair and consistent manner. FEMA believes that the planning process supports the State's authority to administer the grant programs. By engaging in State-established planning processes, funding decisions can be made based on State-developed mitigation strategies.

Listening session: One commenter wrote and questioned the value of listening sessions that were held to gather comments and suggestions on implementing the planning requirements.

FEMA's response: The intent of the listening sessions was to gain input at an early stage from State and local officials, as well as other Federal agencies, for FEMA to consider as it began to develop regulations to implement the planning requirements. Much of the information generated by the listening session was very useful to FEMA in developing these regulations.

Definition of local government: One commenter wrote to request the word "community" be used rather than "jurisdiction" regarding the terminology used to discuss the local entity developing the local level plan.

FEMA's response: FEMA uses the term "jurisdiction" rather than "community" since the term "jurisdiction" is broader than the term "community." A jurisdiction could be a county, city, township, parish, or other local entity. Furthermore, within FEMA, the term "community" is closely linked to the local entity that implements the National Flood Insurance Program.

Local plan eligibility: One commenter wrote that local governments should be able to receive assistance if the local jurisdiction has an approved plan, even if the State does not have an approved plan.

FEMA's response: The State is responsible for administering FEMA's programs. The requirement for a State plan as a condition for local governments to receive non-emergency disaster assistance was originally established through section 409 of the Stafford Act (42 U.S.C. 5176). However, section 409 was repealed by the Disaster Mitigation Act of 2000. In addition, every State has met the planning deadline thus far, and FEMA is confident that States will continue to meet the planning deadlines, thus ensuring that local plans can be approved.

Availability of post-disaster assistance: Two commenters wrote to ask how post-disaster assistance would be affected by the lack of an approved State Mitigation Plan by the established deadline.

FEMA's response: The post-disaster assistance that would be withheld by the lack of an approved State Mitigation Plan includes Public Assistance, categories C–G, HMGP, and Fire Management Assistance. As stated above, however, every State has thus far met the planning deadlines, so no post-disaster assistance has been withheld due to a State's lack of an established State plan.

State planning: One commenter asked what the purpose of the State mitigation planning process is, how the term "effectiveness" will be measured, how the "factual basis" for proposed activities will be established, how State laws should be evaluated, and stated that the requirement that the plan contain an overview of "all natural hazards" that can affect the State is too comprehensive.

FEMA's response: FEMA's approach to the planning process is to establish a mechanism for State and local governments to make informed decisions regarding their risk reduction activities rather than creating a prescriptive list of requirements. Section 201.4(a) describes the purpose of the State Mitigation Plan: "[t]he mitigation plan is the demonstration of the State's commitment to reduce risks from natural hazards and serves as a guide for State decision makers as they commit resources to reducing the effects of natural hazards." FEMA looks to the State to establish baselines by which the State will measure the effectiveness of the programs and activities that it has identified that reduce its risks. FEMA is evaluating the effectiveness of plans based on how well the States document the planning process. The requirement regarding the "factual basis" for activities means that the State should be developing its mitigation strategy based on the facts (risks and vulnerabilities) established in its risk assessment. State laws would be evaluated based on the criteria established by the State to do so. Regarding the requirement that the plan contain overviews of all natural hazards, FEMA requires the State to *identify* all natural hazards that can affect the State, but only to *evaluate* those that pose the greatest risk (as determined by the State). This distinction ensures that natural hazards are not overlooked and can assist in future evaluations of the

State's risk, by summarizing the process used to conduct the risk assessment.

Generic plans: One commenter wrote that the required elements of a mitigation plan, such as listing facilities located in hazard areas or estimating the potential dollar losses to vulnerable structures, may produce generic plans or lists that are simply trying to comply with specifications rather than truly reducing risk.

FEMA's response: The type of information indicated above is essential to developing a thorough risk assessment. It is not FEMA's intent to require plans that merely list information, but, rather, have States, Indian tribes, and local jurisdictions carefully analyze information to better establish their risks and vulnerabilities. FEMA will continue to provide guidance regarding the level of detail necessary in the planning process, and to ensure that the process remains relevant to those who develop plans.

Public Assistance: Two commenters wrote that there should be a link between the mitigation plan and mitigation activities that might be funded through FEMA's Public Assistance program.

FEMA's response: FEMA concurs with these comments, and continues to coordinate within the agency to ensure that our programs and requirements are implemented as consistently as possible.

Link between State and local plans: Four comments requested clarification of the requirement that State Mitigation Plans be linked to local mitigation plans.

FEMA's response: Section 201.4(c)(4) requires that State Mitigation Plans describe the processes for incorporating local planning efforts into the statewide plan and prioritizing assistance to local jurisdictions. The intent of this section is to ensure that the State mitigation strategies and priorities can be evaluated and incorporated into the local mitigation plans, as appropriate. In addition, risk assessment and other data used in the development of the State plan can be used by local jurisdictions developing their plans, and more site specific data developed in the local mitigation plans may be useful to the State as it progresses in the development of any updated State Mitigation Plans. When the State plans were originally prepared under this regulation, there were few local plans that met FEMA's planning requirement under part 201. Therefore, States had limited local information on which to base their plans. Since then, many local plans have been approved and adopted, providing States with the opportunity to better coordinate with local jurisdictions.

Types of resources for Local Mitigation Planning: Two commenters requested additional information regarding the types of resources that are to be used to obtain information and data for the risk assessment and mitigation strategy in local mitigation plans.

FEMA's response: The information used to develop the local mitigation plans will be driven by local needs, State priorities, and the availability of information and data. Our guidance has been for jurisdictions to do a reasonable search for risk assessment information, to use the "best available data" for the analysis, and to indicate how any lack of information or data will be addressed (if at all) in future plan updates. The mitigation strategy should be vetted through the process established by the local mitigation planning team, which should include a public involvement process.

Use of HMGP Planning Funds: One commenter asked whether the 7 percent HMGP planning funding can be used for plan amendments at the local level.

FEMA's response: HMGP planning funds can be used to update or amend mitigation plans.

Privacy concerns: One comment stated that while State and local mitigation plans should identify factors that will be considered when developing specific projects, the plan should not be required to identify specific projects or properties, because doing so could affect privacy concerns and the perceived impact on land values.

FEMA's response: FEMA agrees that specific property addresses should not be included in the plan; however, it may be appropriate to identify project areas for certain risk mitigation activities. For example, as part of a mitigation strategy, a list of properties or areas being considered for acquisition should be prepared, but the specifics regarding property addresses should remain within project applications and not in the plan document itself.

Definition of mitigation: Two commenters wrote that the term "sustained" must be clarified to avoid confusion as to what specifically is appropriately termed hazard mitigation and what will be allowed for funding under FEMA programs. The commenters also noted that the term is at odds with the definition found in § 206.2(14).

FEMA's response: As the commenters note, § 206.2(14)'s definition of "Hazard Mitigation" is any cost-effective measure which will reduce the potential for damage to a facility from a disaster event, while § 201.2's definition of "Hazard Mitigation" is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. The difference between the part 201 and part 206 definitions of hazard mitigation is that "sustained" is related to mitigation planning under part 201, and "cost-effective measures" is related to grant activities under part 206. The definition for hazard mitigation found in part 201 is meant to allow State, tribal, and local officials latitude to evaluate a wide range of options that might reduce risk; the term "sustained" was added to the definition in part 201 to make clear that mitigation activities should be a continuous undertaking, and is consistent with the long-term explanation of hazard mitigation projects in part 206.

Definition of local government: One commenter wrote that the definition of local government was too broad, covering subdivisions of political jurisdictions, and that it is important to look at the community as a whole.

FEMA's response: FEMA understands the commenter's concern. However, section 102 of the Stafford Act (42 U.S.C. 5122) contains a definition for "local government," and this is the definition that FEMA closely follows. FEMA agrees that it is important to look at the whole community. FEMA developed guidance titled "Multi-Jurisdictional Mitigation Planning," (FEMA 386–8), which assists jurisdictions in developing plans that can look at the whole community. A plan developed for a larger community can be adopted by sub-jurisdictions (as long as those sub-jurisdictions participated in the process), which ensures a sub-jurisdiction's eligibility for mitigation grant projects.

Assistance affected by lack of plan: One commenter wrote that §§ 201.4(a) and 201.6(a)(1) are inconsistent with each other, as the former eliminates eligibility for all assistance other than emergency measures for all local governments in a State, if the State fails to secure approval of a plan, while the latter only eliminates eligibility for funding if local entities fail to complete a plan. Since the State is dependent upon local mitigation planning efforts for data, the two sections should be consistent.

FEMA's response: The State Mitigation Plan is required in order for non-emergency disaster assistance, as well as mitigation grants, to be made available throughout the State. The local mitigation plan is required in order to receive mitigation project grants. Other

non-emergency assistance is not affected by the lack of a local mitigation plan. FEMA recognizes that the initial State planning efforts will be limited by the lack of local mitigation plans, but updated State plans will be able to incorporate local level data as it becomes available.

"Ongoing State planning efforts:" One commenter asked what is meant by "ongoing state planning efforts" in § 201.4(b).

FEMA's response: Section 201.4(b) states that an effective planning process is essential in developing and maintaining a good standard State Mitigation Plan. "Ongoing state planning efforts" means that the process should include continued coordination to the extent possible with other State agencies, appropriate Federal agencies, and additional interested groups. It is up to the State to determine what other planning processes might be affected by the mitigation planning process.

Vulnerability Assessments: One comment stated § 201.4(c)(2)(ii) would require the States to conduct vulnerability assessments based on local assessments of hazards and risk, but that it is not clear if the States would have to abandon their existing Hazard and Vulnerability Analysis methodology. Also, these risk analyses would have to be based on local participation, which cannot be mandated in many States.

FEMA's response: FEMA does not intend for any State to abandon their existing Hazard and Vulnerability Analysis methodologies. The State Mitigation Plans should document the process used to gather and analyze the data, and explain the methodology in determining vulnerability assessments. This documentation of previous hazard events and potential future hazard events will ensure that current and future users of the mitigation plan will be able to understand the basis for the decisions made in the plan. FEMA agrees that local participation in the planning process cannot be mandated, but where there are local plans, the available data and information should be used.

State risk assessment: One commenter questioned the level of detail required in the State risk assessment. The commenter stated that requiring the State Hazard Mitigation Plan to contain the potential losses to each structure, facility, or infrastructure identified as a risk by local governments for being located in an identified hazard area is redundant of the local mandates.

FEMA's response: Section 201.4 requires the State plan to provide an overview and analysis of potential losses to identified vulnerable structures based on estimates provided in local risk assessments. The intent is to look more broadly on risk and vulnerability than can be done at a local level. The local mitigation plans provide the necessary detail, but the State Mitigation Plan is where the data can be evaluated and summarized to determine overall vulnerabilities and to identify areas that may need additional assistance.

State mitigation strategy: One commenter questioned the level of detail required in the mitigation strategy section of the State Mitigation Plan. The commenter wrote that States may not be able to properly represent local actions and projects with respect to the elements in § 201.4(c)(3)(iii) because it would be quite costly to fully incorporate data for every local plan.

FEMA's response: Section 201.4 (c)(3)(iii) is based on the risk assessment portion of the plan and includes actions that have been identified through the planning process. These actions may be statewide in nature (such as adopting statewide building codes or establishing a multi-agency grant evaluation panel). It is not intended that every activity or action identified in local mitigation plans would be specifically addressed in the State plan. The State plan, through the description of the planning process, the establishment of the mitigation strategy, and the plan maintenance process, will dictate how future plan updates will be evaluated. FEMA will look at what was completed, deleted, or deferred from the plan and the justification for the process.

Intense development pressure: One comment asked for clarification of the term "intense development pressure."

FEMA's response: FEMA believes that States can reasonably interpret and apply the term "intense development pressure."

Prioritizing HMGP funds: One commenter requested that FEMA should consider allowing each State to prioritize the use of HMGP funds generated by a disaster based on whether the community has a multi-hazard plan.

FEMA's response: FEMA agrees with this comment. Program regulations, policy, and guidance allow States to prioritize the use of HMGP funds.

Mandatory planning: One commenter wrote that mitigation planning is a mandatory requirement, yet there is no guaranteed funding.

FEMA's response: The mitigation planning requirement is not an independently enforced, mandatory requirement. Rather, mitigation planning is a condition of eligibility for receiving certain assistance under the Stafford Act. State mitigation planning can result in reduced disaster losses. While there is no guaranteed funding for mitigation planning, FEMA has provided over $157 million in mitigation planning grants to States, Indian tribal governments, and local jurisdictions from February 2002 through March 2007. Projects are funded based on a thorough understanding of the local risks and vulnerabilities and the mitigation strategy outlined in the local mitigation plan.

Executive Order 12898: One comment stated that the rule substantially affects human health or the environment under Executive Order 12898 by creating a planning requirement that will be difficult for large urban cities and rural poor areas to meet, thereby denying those jurisdictions the opportunity to apply for HMGP project grants.

FEMA's response: FEMA does not agree that the rule has a disproportionate, adverse impact on minority or low income populations or on large urban cities. After the first interim rule, FEMA recognized that insufficient time was originally allowed to prepare the plans, and issued another IR on October 1, 2002 that extended the planning requirement for local plans under the HMGP from November 1, 2003 to November 1, 2004. Currently, over 14,000 jurisdictions now have approved local level mitigation plans, covering over 50 percent of the United States population. Large urban cities generally have their own planning and emergency management departments with staff who can carry out the work related to preparing the plan and/or direct the efforts of contractors. FEMA also recognized the potential administrative burden on jurisdictions that did not budget for the costs associated with the development of mitigation planning, and FEMA has provided funding opportunities for jurisdictions (through planning grants) to allow projects to proceed in minority or low income populations. This eases the potential burden on these jurisdictions while maintaining the statutory intent. Through these programs, FEMA has approved over 1,400 planning grants between February 2002 and March 2007 with obligated Federal grants of over $157,000,000.

In addition, § 201.6(a)(3) allows for an exception, in extraordinary circumstances, for a jurisdiction to receive an HMGP project grant without an approved plan. In this circumstance, the jurisdiction must agree to develop a plan within 12 months of receiving the project grant. This exception allows small or impoverished communities or

jurisdictions with limited resources the opportunity to apply for project funds, while meeting the planning requirement. This exception is available after a disaster, which also allows FEMA to provide resources to jurisdictions that need to complete their mitigation plan. These resources can include training and workshops, new data leading to the risk assessment, assistance in holding and facilitating community meetings, as well as the grant funding for plan development. This allows such potentially disadvantaged communities to receive HMGP project grants concurrent with the development of their mitigation plan, and FEMA will work with those jurisdictions to assist them in meeting the planning requirement. Therefore, FEMA has implemented the planning requirement in a manner that addresses any potential disproportionate adverse effect on minority or low income populations by providing technical assistance and funding opportunities to meet the requirement, as well as exceptions allowing project grants to proceed even where the regular planning requirement is not yet met.

45-day FEMA review: One comment wrote to express concern with the regulatory language that FEMA will review mitigation plans within 45 days, "whenever possible," yet State, tribal, and local governments are required to meet firm deadlines.

FEMA's response: While FEMA makes every effort to review all plans in a timely manner, it must have the flexibility to have an extended review period beyond 45 days, if necessary. FEMA cannot control for disaster activity, field deployments, or large numbers of plans being submitted within a short timeframe, but is not aware of any programs or project grants being denied due to the lack of a plan being approved. The FEMA Regional offices have established draft plan review procedures that expedite the review and approval of final plans.

Multi-jurisdictional plans: One comment requested additional information regarding criteria for multi-jurisdictional planning.

FEMA's response: FEMA has developed a guidance document titled "Multi-Jurisdictional Mitigation Planning" (FEMA 386–8). This document contains all of the guidance developed to date regarding multi-jurisdictional planning, and provides direction to those considering this type of planning process. This document can be obtained through any FEMA Regional office or on the FEMA Web site at *http://www.fema.gov/plan/mitplanning/index/shtm.*

Disaster funding restrictions and planning: One commenter wrote that the Disaster Mitigation Act of 2000 did not intend to restrict disaster assistance to individuals due to the lack of a mitigation plan, and that failure to complete a plan should result in the denial of the increased mitigation dollars, not the entire mitigation grant program.

FEMA's response: FEMA agrees that assistance to individuals and other emergency disaster assistance should not be impacted by the lack of a State Mitigation Plan, and have provided for this exception in the regulation in § 201.3(c)(1). However, regarding non-emergency disaster assistance, State Mitigation Plans are critical to the disaster recovery process. The State establishes the framework for the recovery regarding how to address specific issues arising from the disaster, how to address building codes in the recovery effort, and to set priorities for mitigation activities. The requirement for this plan is based on over 30 years of experience that State mitigation planning can result in reduced disaster losses. Since State-level mitigation plans have been required for over 30 years, and section 322 of the Stafford Act is intended to increase mitigation activities, FEMA allows for Enhanced Plans, which make States eligible for the increased share of HMGP funding.

Vulnerability information in State Plans: One commenter wrote that every structure, infrastructure, and critical facility is vulnerable to the risk of disasters and the estimated total loss is potentially the total assessed value of all properties in a jurisdiction, excluding land; therefore, the requirement to analyze these losses as indicated in § 201.4(c)(2)(iii) is a meaningless and burdensome task.

FEMA's response: Section 201.4 requires the State to provide an overview and analysis of potential losses in order to develop a strategy for reducing its risk and vulnerability. If an entire State is subject to losses from disasters, it would be important to assess that risk and determine the best approach to reducing vulnerabilities. FEMA has designed the planning criteria so that each State can develop its own approach to determining how to mitigate its risks.

Publish as a proposed regulation: One comment stated that the regulation should be published as a proposed regulation to allow adequate consideration of the comments from State and local governments.

FEMA's response: As FEMA noted in the interim rule, these regulations needed to be effective in order for State and local governments to be eligible for and to receive mitigation funds as soon as possible. The public benefit of an interim rule is to assist States and communities assess their risks and identify activities to strengthen the larger community in order to be less susceptible to disasters. For these reasons, delaying the effective date of this rule would not have furthered the public interest. Furthermore, prior to this rulemaking, FEMA hosted a meeting where interested parties provided comments and suggestions on how FEMA could implement planning requirements. FEMA has also considered comments provided by States and local governments during the rulemaking process in implementing the planning requirements. The agency will continue to assess the utility and practicality of the requirements based on the experiences of States, tribes, and local governments.

Mitigation under the Public Assistance Program: One comment requested that FEMA change § 206.226(c) so that the hazard mitigation measures identified in a FEMA approved local hazard mitigation plan and associated with facilities and sites which subsequently suffer disaster related damage in a declared disaster are automatically incorporated into the entity's public assistance hazard mitigation proposal on the Project Worksheet as an eligible item.

FEMA's response: Activities funded under § 206.226 must meet the basic eligibility requirements of the Public Assistance program. While mitigation measures identified in the approved mitigation plan may be worthwhile actions, they may not meet the requirements of the Public Assistance program, and would not be eligible.

New language for the regulation: A number of comments proposed specific language revisions. One commenter wrote that the following language should be added to the FEMA responsibilities set out in § 201.3(b)(2), "* * * and assist the [S]tate in the identification of the appropriate mitigation actions that a [S]tate or locality must take in order to have a measurable impact on reducing or avoiding the adverse effects of a specific hazard or hazardous situation" because requiring the State to coordinate all State and local activities exceeds the State's capability and authority with regard to local control. Another commenter wrote that § 201.3(c) be revised to read "[t]he key responsibilities of the State are to coordinate all State and regional activities relating to hazard evaluation and mitigation, and to the extent

possible, local activities relating to hazard evaluation and mitigation." One commenter wrote that § 201.3(c)(4) should be removed as it is redundant to Subpart N, and that § 201.4(c)(4)(iii) should be stricken as it conflicts with § 201.4(c)(3)(iii). One comment suggested that FEMA should add the following to § 206.401: "* * * except where the local or [S]tate entity has adopted, in the post disaster period, new codes, standards, and ordinances that decrease risk to facilities from natural and manmade hazards." One comment asked that the language in § 206.432(b)(1) and (2) replace "not to exceed" with "equal to."

FEMA's response: Regarding the request to add "* * * and assist the [S]tate in the identification of the appropriate mitigation actions that a [S]tate or locality must take in order to have a measurable impact on reducing or avoiding the adverse effects of a specific hazard or hazardous situation" to FEMA's responsibilities; FEMA believes that the existing description requiring FEMA to provide technical assistance covers this type of activity, if necessary, but does not require the provision of the assistance in every situation, where it might not be required. In addition, FEMA believes that State and local jurisdictions often have a better understanding than FEMA of what is an appropriate mitigation action given the local conditions.

Regarding the request to revise § 201.3(c) to read "[t]he key responsibilities of the State are to coordinate all State and regional activities relating to hazard evaluation and mitigation, and to the extent possible, local activities relating to hazard evaluation and mitigation;" FEMA understands that some States lack the authority to mandate local actions, but FEMA believes that this section can be (and is) interpreted broadly enough to accommodate this situation. The proposed language change emphasizes regional over local activities, and FEMA believes that if the State coordinates regional activities, it has met the requirements of this section, given the broad interpretation of local activities.

Regarding the comment that § 201.3(c)(4) should be removed as it is redundant to Subpart N; FEMA believes that it is important to identify a potential source of funding for planning within the planning regulation, even if it addressed in Subpart N.

Regarding the comment that § 201.4(c)(4)(iii) should be stricken as it conflicts with § 201.4(c)(3)(iii); FEMA believes that while the two sections are similar, they are not identical and both need to be retained. Under the Mitigation Strategy (§ 201.4(c)(3)(iii)), the intent is to identify a range of mitigation actions and activities that are prioritized based on a variety of criteria and under the Coordination of Local Mitigation Planning (§ 201.4(c)(4)(iii)), the requirement is to prioritize communities who might most benefit from either planning or project grants (*i.e.* communities with high risk or multiple repetitive loss properties).

Regarding the comment that FEMA add the following to § 206.401: "* * * except where the local or [S]tate entity has adopted, in the post disaster period, new codes, standards, and ordinances that decrease risk to facilities from natural and manmade hazards;" FEMA disagrees with this change since it would conflict with regulations guiding the restoration of damaged facilities under § 206.226(d), and would substitute a very broad qualitative criterion of codes in general, as opposed to the five very specific criteria in the current regulation, which specifically requires that codes must be written, adopted, universally applied, and have demonstrated evidence of prior enforcement.

Regarding the comment that that the language in § 206.432(b)(1) and (2) replace "not to exceed" with "equal to;" it would not be appropriate to lock in the HMGP funding level by replacing "not to exceed" with "equal to" since Congress has already demonstrated a willingness to modify the HMGP funding formula.

In the future, FEMA intends to engage in additional discussions with interested groups on how to improve the planning process, which may include changes to the regulatory language.

Hazard Mitigation Surveys: One comment requested that FEMA restore the Hazard Mitigation Early Implementation Strategy, the Hazard Mitigation Surveys, and the Interagency Hazard Mitigation Survey requirements.

FEMA's response: FEMA will consider restoring these post-disaster surveys as part of the ongoing implementation of the Hazard Mitigation Grant Program.

Comments on the Second IR

Support for the extension of the date: One comment encouraged the interim rule to become final, and supported the extension of the date by which State and local governments must develop mitigation plans as a condition of grant assistance to November 1, 2004.

FEMA's response: FEMA agrees and had already extended the date by which State and local governments must develop mitigation plans.

Plan updates: One commenter asked about the process to bring existing mitigation plans into compliance with the regulations at part 201, and how plans are to be updated when they expire.

FEMA's response: Plans approved prior to the implementation of part 201 must be reevaluated and re-approved by FEMA to ensure that they meet the planning requirements identified in part 201. FEMA has also provided guidance through FEMA's "Multi-Hazard Mitigation Planning Guidance under DMA2000" on how plans developed under the FMA program can be upgraded to meet the regulations at part 201. This document may be obtained through any Regional office or from the FEMA Web site at *http://www.fema.gov/plan/mitplanning/index.shtm*. In addition, FEMA is in the process of issuing specific guidance on how to update the State, tribal, and local plans when they expire.

Disaster costs and mitigation planning: One commenter asked that FEMA provide each State and community with a detailed analysis of prior disaster assistance outlays by all Federal agencies, an integrated review of all structural projects in the community both as built and proposed, and a legal review regarding the authority of the planning process.

FEMA's response: FEMA will work with State, tribal and local jurisdictions to ensure that they have information generated by FEMA regarding disaster outlays, and has developed guidance through its "Multi-Hazard Mitigation Planning Guidance under DMA2000" on how to obtain additional data. This document may be obtained through any Regional office or from the FEMA Web site at *http://www.fema.gov/plan/mitplanning/index.shtm*. Most State, tribal, and local jurisdictions have the authority to develop and implement plans. FEMA encourages the mitigation planning process to be integrated across jurisdictions to ensure that existing data and information is shared and that there is no duplication of effort in gathering and analyzing data.

III. Regulatory Requirements

A. Executive Order 12866, Regulatory Planning and Review

FEMA has prepared and reviewed this rule under the provisions of Executive Order 12866, Regulatory Planning and Review. Under Executive Order 12866, a significant regulatory action is subject to the Office of Management and Budget (OMB) review and the requirements of the Executive Order. OMB has determined that this rule is not a

significant regulatory action. OMB has not reviewed this rule. The Executive Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The purpose of this rule is to implement section 322 of the Stafford Act, which addresses mitigation planning at the State, local and tribal levels, identifies new local planning requirements, allows HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to States that develop a comprehensive, Enhanced Mitigation Plan. The rule clarifies the requirements for State Mitigation Plans, identifies local mitigation planning requirements before approval of project grants, and requires our approval of an Enhanced State Mitigation Plan as a condition for increased mitigation funding. The rule also implements section 323 of the Stafford Act, which requires that repairs or construction funded by disaster loans or grants must comply with applicable standards and safe land use and construction practices.

FEMA calculates the annual economic impact of the interim rules that this final rule finalizes to be approximately $46,000,000. As this final rule makes no significant change to these interim rules, FEMA is adopting the economic impact estimate of these interim rules as the economic impact of this final rule. The following paragraphs provide a more detailed explanation of the economic impact of this rulemaking.

This rule modifies the State Mitigation planning requirement. Currently, all 50 States, the District of Columbia, 7 territories, and 33 Indian tribal governments have approved State level mitigation plans. FEMA estimates that it takes an average of 2,080 hours for States to prepare State Mitigation Plans to comply with this regulation. Using wage rates from the May 2004, U.S. Department of Labor, Bureau of Labor Statistics (BLS), Standard Occupation Classification (SOC) System, the median hourly wage for urban and regional planners (SOC Code Number 19–3051) is $26.31 per hour. Adding 30 percent to the BLS figure to account for benefits, FEMA has calculated the burden using a wage rate of $34.20 per hour. Since there are a total of 91 State level plans, it is estimated that the one time cost of compliance to submit the State Mitigation plans is $6,473,376. This figure is calculated as follows: ((91 × 2,080) × $34.20).

These State Mitigation Plans must be updated every 3 years. Since there are a total of 91 State level plans, the cost estimate will assume that, on average, there will be 31 updated plans each year. All States now have existing State Mitigation Plans, and the only continuing requirement is for plan updates. FEMA estimates that it would take an average of 320 hours for States to prepare plan updates. Using wage rates from the May 2004, U.S. Department of Labor, BLS, SOC System, the median hourly wage for urban and regional planners (SOC Code Number 19–3051) is $26.31 per hour. Adding 30 percent to the BLS figure to account for benefits, FEMA has calculated the burden using a wage rate of $34.20 per hour. Therefore, it is estimated that the annual cost of compliance to submit the updates to State Mitigation Plans is $339,264. This figure is calculated as follows: ((31 × 320) × $34.20).

This rule also allows States to submit an Enhanced State Mitigation Plan, should they wish to increase the amount of HMGP funds they receive from 15 percent to 20 percent. States may now opt to create an Enhanced Mitigation Plan to receive additional funding. As of March 2007, there were 11 States with Enhanced Mitigation Plans. Two were approved in 2004, four in 2005, three in 2006, and two in 2007. These plans must be renewed every 3 years. As of July 2, 2007, there were only nine approved plans as two States opted not to renew their Enhanced Mitigation Plan.

Once a State has a FEMA-approved Enhanced Mitigation Plan, its only remaining requirement is to review and update it once every 3 years. Using the data from the 5 years since the first interim rule was published the average number of plans submitted in a year is three. The cost estimates will assume three new and three renewal plans submitted to calculate the annual burden.

Again, all States already have existing State Mitigation Plans. FEMA estimates that it would take an average of 320 hours for States to update their Enhanced Mitigation Plan, and an additional 160 hours for States to upgrade an existing Standard State Mitigation Plan to an Enhanced Plan. Since FEMA is encouraging States to update their plans when preparing an Enhanced Plan, the total hours for developing "new Enhanced Mitigation plans" is 480 hours (160 hours to upgrade from Standard to Enhanced plus 320 hours to update the plan). Using wage rates from the May 2004, U.S. Department of Labor, BLS, SOC System, the median hourly wage for urban and regional planners (SOC Code Number 19–3051) is $26.31 per hour. Adding 30 percent to the BLS figure to account for benefits, FEMA has calculated the burden using a wage rate of $34.20 per hour. Therefore, it is estimated that the annual cost of compliance to voluntarily submit an Enhanced Mitigation Plan is $82,080. This figure is calculated as follows: ((3 × 480) × $34.20) + ((3 × 320) × $34.20).

After its Enhanced Mitigation Plan is approved, pursuant to § 206.432(b), a State is then able to receive an amount equal to 20 percent of the total estimated Federal assistance (excluding administrative costs) provided for a major disaster declaration, instead of 15 percent. The table below reflects all States with Enhanced Plans, each disaster that has been declared in that State since its Enhanced plan was approved, and reflects the amount of HMGP funds it was eligible for. Each State was given funds at the 20 percent rate, however, the 15 percent rate is provided to determine the economic benefit (transfer) received from having the approved Enhanced Plan. In some cases, these are not final lock-in figures, but it is the most accurate data that FEMA has as of August 2007.

TABLE: HMGP FUND ELIGIBILITY FOR STATES WITH ENHANCED PLANS 2004—AUGUST 2007

State	Enhanced plan approved date	Disaster dates declared after enhanced plan	Declaration No.	20% Amount	15% Amount	Difference
WA	July 1, 2004	May 17, 2006	1641	$989,290.00	$741,967.50	$247,322.50.
		December 12, 2006	1671	6,106,627.00	4,579,970.25	1,526,656.75.
		February 14, 2007	1682	7,209,865.00	5,407,398.75	1,802,466.25.
MO	July 2, 2004	March 16, 2006	1631	1,290,726.00	968,044.50	322,681.50.
		April 5, 2006	1635	4,210,525.00	3,157,893.75	1,052,631.25.
		November 2, 2006	1667	128,676.00	96,507.00	32,169.00.
		December 29, 2006	1673	825,000.00	618,750.00	206,250.00.
		January 15, 2007	1676	16,549,000.00	12,411,750.00	4,137,250.00.
		June 11, 2007	1708	Data Unavailable	Data Unavailable	Data Unavailable.
OK	March 18, 2005	January 10, 2006	1623	2,138,136.00	1,603,602.00	534,534.00.
		April 13, 2006	1637	244,990.00	183,742.50	61,247.50.
		February 1, 2007	1677	746,250.00	559,687.50	186,562.50.
		February 1, 2007	1678	7,592,175.00	5,694,131.25	1,898,043.75.
		June 7, 2007	1707	Data Unavailable	Data Unavailable	Data Unavailable.
OH	May 17, 2005	July 2, 2006	1651	1,798,019.00	1,348,514.25	449,504.75.
		August 1, 2006	1656	3,411,736.00	2,558,802.00	852,934.00.
MD	August 26, 2005	July 2, 2006	1652	1,274,514.00	955,885.50	318,628.50.
WI	December 14, 2005	None	NA	NA	NA	NA.
OR	March 7, 2006	March 20, 2006	1632	1,511,700.00	1,133,775.00	377,925.00.
		December 29, 2006	1672	921,824.00	691,368.00	230,456.00.
		February 22, 2007	1683	687,362.00	515,521.50	171,840.50.
FL	August 22, 2006	February 3, 2007	1679	4,044,445.00	3,033,333.75	1,011,111.25.
		February 8, 2007	1680	263,916.00	197,937.00	65,979.00.
PA	August 23, 2006	February 23, 2007	1684	1,822,812.00	1,367,109.00	455,703.00.
IA	January 3, 2007	March 14, 2007	1688	Data Unavailable	Data Unavailable	Data Unavailable.
		May 25, 2007	1705	Data Unavailable	Data Unavailable	Data Unavailable.
VA	March 14, 2007	None	NA	NA	NA	NA.
Totals				63,767,588.00	47,825,691.00	15,941,897.00.

These disasters range in date from March 16, 2006 to Feb. 23, 2007, which is roughly one year. A total of $63,767,588 in HMGP funds were granted at the 20 percent rate due to the fact that these States had approved Enhanced Mitigation Plans. This 5 percent increase translates to an additional $15,941,897 in funds distributed as a result of this regulation.

This rule also requires that after November 1, 2004, a local mitigation plan must be approved in order to receive HMGP project grants. As of June 2007, over 2,500 local mitigation plans covering over 13,000 jurisdictions have been approved. FEMA receives and approves approximately 280 local plans per year. The requirement of a local plan does not affect the amount of HMGP funds that were available to the jurisdiction before this regulation. The economic impact results from the cost to create the plan. If a local jurisdiction is covered by a plan, it will receive the same amount of HMGP project funds it would have received before this requirement was created.

From experience over the past 5 years, FEMA expects approximately 280 new local plans to be developed annually. Once a local jurisdiction has a FEMA-approved Mitigation plan, they are required to review and update it once every 5 years. FEMA averages 280 plan updates per year. FEMA estimates that it would take an average of 2,080 hours to develop new plans, and 320 hours for plan updates, plus 8 hours for the State to review the local plan. Using wage rates from the May 2004, U.S. Department of Labor, BLS, SOC System, the median hourly wage for urban and regional planners (SOC Code Number 19–3051) is $26.31 per hour. Adding 30 percent to the BLS figure to account for benefits, FEMA has calculated the burden using a wage rate of $34.20 per hour. Therefore, it is estimated that the annual cost of compliance is $(((280 \times 2{,}080) + (280 \times (320 + 8)) \times 34.20) = \$23{,}059{,}008$.

Under § 206.434(d), up to 7 percent of the State's HMGP grant may be used to develop State, tribal and/or local mitigation plans. This change does not have any effect on the actual amount of HMGP funds that a State is eligible for, but allows the cost to develop plans described above to be offset by HMGP planning grants. This regulation simply expands the eligible use of HMGP funds to include the development of mitigation plans. States are not required to use the funds for this purpose. Any HMPG funding spent on mitigation planning is accounted for in the analysis above, under each category of planning (Standard State Mitigation Plans, Enhanced State Mitigation Plans, and local mitigation plans). For the reasons stated above, the annual impact of this rule on the economy is approximately $46,000,000. This figure is calculated as follows: ($6,473,376+$339,264+$82,080+$15,941,897+$23,059,008).

B. Regulatory Flexibility Act

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (Pub. L. 104–121, 110 Stat. 857), FEMA is not required to prepare a final regulatory flexibility analysis for this final rule because the agency has not issued a notice of proposed rulemaking prior to this action.

C. National Environmental Policy Act

The National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) (NEPA) implementing regulations governing FEMA activities at § 10.8(d)(2)(ii) categorically exclude the preparation, revision and adoption of regulations from the preparation of an environmental assessment or environmental impact statement, where the rule relates to actions that qualify for categorical exclusions. Mitigation plans to be developed under regulations revised or adopted by this rulemaking

include hazard mitigation measures categorically excluded under § 10.8(d)(2)(iii).

D. Executive Order 12898, Environmental Justice

Under Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (59 FR 7629, published February 16, 1994), FEMA incorporates environmental justice into its policies and programs. The Executive Order requires each Federal agency to conduct its programs, policies, and activities that substantially affect human health or the environment in a manner that ensures that those programs, policies, and activities do not have the effect of excluding persons from participation in programs, denying persons the benefits of programs, or subjecting persons to discrimination because of race, color, or national origin.

FEMA believes that no action under the rule will have a disproportionately high or adverse effect on human health or the environment. This rulemaking implements sections 322 and 323 of the Stafford Act. Section 322 focuses specifically on mitigation planning to identify the natural hazards, risks, and vulnerabilities of areas in States, localities, and tribal areas; development of local mitigation plans; technical assistance to local and tribal governments for mitigation planning; and identifying and prioritizing mitigation actions that the State will support as resources become available. Section 323 requires compliance with applicable codes and standards in repair and construction, and use of safe land use and construction standards. This rulemaking is intended to result in the creation of hazard mitigation plans that will assist communities in planning for hazards, so as to protect human lives and the environment. The Hazard Mitigation Grant Program is available to all States, tribes and local communities regardless of race, color, or national origin. Accordingly, the requirements of Executive Order 12898 do not apply to this rule.

E. Congressional Review of Agency Rulemaking

FEMA has sent this final rule to the Congress and to the Government Accountability Office under the Congressional Review of Agency Rulemaking Act, ("Congressional Review Act"), Public Law 104–121. This rule is not a "major rule" within the meaning of the Congressional Review Act. The rule will not result in a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. It will not have "significant adverse effects" on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises.

F. Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), enacted as Public Law 104–4 on March 22, 1995, requires each Federal agency, to the extent permitted by law, to prepare a written assessment of the effects of any Federal mandate in a proposed or final agency rule that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more (adjusted annually for inflation) in any one year.

This final rule is not an unfunded Federal mandate within the meaning of the UMRA. This final rule would not impose a significant cost or uniquely affect small governments. The final does not have an effect on the private sector of $100 million or more in any 1 year. Any enforceable duties that FEMA imposes are a condition of Federal assistance or a duty arising from participation in a voluntary Federal program.

G. Executive Order 13132, Federalism

Executive Order 13132, entitled "Federalism," (64 FR 43255, published August 10, 1999), sets forth principles and criteria that agencies must adhere to in formulating and implementing policies that have federalism implications; that is, regulations that have substantial direct effects on the States, or on the distribution of power and responsibilities among the various levels of government. Federal agencies must closely examine the statutory authority supporting any action that would limit the policymaking discretion of the States, and to the extent practicable, must consult with State and local officials before implementing any such action.

FEMA has determined that this rule involves no policies that have federalism implications under Executive Order 13132. However, FEMA consulted with State, local and tribal officials in the promulgation of this rulemaking. Furthermore, in order to assist in the development of this rule, FEMA hosted a meeting to allow interested parties an opportunity to provide their perspectives on the legislation and options for implementation of the Stafford Act requirements. Stakeholders who attended the meeting included representatives from the National Emergency Management Association, the Association of State Floodplain Managers, the National Governors' Association, the International Association of Emergency Managers, the National Association of Development Organizations, the American Public Works Association, the National League of Cities, the National Association of Counties, the National Conference of State Legislatures, the International City/County Management Association, and the Bureau of Indian Affairs. FEMA received valuable input from all parties at the meeting which was taken into account in the development of the initial interim rule. In addition, FEMA received comments on the interim rules from 14 State emergency management agencies, 3 organizations, 2 local governments; and 1 independent group.

H. Paperwork Reduction Act

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*), an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the collection of information displays a valid control number. OMB has approved a collection of information entitled "State/Local/Tribal Hazard Mitigation Plans—Section 322 of the Disaster Mitigation Act of 2000" (OMB No. 1660–0062) for the use of information gathered pursuant to this rulemaking. The OMB collection number for this collection is 1660–0062. An emergency extension was filed with OMB on June 18, 2007, and approved on June 25, 2007. The collection is currently set to expire on October 31, 2007. Before the collection expires, FEMA will submit a request for revision to this collection and begin the OMB clearance process for long-term approval by publishing a 60 day request for comments on the revision.

I. Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

FEMA has reviewed this rule under Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, published November 9, 2000). FEMA finds that, while it does have "tribal implications" as defined in Executive Order 13175, it will not have a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.

Despite this determination, FEMA has, and continues to, consult with Indian tribal governments with respect to hazard mitigation. Before FEMA developed the interim rule, the agency met with representatives from State and local governments and the Bureau of Indian Affairs to discuss the new planning requirements of section 322 of the Stafford Act. The same opportunity for comment was offered to all parties. FEMA received valuable input from all attendees, which helped FEMA to develop the interim rule. Also, since FEMA published the interim rule, it has coordinated more directly with Indian tribal governments, and with organizations that represent them. For example, in conjunction with the National Congress of American Indians, FEMA hosted a Tribal Mitigation Conference in October 2002 at the Ak-Chin Indian Community, Arizona. This conference provided FEMA with an opportunity to better understand its responsibilities related to Indian tribal governments and to build a working relationship with many of the Indian tribal representatives. A follow-up conference was held at the Salish Kootenai Community, Montana in August 2003. As a direct result of these conferences, FEMA developed an EMI resident course titled "Mitigation for Tribal Officials." This course provides a direct opportunity for coordination and information sharing between Indian tribal representatives and FEMA, resulting in refinements to FEMA's Indian tribal policy and guidance.

Finally, FEMA believes that planning is critical to successful mitigation at all levels of government. The agency has been working to technically assist all federally-recognized Indian tribal governments regarding the availability of grant funding, training opportunities, as well as program requirements.

List of Subjects

44 CFR Part 201

Administration practice and procedure, Disaster assistance, Grant programs, Reporting and recordkeeping requirements.

44 CFR Part 204

Administration practice and procedure, Fire prevention, Grant programs, Reporting and recordkeeping requirements.

44 CFR Part 206

Administrative practice and procedure, Coastal zone, Community facilities, Disaster assistance, Fire prevention, Grant programs—housing and community development, Housing, Insurance, Intergovernmental relations, Loan programs—housing and community development, Natural resources, Penalties, Reporting and recordkeeping requirements.

■ Accordingly, for the reasons stated in the preamble, the interim rules amending 44 CFR parts 201, 204, and 206 that were published at 67 FR 8844 on February 26, 2002, 67 FR 61512 on October 1, 2002, 68 FR 61368 on October 28, 2003, 69 FR 55094 on September 13, 2004, and the correcting amendment published at 68 FR 63738 on November 10, 2003, are adopted as final with the following changes:

PART 201—MITIGATION PLANNING

■ 1. The authority citation for part 201 is revised to read as follows:

Authority: 42 U.S.C. 5121–5206; 6 U.S.C. 101; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239; 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 2. Revise § 201.4 (c)(2)(ii) to read as follows:

§ 201.4 Standard State Mitigation Plans.

* * * * *

(c) * * *

(2) * * *

(ii) An overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments as well as the State risk assessment. The State shall describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State owned or operated critical facilities located in the identified hazard areas shall also be addressed;

* * * * *

Dated: October 24, 2007.

Harvey E. Johnson, Jr.,

Deputy Administrator/Chief Operating Officer, Federal Emergency Management Agency.

[FR Doc. E7–21264 Filed 10–30–07; 8:45 am]

BILLING CODE 9110–41–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 635

RIN 0648–XD44

Atlantic Highly Migratory Species; Atlantic Bluefin Tuna Fisheries

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Temporary rule; inseason retention limit adjustment.

SUMMARY: NMFS has determined that the Atlantic tunas General category daily Atlantic bluefin tuna (BFT) retention limit should be adjusted for the November and December time periods of the 2007 fishing year and the January period of the 2008 fishing year. NMFS increases the daily BFT retention limits, including on previously scheduled Restricted Fishing Days (RFDs), to provide enhanced commercial fishing opportunities to harvest the established General category quota.

DATES: The effective dates for the adjusted BFT daily retention limits are November 1, 2007, through January 31, 2008.

FOR FURTHER INFORMATION CONTACT: Brad McHale or Sarah McLaughlin, 978–281–9260.

SUPPLEMENTARY INFORMATION: Regulations implemented under the authority of the Atlantic Tunas Convention Act (16 U.S.C. 971 *et seq.*) and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; 16 U.S.C. 1801 *et seq.*) governing the harvest of BFT by persons and vessels subject to U.S. jurisdiction are found at 50 CFR part 635. Section 635.27 subdivides the U.S. BFT quota recommended by the International Commission for the Conservation of Atlantic Tunas (ICCAT) among the various domestic fishing categories, per the allocations established in the Consolidated Highly Migratory Species Fishery Management Plan (Consolidated HMS FMP). The latest (2006) ICCAT recommendation for western Atlantic BFT included a U.S. quota of 1,190.12 mt, effective beginning in 2007, through 2008, and thereafter until changed (i.e., via a new ICCAT recommendation).

The 2007 fishing year began on June 1, 2007, and ends December 31, 2007. NMFS published final specifications on June 18, 2007 (72 FR 33401) and

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

44 CFR Parts 59, 61, 78, 79, 80, 201, and 206

[Docket ID FEMA–2006–0010]

RIN 1660–AA36

Flood Mitigation Grants and Hazard Mitigation Planning

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Final rule.

SUMMARY: The Federal Emergency Management Agency finalizes the interim regulations that implemented the Severe Repetitive Loss program and clarified provisions of the existing Flood Mitigation Assistance program. In addition, this rule finalizes interim requirements for the acquisition of property for open space with mitigation funds and clarifies mitigation planning requirements for Indian Tribal governments. This rule is intended to encourage hazard mitigation, reduce the number of repetitive loss properties, and improve FEMA's mitigation programs.

DATES: This rule is effective October 16, 2009.

FOR FURTHER INFORMATION CONTACT: Cecelia Rosenberg, Mitigation Directorate, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598–3030, (phone) 202–646–3321, (facsimile) 202–646–2719, or (e-mail) *cecelia.rosenberg@dhs.gov.*

SUPPLEMENTARY INFORMATION:

I. Background

On October 31, 2007 (72 FR 61720), the Federal Emergency Management Agency (FEMA) published an Interim Rule (IR). The IR implemented provisions of the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, Public Law 108–264, 118 Stat. 714, found at 42 U.S.C. 4102a, which amended the National Flood Insurance Act of 1968 (NFIA) to provide new programs and incentives for States and communities to mitigate flood damage to severe repetitive loss properties. Using this new authority, the IR added a new 44 CFR part 79 that established the new Severe Repetitive Loss (SRL) program. The SRL program is intended to eliminate or reduce the risk of additional flood damage to the subset of properties that have the largest claims paid from the National Flood Insurance Program (NFIP). It is also intended to reduce losses to the National Flood Insurance Fund (NFIF). The SRL program provides mitigation offers for NFIP insured properties that have experienced four or more separate flood claims payments each exceeding $5,000 and cumulative payments exceeding $20,000; or at least two separate claims payments cumulatively exceeding the market value of the building. Claims made within 10 days of each other are counted as one claim, and at least two of the claims must be within 10 years of each other. If the offer of mitigation assistance is refused the property owners' insurance rates may be increased.

In addition, the IR amended the existing Flood Mitigation Assistance (FMA) program by updating the FMA regulations to reflect changes to the non-Federal cost share as a result of the amendments to the NFIA, changes to FEMA policy, and adding a new 44 CFR part 79. The IR also codified, at new 44 CFR part 80, procedures and requirements for the acquisition of property for open space. Although FEMA previously had procedures in place for open space acquisition, the new part expanded the scope of FEMA's prior regulations to address the use of all types of mitigation funds, including SRL and FMA, and consolidated them in one location. FEMA also modified the mitigation planning regulations at 44 CFR part 201 to reduce the non-Federal cost share for mitigation projects under the FMA and SRL programs for grantees with State mitigation plans that address repetitive loss strategies. This change is intended to minimize the burden on State, local, and Indian Tribal governments; to streamline the flood mitigation planning process; and to ensure consistency in the local planning requirements that apply to FEMA's mitigation grant programs. Recognizing the unique needs of Indian Tribal governments, who may act as grantees or subgrantees and may have different organizational structures than State or local governments, the IR also established the Tribal Mitigation Plan in 44 CFR 201.7.

The rule also implemented amendments to section 1308 of the NFIA to charge the full actuarial insurance premium rates for property leased from the Federal Government "located on the river-facing side of any dike, levee, or other riverine flood control structure, or seaward of any seawall or other coastal flood control structure." (42 U.S.C. 4015(c)(2)) Finally, effective October 4, 2006, section 684 of the Post-Katrina Emergency Management Reform Act of 2006, Public Law 109–295, amended the amount of Hazard Mitigation Grant Program (HMGP) assistance available to States with an approved Standard State Mitigation Plan from 7.5 percent to 15 percent and established a sliding scale for HMGP assistance. The IR revised FEMA's regulations to align with this change. (44 CFR 206.432(b)(1).)

II. Discussion of Final Rule

This final rule adopts the regulations established by the October 31, 2007 IR. It addresses the comments received from the public in response to the IR, makes changes to correct errors identified in public comments, makes technical corrections, and finalizes the interim regulations contained in 44 CFR parts 59, 61, 78, 79, 80, 201, and 206. The following is a summary of these regulatory changes:

A. 44 CFR Part 79

FEMA revised "Alaskan native village" in paragraph 79.2(c)(1) to "Alaska Native village" so that the term is consistent with its use under the definition of "local government" in the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended (42 U.S.C. 5122). FEMA also inserted a definition of "Indian Tribal Government" at new paragraph 79.2(e) so that 44 CFR part 79 is consistent with 44 CFR parts 201 and 206 where "Indian Tribal government" is currently defined. Throughout paragraph 79.4(c), FEMA removed the word "State" and revised the text to recognize that per 44 CFR 206.202(f)(1), Indian Tribal governments may also apply directly to FEMA for grant assistance. These changes are intended to correct an unintentional omission in the language of the IR. A technical correction has also been made to paragraph 79.6(b)(1) to add a more specific reference to Tribal mitigation planning requirements. Finally, paragraph 79.6(c)(2)(ii) of the IR inadvertently listed demolition or relocation of structures to areas outside of the floodplain as an eligible activity, rather than as a component of paragraph 79.6(c)(2)(i). To correct this error, paragraph 79.6(c)(2)(ii) has been removed and its substance has been incorporated into the language of paragraph 79.6(c)(2)(i).

Finally, on April 3, 2009, FEMA published a technical amendment that updated the agency's titles to reflect its current organization (74 FR 15328). Among other things, the technical amendment changed the terms "Director" to "Administrator" and "Regional Director" to "Regional Administrator" throughout Title 44 of the Code of Federal Regulations, and

removed the agency organization and delegations of authority from 44 CFR part 2. The IR had inserted definitions for "Administrator" and "Regional Administrator" at 44 CFR parts 79, 80, and 201 to reflect the agency organization; however, it did so in a way that referenced the old terms "Director" and "Regional Director" as defined in 44 CFR part 2. To ensure this final rule conforms to the changes made in the technical amendment, the definitions for "Administrator" and "Regional Administrator" are revised in newly designated paragraphs 79.2(l) and (m), paragraphs 80.3(l) and (m), and also revised in § 201.2.

B. 44 CFR Part 80

FEMA revised paragraph 80.11(d) to clarify that the subapplicant must acquire or retain fee title (full property interest), except for encumbrances FEMA determines are compatible with open space uses, consistent with paragraph 80.17(b). In response to a comment, FEMA reviewed the provisions for verifying that a property owner is a National of the United States or qualified alien and therefore eligible to be offered pre-event market value for the property in an acquisition instead of current market value. To correct an inconsistency confirmed in that review, FEMA revised paragraphs 80.13(a)(6) and 80.17(c)(4) to require the subapplicant to certify that the property owner is a U.S. National or qualified alien before the grant award.

C. 44 CFR Part 201

The final rule makes technical corrections throughout this part. In the definition of the term "Indian Tribal government" in § 201.2, the word "Indian" was inadvertently omitted in the reference to the Federally Recognized Indian Tribe List Act of 1994, but has been added in this final rule. The final rule removes paragraph 201.3(c)(7) to eliminate reference to a paragraph of the regulation that no longer exists, as it was transitional in nature. In paragraphs 201.3(e)(1), 201.7(a)(2) and 201.7(c)(3)(vi), FEMA inadvertently failed to reference that Indian Tribal governments, like States, must apply to FEMA as a grantee to receive the reduced cost share for the FMA and SRL programs when addressing severe repetitive loss properties in their plans. This requirement appeared in paragraph 201.3(e) before 44 CFR part 201 was changed by the IR; therefore, these changes are nonsubstantive.

FEMA has revised paragraph 201.7(a)(3) by replacing local with Tribal to reflect the appropriate mitigation plan required for Tribal governments. Additionally, FEMA added a sentence to the end of paragraph 201.7(a)(3) to reference the extraordinary circumstances in which a Regional Administrator may grant Tribal governments an exception to the plan requirement. This exception appeared in FEMA's regulations before the IR at paragraph 201.6(a)(3) and was unintentionally omitted from the new language specifically addressing Tribal governments in the IR.

Finally, in paragraph 201.6(c)(2)(ii)(B), an incorrect cross-reference has been revised from (c)(2)(i)(A) to (c)(2)(ii)(A). In paragraph 201.6(c)(3)(iii), an incorrect cross-reference has been revised from (c)(2)(ii) to (c)(3)(ii). In paragraph 201.7(c)(2)(ii)(B), an incorrect cross-reference has been revised from (c)(2)(i)(A) to (c)(2)(ii)(A) and in paragraph 201.7(c)(3)(iii), an incorrect cross-reference has been revised from (c)(2)(ii) to (c)(3)(ii).

D. 44 CFR Part 206

This final rule makes two technical corrections to § 206.432. The first technical correction is to paragraph 206.432(b) and removes the reference to 42 U.S.C. 5178 since 42 U.S.C. 5178, section 411 of the Stafford Act was repealed. The second technical correction is to paragraph 206.432(b)(2) to clarify that for States with an Enhanced State Mitigation Plan, the total amount of Federal contribution under the HMGP for a major disaster may not exceed 20 percent of $35.333 billion. This technical correction is non-discretionary and makes the paragraph consistent with the statute (sections 322 and 404 of the Stafford Act, as amended, 42 U.S.C. 5165 and 5170c).

This final rule also corrects inadvertent errors and omissions to reflect the Tribal Mitigation Plan established by the IR. The rule adds the word "Indian" to the definition of "Indian Tribal government" in § 206.431 and "or Tribal" to paragraphs 206.434(b)(1) and 206.434(c)(1), deletes the words "or Indian Tribal" from the definition of Local Mitigation Plan in § 206.431, and adds a definition of the term "Tribal Mitigation Plan" to § 206.431.

In paragraph 206.434(b)(1), the final rule expands the reference to 44 CFR 201.6 and revises it to include the entirety of 44 CFR part 201 so that it includes both Local and Tribal Mitigation Plans. In that paragraph, the final rule also removes the reference to disasters declared on or after November 1, 2004, and the requirements for plans approved before that date. This change is a conforming amendment because the provisions are no longer applicable. Additionally, the final rule revises the cross-reference in § 206.401 to correctly direct readers to paragraph 206.226(d). Paragraph 206.226(b) is revised to include the Tribal Mitigation Plan established by the IR. As FEMA treats Tribal Mitigation Plans in the same manner that it treats State Mitigation Plans, this section should have been amended in the IR to reflect the new form of planning document. These changes are intended to correct that omission and conform this section to the requirements and authorities contained in other sections.

Finally, the introductory text to paragraph 206.434(e) has been restated in this rule. As previously noted, on April 3, 2009, FEMA published a technical amendment that updated the agency's titles and organization (74 FR 15328). That rule changed "Regional Director" to "Regional Administrator" in this paragraph. To ensure this final rule does not undo that change, the language of the IR is repeated to incorporate the change from the technical amendment.

III. Discussion of Public Comments

FEMA received five public comments regarding the IR published on October 31, 2007. The comments on the IR were submitted by three State emergency management agencies, the Association of State Floodplain Managers, and an individual citizen. The comments received, together with FEMA's response, are set forth below. Many of the public comments contained general supportive statements or positive responses to specific regulatory changes. Although FEMA appreciates the public support for this rulemaking, and took those statements into consideration when drafting this final rule, FEMA has no specific response to those comments and they are not represented in this discussion. Additionally, the comments regarding river flow and impervious surfaces in New Jersey were outside the scope of this rulemaking. Therefore, FEMA has no specific response to those comments. All previously published rulemaking documents, as well as all comments received are available in the public docket for this rulemaking. The public docket for this rulemaking is available online at the Federal e-Rulemaking Portal at *http://www.regulations.gov* under Docket ID FEMA–2006–0010.

44 CFR Part 78

44 CFR part 78 provides information on the actions, procedures, and requirements for the administration of

the FMA program. The FMA program is designed to assist States and local governments in funding cost effective actions that result in the greatest cost savings to the NFIF. One commenter noted that paragraph 78.12(f), which allows for other activities that bring an insured structure into compliance with NFIP minimum standards, and paragraph 78.12(h), that allows for beach nourishment activities, are now excluded in the new rule at 44 CFR part 79. The commenter had no concerns with these changes. This change was incorporated into the IR to implement a policy change, and has not been modified in this final rule. Eligible projects that now can be funded under FMA are limited to acquisition/demolition, relocation, elevation, floodproofing, and minor localized flood reduction projects.

44 CFR Part 79

General

44 CFR part 79 implements certain amendments to the NFIA that provide incentives for States and communities to mitigate the effects of flood damage to severe repetitive loss properties by creating the SRL program and by reducing the cost share requirements in the existing FMA program for SRL properties. One commenter noted that §§ 79.8 and 79.9 replace § 78.13 and add language that is consistent with how the FMA program is currently being implemented. Another commenter indicated that this rulemaking illustrates how cumbersome the SRL program is as a result of complexity in the statute, and as a result the SRL program when implemented will be difficult.

FEMA acknowledges that the rule is consistent with the statutory language as required by the amendments to the NFIA and that many details of the SRL program reflect the statute. FEMA acknowledges that implementation of the program poses some challenges. As a result of carrying out the Fiscal Year 08 and 09 programs, FEMA is working to identify and address critical implementation issues in order to streamline, where possible, the delivery of assistance to mitigate SRL properties.

Section 79.3 (Responsibilities/Reallocation)

Section 79.3 outlines FEMA's, States', Tribes', and communities' roles and responsibilities in implementing the FMA and SRL programs. These responsibilities include administering and providing oversight to FEMA-related hazard mitigation programs and grants by issuing program guidance and procedures, allocating funds to States for the FMA and SRL programs, awarding all grants to the grantee, and providing technical assistance and training to State, local, and Indian Tribal governments.

One commenter noted that changes to the Federal responsibilities section of the IR eliminated FEMA regional office authority to award grants, and transferred that authority to FEMA headquarters. The commenter also acknowledged FEMA's recent procedural change that no longer allows for a regional reallocation of FMA funds; rather, all unallocated funds now must return to FEMA headquarters and be reallocated through a national competition. The commenter prefers FEMA's previous procedure that allows for a regional reallocation followed by a national reallocation.

Although the Region is no longer specified in the new § 79.3 (which replaces paragraph 78.3(a)) regarding responsibility for the administration of funds awarded under the FMA program, FEMA disagrees that this has the effect of transferring authority to award grants from the Region to FEMA Headquarters. Rather, the provision allows FEMA increased flexibility in determining how to implement allocation, award, and reallocation to more efficiently make grant assistance available to eligible applicants and to more equitably distribute the FMA funds nationally in the event that eligible applications exceed available dollars.

Section 79.4 (Availability of Funding)

Section 79.4 provides information regarding the availability of funding and provides guidelines regarding the allocation process. Two commenters noted that the allocation formula for the SRL program is reasonable, but one indicated that the IR eliminates the base amount of per State funding for FMA which had been $10,000 for planning and $100,000 for projects. The rule does remove the base amounts of funding. The FMA allocation formula as described at § 79.4 is based on the number of NFIP policies and repetitive loss structures in each State, in addition to criteria described at § 79.6, eligibility. This provides FEMA with increased flexibility, which ensures that as many eligible projects as possible are funded.

Management Costs

One commenter was opposed to the elimination of paragraph 78.8(c) which specifies that a maximum of 10 percent of FMA funds will be available for Technical Assistance grants because there is no equivalent language in the IR to provide for costs incurred by the State in administering this program. The commenter suggested that this change indicates that FEMA intends to reduce management costs by policy instead of a rule change.

FEMA does not intend for this rule to reduce the amount of assistance provided to administer the FMA and SRL programs. In the IR, paragraph 79.8(a)(1) contains language that allows for eligible management costs. For the purposes of clarity, the term management costs in the IR replaces the term Technical Assistance grants as used in 44 CFR part 78. Management costs as described in the IR provide for costs incurred by the State in administering the FMA and SRL programs with the same 10 percent cap. Thus, there is equivalent language in the IR to provide for such costs.

FMA Cap

One commenter noted that the community and State cap on FMA funding will pose an obstacle in some areas. Although this cap may limit the funding of potential FMA projects for some communities, it is a requirement imposed by the statute that authorized the FMA program (42 U.S.C. 4104c). Although FEMA has no discretionary authority to remove the cap, the statute gives FEMA the discretion to waive the caps for any 5-year period when a major disaster or emergency for flooding is declared under the Stafford Act in that community or State, respectively. This provision is implemented at § 79.4 of the rule.

In-Kind Match Limit

One comment notes that up to half of the local match to a FMA project can be an in-kind match and that FMA is the only FEMA mitigation program with the in-kind restriction. FEMA agrees that there is a restriction on the use of in-kind matching of FMA projects to meet the required non-Federal contribution. This is a requirement from the legislation that authorized the FMA program (42 U.S.C. 4104c(g)(1)) which requires that in-kind contributions by any State or community shall not exceed one-half of the amount of non-Federal funds contributed by the State or community.

Requirement of an SRL Non-Federal Match

One commenter noted that the SRL program requires a non-Federal match unlike the Repetitive Flood Claims (RFC) program. The commenter adds that many communities find it difficult to promote mitigation buyouts when the property will be deed restricted and there is a loss of tax base. With respect

to the SRL non-Federal match, the regulation mirrors the language of the authorizing statute. (42 U.S.C. 4102a(d)) The authorizing language for the RFC program does not contain a similar match requirement and FEMA has not implemented one. FEMA has interpreted that the intent of the RFC is to provide mitigation assistance for States and communities that cannot meet the requirements of the FMA program, including the ability to provide a non-Federal match.

Section 79.6 (Eligibility)

Section 79.6 provides information on eligible applicants, subapplicants, State mitigation plan requirements, eligible activities, and minimum project criteria. One commenter noted that elevation, flood-proofing, demolition, and rebuilding will occur at least to the Base Flood Elevation (BFE) level or higher, if required by FEMA or State or local ordinance. Another commenter added that its particular jurisdiction requires the lowest enclosed level to be the BFE plus 2 feet for both FMA and HMGP flood mitigation projects. The commenter noted that this requirement is pursuant to its grant administrative discretion and its responsibility to prepare and adopt its State Standard Mitigation Plan, not because of local ordinance or State statute. The commenter requested that FEMA change the IR by adding statements which recognize that State administrative provisions and mitigation plans may also require an elevation higher than the BFE.

FEMA has worked closely with its State and local partners to robustly implement mitigation planning as part of their decision-making. FEMA encourages, as part of an overall mitigation strategy, that States and local communities identify the particular hazard or hazards in their areas. Upon identification and prioritization of those hazards, State and local decision-makers are encouraged to develop prudent mitigation measures to address those risks and vulnerabilities. FEMA encourages States to establish more stringent requirements as part of their State administrative provisions or State mitigation plan. FEMA's guidelines for floodplain management under the NFIP are a minimum standard; however, States are afforded the flexibility to adopt and implement more restrictive requirements, which may include provisions specific to mitigation. The IR was not intended to limit States from implementing their own administrative requirements that can serve as a basis for State-level ordinance or local regulatory changes to go above and beyond FEMA's minimum standards.

SRL Benefit Cost Analysis Requirements

Two commenters noted that a benefit cost analysis for SRL projects is required, although mitigation of some structures may not be cost effective because they are not located in special flood hazard areas. One of those commenters requested that the SRL and repetitive loss properties automatically be considered cost effective.

FEMA determined that the intent of the legislation that authorized the SRL program is to fund projects that reduce flood damages to SRL properties and that reduce losses to the NFIF. The statutory text does not specify that the projects must be cost effective; however, FEMA recognizes that determining cost-effectiveness ensures compliance with these statutory program purposes, as well as provides a means of implementing the SRL program's legislative requirement of providing assistance that will result in the greatest amount of savings to the NFIF. FEMA continues to evaluate the various approaches to determining cost-effectiveness in terms of creating savings to the NFIF.

SRL Property Relocation

One commenter indicated that paragraph 79.6(c)(2)(ii) lists the demolition or relocation of structures to areas outside of the floodplain as an eligible project without placing limitations on the future use of the flood prone property. The commenter indicates that this change in the IR creates a potential for misuse as it would be possible to use mitigation funding to purchase a property under the SRL program, have it demolished or relocated, and then build a new structure on the same flood prone site. FEMA notes that paragraph 79.6(c)(2)(ii) is a component of the eligible activity identified in paragraph 79.6(c)(2)(i). To correct the error, paragraph 79.6(c)(2)(ii) has been removed and its substance has been incorporated into the language of paragraph 79.6(c)(2)(i), which contains a requirement that the property be converted to open space.

Section 79.7 (Offers and Appeals Under the SRL Program)

Section 79.7 provides information on mitigation offers and appeals under the SRL program. The section provides guidance on the consultation process, the voluntary mitigation offer, likely insurance increases due to refusal of a mitigation offer, and the appeals process for insurance rate increases. One commenter noted that there is no appeals process for the market value determination on an SRL property. The commenter indicated that the lack of an appeals process will likely cause problems in the implementation of the program.

Contrary to the commenter's claim, FEMA asserts that throughout the SRL process there are several opportunities for property owners to formally or informally consult with the State and local community regarding the purchase offer for their property. Under the SRL program, the purchase offer must be at least equal to the greatest amount offered through one of the three alternatives, specified in § 80.17. The local community is required, through a formal SRL consultation process, to take all necessary steps to ensure that the property owner is fully informed of the SRL program requirements, and that proper consultation and offer procedures were followed. In the event that the property owner does not accept a mitigation offer, the property owner may submit an appeal of the likely insurance premium rate increase (under certain circumstances). Specifically, with respect to an issue of property value, paragraph 79.7(d)(1)(ii)(A) allows the property owner to appeal an increase in insurance rate premium resulting from declining the offer of assistance (mitigation offer) if the purchase offer amount can be documented and verified as an inaccurate estimate of the property's market value. Also, pursuant to paragraph 79.7(d)(1)(i), the property owner may appeal if he or she cannot find a replacement property of comparable value that is functionally equivalent to the property being replaced. Finally, paragraph 80.5(c)(5) describes the responsibility of the subapplicant/subgrantee to include resolving property owner disputes regarding mitigation offers for the purchase of property.

Request for Statutory Amendments for SRL

A commenter posed several comments that focus on the authorizing statute with the intent to propose legislative changes to the SRL program. The commenter raised the following six issues: (1) There is no requirement for a State/community to participate in the SRL; (2) The offer process is unique and will be difficult to administer; (3) The entire appeals process is cumbersome and unnecessary; (4) SRL is the only mitigation program with consequences for refusal to mitigate; (5) SRL has a cost share that, compared to RFC for example, puts the program at a competitive disadvantage; and (6)

Benefit cost analysis is used to determine whether a project will be funded or not. These comments pertain directly to the authorizing statute and do not directly address FEMA's interpretation of that statute in this regulation. Although FEMA notes the commenter's concerns, FEMA must adhere to the statutory requirements.

44 CFR Part 80

44 CFR part 80 provides, in a single source, the requirements for the administration of FEMA mitigation assistance to acquire property for open space under all FEMA Hazard Mitigation Assistance (HMA) programs. 44 CFR part 80 also provides information on the eligibility and procedures for acquisition and relocation of vulnerable structures away from hazardous areas. Subsequently, the cleared property is to be maintained as open space in perpetuity.

Paragraph 80.5(b)(7)—Enforcement

Section 80.5 provides information on the roles and responsibilities of FEMA, the State, the subapplicant, and the participating property owners in the context of creating open space. Paragraph 80.5(b)(7) outlines the State's roles and responsibilities to enforce the open space deed restrictions to ensure that a property purchased with mitigation funds remains as open space in perpetuity.

One commenter noted that the term "enforcing" implies an assumption that States have a statutory and regulatory authority to force jurisdictions to uphold open space deed restrictions. The commenter added that various States may or may not have this authority to enforce the open space deed restrictions, depending upon which agency implements the various mitigation grant programs.

By virtue of receiving the HMA funds for open space projects, States and local communities are accountable for compliance with the terms of the grant agreement and its requirements for the use of those funds. Upon receiving FEMA funds for an open space acquisition project, the grantee and subgrantee assume stewardship, including ensuring that the deed restrictions are recorded, that there is a clear title to the property, that all incompatible easements or encumbrances are extinguished, that the vacant land is clean of hazardous materials, that the intended and future use of the property complies with the legally imposed use restrictions, and that the State and the local community jointly monitor and inspect the deed-restricted properties at regular intervals to ensure that the property continues to be used for open space purposes. All parties to the grant/subgrant award assume these responsibilities by receiving HMA funds. The authority to enforce these restrictions lies with the State in its role as grantee. Therefore, just as the grant condition continues in perpetuity pursuant to Federal law, the responsibility to ensure compliance with that condition continues in perpetuity. FEMA notes that these responsibilities have always applied to grantees and subgrantees for open space acquisition and relocation projects under all of FEMA hazard mitigation grant programs as necessary to ensure the long-term purpose of the Federal funds for this particular project type is met.

Section 80.9 (Eligible and Ineligible Costs)

One commenter indicated that the language in paragraph 80.9(c) allows for reducing a grant award for Duplication of Benefits (DOB) which could mean that a full DOB analysis would have to be completed before a project is approved by FEMA. The commenter indicated that the DOB should not be deducted until the local project manager has met with each owner during the offer presentation process and credited back temporary living expenses and/or receipted repairs using insurance or grant funds. Also, the commenter noted that the language appears to be confusing the concept of DOB and Duplication of Programs (DOP).

HMA funding must be reduced by the amounts reasonably available to a property owner (even if not sought or received) designated for the same purpose or loss. In this case, the purchase offer will be reduced by the duplicative amount. It is the subgrantee's responsibility to coordinate with the property owner and to disclose all potential deductions as a result of funds that were reasonably made available to the property owner. It is also the subgrantee's responsibility to make the appropriate deductions from the purchase offer before making a final mitigation offer to the property owner. Consequently, it is the property owner's responsibility to take all reasonable steps to recover funding he or she is eligible to receive. In developing a project budget, the subapplicant should take all reasonable steps to accurately identify all project costs. The information needed to determine a DOB is generally readily available and can impact the mitigation grant offer at any time. Therefore, it is preferable to identify all DOBs as early as possible in order to reduce the risk of having a cost overrun. However, amounts made available for the same purpose at any time, even after award or acquisition, constitute a DOB and will be treated as such. It should be noted that funds received by the property owner that were designated for the same purpose or loss will not be deducted from the final mitigation offer if the owner can document with receipts that those funds were expended on repairs or cleanup.

Finally, FEMA disagrees with the commenter's assertion that the language confuses the concept of DOB and DOP. DOP would occur when an activity is funded under one program, despite there being more specific authority to fund it under a different program. DOB occurs when HMA funds are used to fund a mitigation activity, but other funds for the same purpose, such as from insurance, are received by or available to the project participant.

Section 80.11 (Project Eligibility)

Section 80.11 provides information on project eligibility. This section includes a discussion of voluntary participation, acquisition of improved properties, subdivision restrictions, and open space restrictions. Paragraph 80.11(a) notes that a property owner who agrees to an acquisition must do so on a voluntary basis and that the grantee/subgrantee can not use their powers of eminent domain to acquire the property should negotiations fail.

One commenter notes that the term "negotiations" may be construed to mean that negotiations of offers are possible. The commenter suggests that the use of the term "negotiations" may be problematic in implementing an acquisition/demolition project regardless of the mitigation grant involved.

FEMA is required to implement the provisions of 49 CFR part 24, Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs (URA). The term "initiation of negotiations" is defined as the delivery of the initial written offer of just compensation by the Agency to the owner or the owner's representative to purchase the real property for the project. (49 CFR 24.2(a)(15).) As such, the word "negotiation" is a term of art.

If the property owner can verify that the final mitigation offer is significantly below market value, or presents other convincing facts such that the offer should be adjusted, then there may be an increase of the purchase offer. Regardless, in all cases, FEMA, the State, and the local community will work to ensure that all property owners are treated fairly and are offered an equitable mitigation offer based on the

acceptable methods for determining purchase offers for acquisitions under FEMA HMA programs.

FEMA revised paragraph 80.11(d) to clarify that the subapplicant must acquire or retain fee title (full property interest), except for encumbrances FEMA determines are compatible with open space uses, consistent with paragraph 80.17(b). In response to a comment, FEMA reviewed the provisions for obtaining verification that a property owner is a National of the United States or qualified alien and therefore eligible to be offered pre-event market value for the property in an acquisition instead of current market value. To address any perceived inconsistency, FEMA revised paragraph 80.17(c)(4) to clarify that the subapplicant must certify that the property owner is a National of the United States or qualified alien during the application process.

Section 80.13 (Application Information)

Section 80.13 provides information on application requirements. Some of this required information includes: property information, deed restriction language consistent with FEMA's model deed restriction, a signed notice of voluntary interest, an assurance that there is no intention to use the acquired property for any public or private facility for a future use that is inconsistent with 44 CFR part 80, and certification that the property owner is a National of the United States or a qualified alien (if the owner is being offered pre-event market value).

One commenter indicated that the general requirements outlined in this section will significantly increase the paperwork burden on the subapplicants in the application process. In particular, the commenter indicates that prior to appraisal it is difficult to obtain signatures from property owners regarding the inclusion of their properties in the project, and notes that, as an applicant, the Voluntary Transaction Agreements signature is obtained after the grant is awarded to the local jurisdiction.

FEMA analyzed the anticipated paperwork burden associated with implementing these mitigation programs with respect to the Paperwork Reduction Act of 1995 (PRA) (5 CFR part 1320). As part of its PRA analysis in Section IV.E. of this rule, FEMA determined that the collection of information needed to develop a mitigation application package does not impose an additional undue burden on the States and local communities. Applicants and subapplicants have been submitting this information before FEMA published the IR. Regardless, FEMA reviewed 44 CFR 80.13 to ensure that the HMA application information requirements do not impose any additional undue burden in the development of HMA applications. Generally, 44 CFR part 80 reflects the information that has always been requested in program guidance as a condition for applying for assistance to enable FEMA to determine the project's eligibility and compliance with program requirements.

With respect to the comment about obtaining project participants' signatures, FEMA wants to clarify that the timing for obtaining from the property owner the Statement of Voluntary Participation (formerly called Voluntary Transaction Agreement), which indicates the market value of the property and the owner's acknowledgment that they are voluntarily participating in the project, continues to occur post award. This is distinct from the Notice of Voluntary Interest, which simply documents during project development that potentially interested owners have received general notice from the subapplicant of the voluntary nature of the potential acquisition project, including that the subapplicant will not use its eminent domain authority for the purpose of open space. The Notice of Voluntary Interest may be as simple as having a group sign-in sheet at a neighborhood meeting about the possible project that includes a statement to this effect. For FEMA to ensure compliance with basic program requirements, this less formal documentation is provided to FEMA during the application process.

Another commenter noted that it is unclear how States will be required to indicate that there is no intention to use the property for any public or private facility in the future. Paragraph 80.13(a)(5) requires that the State provide assurances that the subject property to be acquired, deed restricted, and converted to open space has no future, intended, or planned use that is inconsistent with the requirements delineated in § 80.19 (land use and oversight). Compliance with this regulation is accomplished through a written statement submitted as part of the application.

Two commenters indicated that it is unclear why offering the pre-event value to a property owner requires that the subapplicant provide certification that the property owner is a National of the United States or a qualified alien. One commenter also notes that § 80.13, which indicates that this certification must be done as part of the application process, conflicts with § 80.17 which indicates that this certification must be done before offering pre-event market value for a property.

As established by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) (42 U.S.C. 1305 note), an alien who is not a qualified alien (as defined in 8 U.S.C. 1641) is not eligible for any Federal public benefit. In this instance, such a Federal public benefit results from an offer of pre-event market value, which has the effect of compensating for the disaster loss beyond the current market value of the property. This benefit is reserved for property owners who owned the property during the event and who are Nationals of the United States or qualified aliens. The property value for other individuals must be based on current market value. To ensure compliance with the PRWORA, local communities offering pre-event market value must verify that the property owners are either Nationals of the United States or qualified aliens.

The term "National of the United States" is defined at 8 U.S.C. 1101 and means a citizen of the United States or a person who is not a citizen but who owes permanent allegiance to the United States. The term "qualified alien", as delineated in the Immigration and Nationality Act (the Act) at 8 U.S.C. 1641, is an individual who meets certain criteria contained in the Act at the time they apply for, receive, or attempt to receive a Federal public benefit.

In response to the commenter's view that there is an inconsistency between §§ 80.13 and 80.17, FEMA notes that it intended the language in paragraph 80.17(c)(4) to describe a pre-condition of offering pre-event value, not to address the timing of obtaining the information. Such information is relevant to the eligible costs of the project and is provided to FEMA during the application process. FEMA revised § 80.17 to clarify that the pre-event value is only available to a property owner that has certified during the application process as to being a National of the United States or a qualified alien.

Section 80.17 (Project Implementation)

Paragraph 80.17(c)(1) provides that the amount of a purchase offer is either the current market value of the property or the market value of the property immediately before the relevant event affecting the property. One commenter requested clarification of the term "relevant event" for Pre-Disaster Mitigation (PDM). The commenter indicated that this clarification will

make implementation of the program easier. As it relates to PDM, the regulation states that the relevant event is the most recent major disaster that affected the subject property. In the case where multiple disasters have affected the same property, this section indicates that the "grantee and subgrantee shall determine which is the relevant event." Alternatively, if the project is not occurring in association with or will be more than 12 months after a disaster event, for example, the grantee and subgrantee may want to consider whether current market value may be more appropriate, per paragraph 80.17(c)(3).

One commenter indicated that the flexibility built into the SRL program affords market value determination of the greatest amount (*i.e.* current market value, pre-event market value, original purchase price paid, or outstanding amount of the loan on the property). The commenter indicated that in some instances the offer of the greatest amount would render the property not cost effective.

Paragraph 80.17(c)(2) notes that for acquisition of properties under SRL, the purchase offer is to be not less than the greatest of the following amounts: the current market value of the property or the pre-event market value of the property; the original purchase amount paid by the property owner holding the flood insurance policy as demonstrated by property closing documents; or the outstanding amount of any loan to the property owner, secured by a recorded interest in the property at the time of the purchase offer. It is legislatively mandated at 42 U.S.C. 4102a(g)(3) that FEMA use these values to determine the greatest amount on which to base a purchase offer. The statute also requires that the purchase price be the greatest of those amounts. FEMA acknowledges that as a result of this method, there may be instances where the project costs outweigh the project benefits; however, FEMA must follow the legislatively mandated direction.

Section 80.19 (Land Use and Oversight)

Section 80.19 provides guidance on open space requirements and land uses compatible with open space. One commenter noted the correlation between the requirement in paragraph 80.17(b) that any incompatible easements or other encumbrances to the property be extinguished before acquisition, and the requirement in paragraph 80.19(a)(1)(i) identifying "below ground pumping and switching stations" as not being compatible with open space uses. The commenter added that this requirement restricts the ability of the local jurisdiction to purchase a property because a utility company may be unwilling to nullify an easement.

Above or below ground pumping stations or other uses that obstruct the natural and beneficial use of the floodplain are deemed as land uses that are incompatible with FEMA's open space requirements because they are detrimental to maintaining the beneficial functions of the floodplain. If, at the time of acquisition, a property is used for an incompatible open space use, then that property is no longer eligible for acquisition if the use cannot be discontinued. Similarly, if easements for the property allow for any incompatible use, such provisions must be nullified in order for the property to be acquired (provisions allowing for compatible uses may remain in effect). FEMA acknowledges that where incompatible uses will continue to be permitted on a property, the property is not eligible for FEMA HMA funds for an acquisition for open space purposes.

One commenter expressed concern with the monitoring and reporting requirements and the enforcement provisions of § 80.19. The commenter suggested a monitoring timeframe consistent with mitigation plans.

In an effort to ease the workload for monitoring, 44 CFR part 80 reduces the frequency of HMGP grant monitoring from once every 2 years to once every 3 years. This change makes all HMA programs consistent in their property acquisition land-use monitoring requirement. FEMA believes that further extending this timeframe would not provide sufficient monitoring to ensure ongoing compliance with the land use requirements. In addition, FEMA does not think it is appropriate to synchronize the open space monitoring timeframe with the completely unrelated timeframe for local mitigation plan updates, and notes that to do so could place additional distractions on local jurisdictions at a time when they need to focus instead on the mitigation planning process.

The same commenter also raised concerns about State responsibilities, including funds and authority to meet enforcement responsibilities, including taking legal action. Finally, the commenter identified concerns about improper consequences for State and subgrantee failure to enforce open space requirements, noting that it would be unfair for the State to lose HMA assistance if the subgrantee were non-compliant.

In response, it should be noted that 44 CFR part 80 does not substantially differ from previous open space project grant requirements, where the State has always played a vital role in the monitoring and enforcement of the open space restrictions. These provisions have been a requirement of FEMA property acquisition and relocation for open space projects almost since program inception. They have been reflected in the HMGP Desk Reference and the annual program guidance for the other HMA programs (*e.g.*, the PDM program), which also incorporated FEMA's model deed restriction language. The States, as grantees, and subgrantees agree to this language as a condition of receiving HMA funding, both by signing a statement of assurances acknowledging these conditions, and by accepting grant funds subject to the grant agreement. Unlike most NFIP-related programs and activities where the primary entity is the community, for HMA grant purposes the State is the grantee and is accountable for the use of funds and for assuring compliance with the terms of the grant award and the program. (*See, e.g.*, 44 CFR 206.433 and 13.3.) It also should be noted that FEMA is also accountable for ensuring that Federal awards are used for the intended purpose. The IR restated and codified previous HMA program requirements to ensure that States and FEMA carry out their fiscal responsibilities by taking appropriate actions to maintain consistency with Federal open space requirements. This action may or may not involve court action. The option of seeking specific performance in a court of law or equity is not "a requirement," but is an available option when deemed appropriate.

Further, the options available to FEMA for enforcing the open space requirements are not new. FEMA has always retained the right to bring legal action against a State or local jurisdiction that fails to comply with the open space terms of the grant and deed restriction. In addition, as explained in the rule, the option of withholding HMA assistance is a reasonable response in the event that the State and subgrantee fail to make a good faith effort to enforce the deed restrictions they voluntarily agreed to enforce. These remedies for non-compliance are consistent with government-wide Federal grants management procedures. (*See, e.g.*, 44 CFR 13.43(a).) In the case of a State and/or local jurisdiction failing to comply with the grant terms and deed restrictions, taking such an action may be the most effective means of encouraging a continued commitment to the open space responsibilities. FEMA may withhold funds from a subgrantee for failure to demonstrate a

good faith effort to come into compliance with the terms of the grant. Because the grant relationship is between FEMA and the State as grantee, funds withheld from a subgrantee are also withheld from the grantee. This does not necessarily mean that FEMA will withhold all HMA funding from that State.

General Comment

One commenter expressed concern that FEMA's Flood Insurance Rate Map (FIRM) is antiquated and therefore does not provide the public with the most accurate and up-to-date risk mapping data. The commenter suggested that FEMA be proactive in stopping development in flood-prone areas.

While this comment is outside the scope of this rulemaking, FEMA notes that efforts have been made to update and digitize flood maps. Local communities and States work closely with FEMA to provide the most up-to-date data on flood risk. Any interested party may ask community officials to submit a map revision request to FEMA in accordance with 44 CFR part 65 of the NFIP regulations. Factors that influence when the maps are updated are: (1) When climatological or physical changes in watersheds occur, or (2) when mapping methodologies are improved.

IV. Regulatory Requirements

A. National Environmental Policy Act

FEMA has considered this rule in accordance with its implementing regulations for complying with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321–4365), which are found at 44 CFR part 10. The rulemaking addresses applicant planning requirements, as well as eligibility, funding increases, and cost sharing/funding incentives relating to certain disaster mitigation programs and does not change the type or nature of mitigation actions that may be funded. This rulemaking would neither individually nor cumulatively have a significant effect on the human environment and, therefore, neither an environmental assessment nor an environmental impact statement is required. This rulemaking is among the category of actions included in the Categorical Exclusions listed at paragraph 10.8(d)(2)(ii), which excludes the preparation, revision and adoption of regulations from the preparation of an environmental assessment or environmental impact statement, where the rule relates to actions that qualify for categorical exclusions. The related actions of the development of plans and administrative activities that are included in this rule are also categorically excluded under § 10.8 paragraphs (d)(2)(i) and (d)(2)(iii). FEMA received no public comments on the IR regarding its NEPA determination.

B. Executive Order 11988, Floodplain Management

FEMA has prepared and reviewed this rule under the provisions of Executive Order 11988, Floodplain Management. FEMA's policy, procedures, and responsibilities in implementing this Executive Order are set forth in 44 CFR part 9. FEMA's floodplain management regulations are intended to avoid long and short term adverse impacts associated with the occupancy and modification of floodplains; to avoid direct and indirect support of floodplain development whenever there is a practical alternative; to reduce the risk of flood loss; to promote the use of nonstructural flood protection methods to reduce the risk of flood loss; to minimize the impacts of floods on human health, safety and welfare; to restore and preserve the natural and beneficial values served by floodplains; and to adhere to the objectives of the Unified National Program for Floodplain Management. As stated in the rulemaking, the purpose of the SRL and FMA programs is to mitigate insured property losses from floods, thereby minimizing impacts to the NFIF, which is consistent with the intent of the Executive Order. In addition, for project activities funded through the SRL and FMA programs, each project will go through the environmental review process, which will include compliance with Executive Order 11988. FEMA received no public comments on the IR regarding its Executive Order 11988 determination.

C. Executive Order 12866, Regulatory Planning and Review

Under Executive Order 12866, a significant regulatory action is subject to the Office of Management and Budget (OMB) review and the requirements of the Executive Order. The Executive Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact or entitlements, grants, user fees, or loan programs or the right and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

This final rule adopts the regulations established in the IR with a few nonsignificant changes that are a logical outgrowth from the IR. This final rule does not meet the criteria under paragraphs 2, 3, or 4 of the provision of the Executive Order. In addition, FEMA determined that it is not likely to have a significant economic impact of $100 million or more per year (under paragraph 1 of this provision). This rule has not been reviewed by OMB.

This final rule is intended to have a positive impact on State, local, and Indian Tribal governments. The new SRL program and the modified FMA program assist State, local, and Indian Tribal governments in reducing the loss of life and property from flooding events by providing additional grant resources and the ability to increase the Federal cost share for projects mitigating SRL properties. The FMA is an annual grant program created with the goal of reducing or eliminating claims under the NFIP. The SRL pilot program provides funding to assist States and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to severe repetitive loss structures insured under the NFIP, therefore reducing payments from the NFIF. The SRL program differs from FEMA's other mitigation grant programs, as those property owners who decline offers of mitigation assistance will be subject to increases to their flood insurance premium rates. This final rule also implements changes to the FMA program by allowing for up to a 90 percent Federal cost share for the mitigation of severe repetitive loss properties (the standard Federal cost share is 75 percent). While the SRL and FMA programs will be implemented as separate programs with different funding accounts, they are similar in their goals and purpose. Therefore, FEMA has included both of these programs into one implementing regulation to ensure consistency between the programs.

The primary economic impact of the final rule is defined as the additional transfer of funding from FEMA to State, local, and Indian Tribal governments to implement measures to reduce or eliminate the long-term risk of flood

damage to severe repetitive loss structures. FEMA made conservative assumptions in order not to under estimate the economic impact of the final rule. Historically, the FMA program has provided $20 million in grants on an annual basis. The NFIA, as amended, authorizes the appropriations for the existing FMA program to be increased from $20 million to $40 million per year. Congressional appropriators have gradually increased the funding for this program, and the FMA program may eventually reach its total authorized $40 million cap per year.

In fiscal year 2008, FEMA awarded $38 million for the mitigation of 173 properties at an average of $220,000 per property under the SRL pilot program. In fiscal year 2009, FEMA expects to award $50 million for the mitigation of 227 properties also at an average of $220,000 per property. To date, no one has refused the offer of mitigation or appealed, therefore no premiums have increased.

The purpose of the SRL grant program is to reduce or eliminate claims through flood mitigation projects that would result in the greatest savings to the NFIF. The two most common types of flood mitigation projects are elevation of a flood prone structure, and acquisition and demolition or relocation of a flood prone structure. In 2006, the NFIP paid a total of $617.28 million for claims with an average claim payment of $25,545. Severe Repetitive Loss properties account for far less than 1 percent of the current NFIP policies, yet these properties account for over 7 percent of the total amount paid in claims. Approximately, 8,544 properties were identified as meeting the definition of severe repetitive loss, among which 1,067 SRL properties were damaged by flood and paid $46.21 million in 2006 (or $49.35 million in 2008, if adjusted to reflect inflation). Assuming that all 400 SRL properties (173 in FY08 + 227 in FY09) have accepted mitigation offers, 4.7 percent of the 8,544 SRL properties will lower or eliminate the risk of future flood damages by the end of fiscal year 2009. Therefore, the reduction in claims paid for SRL properties is estimated at up to $2.31 million per year (4.7 percent × $49.35 million).

Assuming that the FMA program reaches its $40 million cap per year, the net economic impact of the final rule is estimated to be up to $61.69 million per year. Table 1 details the annual impact of the final rule. The NFIA, as amended, authorizes the SRL program through the end of fiscal year 2009; therefore, the impact of this rule will be reduced by $44 million in fiscal year 2010 and beyond.

TABLE 1—NET ANNUAL IMPACT OF THE FINAL RULE

[in 2008 $]

FMA Program	$20,000,000
SRL Program	*44,000,000
National Flood Insurance Fund	(2,310,000)
Total	61,690,000

* Average of $38 million in FY 2008 and $50 million in FY 2009.

D. Executive Order 12898, Environmental Justice

In accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, Feb. 16, 1994, FEMA incorporates environmental justice into our policies and programs. The Executive Order requires each Federal agency to conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that those programs, policies, and activities do not have the effect of excluding persons from participation in our programs, denying persons the benefits of our programs, or subjecting persons to discrimination because of their race, color, or national origin.

This rule implements the SRL program, providing mitigation grants to severe repetitive loss properties, and improves the FMA program and the mitigation planning requirements. This rule also clarifies and simplifies the planning requirements for Indian Tribal governments. No action in this rule will have a disproportionately high or adverse human health and environmental effect on any segment of the population. FEMA received no comments during the IR comment period that disagreed with this determination.

E. Paperwork Reduction Act of 1995

In accordance with the Paperwork Reduction Act of 1995, 44 U.S.C. 3501–3520, OMB has approved use of OMB Numbers 1660–0025, FEMA Emergency Preparedness and Response Directorate Grants Administration Forms under 44 CFR parts 78, 79, and 206 in this rule; 1660–0062, State/Local/Tribal Hazard Mitigation Plans—Section 322 of the Disaster Mitigation Act of 2000 under 44 CFR part 201; 1660–0103, Property Acquisition and Relocation for Open Space under 44 CFR part 80; and 1660–0104, Severe Repetitive Loss (SRL) Appeals process under 44 CFR part 79. The approved collections have gone through the OMB's normal clearance procedures in accordance with the provisions of OMB regulation at 5 CFR 1320.10. Use of these collections, under this final rule, does not impose addition burden and are approved for use until August 31, 2011.

The information collection activity under the approved OMB information collection 1660–0072, Mitigation Grant Programs/e-Grants (previously named Flood Mitigation Assistance (e-Grants) and Grant Supplemental Information) have been combined with OMB No. 1660–0071, Pre-Disaster Mitigation (PDM) Grant Program/eGrants to streamline and simplify documentation of the same information collected for all mitigation e-Grants program under section 203 (Predisaster Hazard Mitigation) of the Stafford Act (42 U.S.C. 5133) and has been approved for use until February 28, 2011.

F. Executive Order 13132, Federalism

Executive Order 13132, Federalism, signed August 4, 1999, sets forth principles and criteria that agencies must adhere to in formulating and implementing policies that have federalism implications, that is, regulations that have substantial direct effects on the States, or on the distribution of power and responsibilities among the various levels of government. Federal agencies must closely examine the statutory authority supporting any action that would limit the policymaking discretion of the States, and to the extent practicable, must consult with State and local officials before implementing any such action.

FEMA reviewed the IR under Executive Order 13132 and concluded that the IR, which implemented the statutory requirements for a new SRL program as well as a potential increase in the Federal share for the FMA program, simplified the planning requirements, and reflected a statutorily-mandated change to the HMGP allocation, does not have federalism implications as defined by the Executive Order. FEMA received no comments during the IR comment period that disagreed with this determination. FEMA also determined that this final rule does not significantly affect the rights, roles, and responsibilities of States, and involves no preemption of State law nor does it limit State policymaking discretion.

G. Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

While this rule does have "Tribal implications" as defined in Executive Order 13175, it does not have a substantial direct effect on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes. FEMA coordinates with Indian Tribal governments while implementing its programs, and has modified its procedures to accommodate some of the issues relating to the Tribal governments. This rule clarifies those procedures and streamlines the roles and responsibilities of Indian Tribal governments in mitigation planning.

Indian Tribal governments may apply for assistance directly to FEMA as a grantee, or through the State as a subgrantee. (*See* 44 CFR 201.3(e) and 206.202(f)(1).) Before the IR went into effect, Indian Tribes were permitted to prepare either a State-level Mitigation Plan, or a Local-level Mitigation Plan depending on whether they intend to apply as a grantee, or as a subgrantee. Before publishing the IR, FEMA discussed the existing planning requirements with many of the Indian Tribal governments as they were developing their plans, or while attending Tribal training courses, and were informed that neither of these options sufficiently met the needs of the Indian Tribal governments. To address this problem, the IR established a specific planning requirement for Indian Tribal governments in 44 CFR 201.7 that recognized some of the unique aspects of these governments and combined the appropriate aspects of State and local planning requirements into one section for Indian Tribal governments.

The substance of this rule is intended to have a positive impact on Indian Tribal governments and their relationship with the Federal Government. The rule does not impose substantial direct compliance costs on Indian Tribal governments, nor does it preempt Tribal law, impair treaty rights nor limit the self-governing powers of Indian Tribal governments. FEMA received no comments during the IR comment period that disagreed with this determination.

H. Congressional Review of Agency Rulemaking

FEMA has sent this final rule to the Congress and to the General Accountability Office under the Congressional Review of Agency Rulemaking Act, (Congressional Review Act), 5 U.S.C. 801–808. The final rule will not result in a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. It will not have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises.

I. Regulatory Flexibility Act

The Regulatory Flexibility Act of 1980 (RFA), 5 U.S.C. 601–612, as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (Pub. L. 104–121), requires Federal agencies to consider the potential impact of regulations on small businesses, small governmental jurisdictions, and small organizations during the development of their rules. When an agency invokes the good cause exception under the Administrative Procedure Act to make changes effective through an interim final or final rule, the RFA does not require an agency to prepare a regulatory flexibility analysis. FEMA determined in the IR that good cause exists under 5 U.S.C. 553(b)(B) to exempt this rule from the notice and comment requirements of 5 U.S.C. 553(b) (72 FR 61720, Oct. 31, 2007). Therefore, a regulatory flexibility analysis is not required for this rule.

J. Executive Order 12630, Taking of Private Property

This rule will not affect a taking of private property or otherwise have taking implications under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights. In 44 CFR 80.11(a), this final rule explicitly states that a grantee/subgrantee cannot use its eminent domain authority to acquire the property for open space purposes; only such projects where the property owner participates voluntarily are eligible to receive a grant.

K. Executive Order 12988, Civil Justice Reform

This rule meets applicable standards in sections 3(a) and 3(b)(2) of Executive Order 12988, Civil Justice Reform, to minimize litigation, eliminate ambiguity, and reduce burden.

L. Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), enacted as Public Law 104–4 on March 22, 1995 (2 U.S.C. 1531–1538), requires each Federal agency, to the extent permitted by law, to prepare a written assessment of the effects of any Federal mandate in a proposed or final agency rule that may result in the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector, of $100 million or more (adjusted annually for inflation) in any one year. UMRA exempts from its definition of "Federal intergovernmental mandate" regulations that establish conditions of Federal assistance or provide for emergency assistance or relief at the request of any State, local, or Tribal government. Therefore, this rule is not an unfunded Federal mandate under that Act.

List of Subjects

44 CFR Part 59

Flood insurance, Reporting and recordkeeping requirements.

44 CFR Part 61

Flood insurance, Reporting and recordkeeping requirements.

44 CFR Parts 78 and 79

Flood insurance, Grant programs.

44 CFR Part 80

Acquisition and Relocation for open space.

44 CFR Part 201

Administrative practice and procedure, Disaster assistance, Grant programs, Reporting and recordkeeping requirements.

44 CFR Part 206

Administrative practice and procedure, Coastal zone, Community facilities, Disaster assistance, Fire prevention, Grant programs—housing and community development, Housing, Insurance, Intergovernmental relations, Loan programs—housing and community development, Natural resources, Penalties, Reporting and recordkeeping requirements.

■ Accordingly, the Interim Rule amending 44 CFR Parts 59, 61, 78, 79, 80, 201, and 206 published on October 31, 2007 (72 FR 61720), is adopted as a final rule with the following changes:

PART 79—FLOOD MITIGATION GRANTS

■ 1. The authority citation for part 79 continues to read as follows:

Authority: 6 U.S.C. 101; 42 U.S.C. 4001 *et seq.*; 42 U.S.C. 4104c, 4104d; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 2. Amend § 79.2 by redesignating paragraphs (e) through (l) as (f) through (m); by adding a new paragraph (e); and by revising paragraphs (c)(1), newly designated paragraph (l), and newly designated paragraph (m) to read as follows:

§ 79.2 Definitions.

* * * * *

(c) * * *

(1) A political subdivision, including any Indian Tribe, authorized Tribal organization, Alaska Native village or authorized native organization, that has zoning and building code jurisdiction over a particular area having special flood hazards, and is participating in the NFIP; or

* * * * *

(e) *Indian Tribal government* means any Federally recognized governing body of an Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals.

* * * * *

(l) *Administrator* means the head of the Federal Emergency Management Agency, or his/her designated representative.

(m) *Regional Administrator* means the head of a Federal Emergency Management Agency regional office, or his/her designated representative.

■ 3. In § 79.4, revise paragraph (c) introductory text and paragraph (c)(2) to read as follows:

§ 79.4 Availability of funding.

* * * * *

(c) *Cost Share.* All mitigation activities approved under the grant will be subject to the following cost-share provisions:

* * * * *

(2) FEMA may contribute up to 90 percent of the cost of the eligible activities for each severe repetitive loss property for which grant amounts are provided if the applicant has an approved Mitigation Plan meeting the repetitive loss requirements identified in § 201.4(c)(3)(v) or § 201.7(c)(3)(vi) of this chapter, as applicable, at the time the project application is submitted;

* * * * *

■ 4. Amend § 79.6 by removing paragraph (c)(2)(ii), redesignating paragraphs (c)(2)(iii) through (c)(2)(vii) as (c)(2)(ii) through (c)(2)(vi), and revising paragraphs (b)(1) and (c)(2)(i) to read as follows:

§ 79.6 Eligibility.

* * * * *

(b) * * *

(1) States must have an approved State Mitigation Plan meeting the requirements of §§ 201.4 or 201.5 of this chapter in order to apply for grants through the FMA or SRL programs. Indian Tribal governments must have an approved plan meeting the requirements of § 201.7 of this chapter at the time of application.

* * * * *

(c) * * *

(2) * * *

(i) Acquisition of real property from property owners, and demolition or relocation of buildings and/or structures to areas outside of the floodplain to convert the property to open space use in perpetuity, in accordance with part 80 of this subchapter;

* * * * *

PART 80—PROPERTY ACQUISITION AND RELOCATION FOR OPEN SPACE

■ 5. The authority citation for part 80 is revised to read as follows:

Authority: Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 through 5207; the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 *et seq.*; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; Homeland Security Act of 2002, 6 U.S.C. 101; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 6. In § 80.3, revise paragraphs (l) and (m) to read as follows:

§ 80.3 Definitions.

* * * * *

(l) *Administrator* means the head of the Federal Emergency Management Agency, or his/her designated representative.

(m) *Regional Administrator* means the head of a Federal Emergency Management Agency regional office, or his/her designated representative.

■ 7. Revise § 80.11(d) to read as follows:

§ 80.11 Project eligibility.

* * * * *

(d) *Subapplicant property interest.* To be eligible, the subapplicant must acquire or retain fee title (full property interest), except for encumbrances FEMA determines are compatible with open space uses, as part of the project implementation. A pass through of funds from an eligible entity to an ineligible entity must not occur.

* * * * *

■ 8. Revise § 80.13(a)(6) to read as follows:

§ 80.13 Application information.

(a) * * *

(6) If the subapplicant is offering pre-event value: the property owner's certification that the property owner is a National of the United States or qualified alien; and

* * * * *

■ 9. Revise § 80.17(c)(4) to read as follows:

§ 80.17 Project implementation.

* * * * *

(c) * * *

(4) A property owner who did not own the property at the time of the relevant event, or who is not a National of the United States or qualified alien, is not eligible for a purchase offer based on pre-event market value of the property. Subgrantees who offer pre-event market value to the property owner must have already obtained certification during the application process that the property owner is either a National of the United States or a qualified alien.

* * * * *

PART 201—MITIGATION PLANNING

■ 10. The authority citation for part 201 is revised to read as follows:

Authority: Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 through 5207; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; Homeland Security Act of 2002, 6 U.S.C. 101; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 11. In § 201.2, revise the definition of "Administrator", the first sentence of the definition of "Indian Tribal government", and the definition of "Regional Administrator" to read as follows:

§ 201.2 Definitions.

Administrator means the head of the Federal Emergency Management Agency, or his/her designated representative.

* * * * *

Indian Tribal government means any Federally recognized governing body of an Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a. * * *

* * * * *

Regional Administrator means the head of a Federal Emergency

Management Agency regional office, or his/her designated representative.

* * * * *

■ 12. Amend § 201.3 by removing paragraph (c)(7) and by revising the last sentence of paragraph (e)(1) to read as follows:

§ 201.3 Responsibilities.

* * * * *

(e) * * *

(1) * * * In addition, an Indian Tribal government applying to FEMA as a grantee may choose to address severe repetitive loss properties as identified in § 201.4(c)(3)(v) as a condition of receiving the reduced cost share for the FMA and SRL programs, pursuant to § 79.4(c)(2) of this chapter.

* * * * *

■ 13. In § 201.6 revise paragraphs (c)(2)(ii)(B) and (c)(3)(iii) to read as follows:

§ 201.6 Local Mitigation Plans.

* * * * *

(c) * * *

(2) * * *

(ii) * * *

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;

* * * * *

(3) * * *

(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.

* * * * *

■ 14. In § 201.7 revise paragraphs (a)(2), (a)(3), (c)(2)(ii)(B), (c)(3)(iii), and (c)(3)(vi) to read as follows:

§ 201.7 Tribal Mitigation Plans.

* * * * *

(a) * * *

(2) An Indian Tribal government applying to FEMA as a grantee may choose to address severe repetitive loss properties in their plan, as identified in § 201.4(c)(3)(v), to receive the reduced cost share for the FMA and SRL programs.

(3) Indian Tribal governments applying through the State as a subgrantee must have an approved Tribal Mitigation Plan meeting the requirements of this section in order to receive HMGP project grants and, the Administrator, at his discretion may require a Tribal Mitigation Plan for the Repetitive Flood Claims Program. A Tribe must have an approved Tribal Mitigation Plan in order to apply for and receive FEMA mitigation project grants, under all other mitigation grant programs. The provisions in § 201.6(a)(3) are available to Tribes applying as subgrantees.

* * * * *

(c) * * *

(2) * * *

(ii) * * *

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;

* * * * *

(3) * * *

(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 Indian Tribal government.

* * * * *

(vi) An Indian Tribal government applying to FEMA as a grantee may request the reduced cost share authorized under § 79.4(c)(2) of this chapter of the FMA and SRL programs if they have an approved Tribal Mitigation Plan meeting the requirements of this section that also identifies actions the Indian Tribal government has taken to reduce the number of repetitive loss properties (which must include severe repetitive loss properties), and specifies how the Indian Tribal government intends to reduce the number of such repetitive loss properties.

* * * * *

PART 206—FEDERAL DISASTER ASSISTANCE

■ 15. The authority citation for part 206 continues to read as follows:

Authority: Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 through 5207; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; Homeland Security Act of 2002, 6 U.S.C. 101; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; and E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 16. In § 206.226 revise paragraph (b) to read as follows:

§ 206.226 Restoration of damaged facilities.

* * * * *

(b) *Mitigation planning.* In order to receive assistance under this section, the State or Indian Tribal government applying to FEMA as a grantee must have in place a FEMA approved State or Tribal Mitigation Plan, as applicable, in accordance with 44 CFR part 201.

* * * * *

■ 17. Revise § 206.401 to read as follows:

§ 206.401 Local standards.

The cost of repairing or constructing a facility in conformity with minimum codes, specifications and standards may be eligible for reimbursement under section 406 of the Stafford Act, as long as such codes, specifications, and standards meet the criteria that are listed at 44 CFR 206.226(d).

■ 18. Amend § 206.431 by revising the definitions of "Indian Tribal government" and "Local Mitigation Plan" and by adding, in alphabetical order, the definition of "Tribal Mitigation Plan" to read as follows:

§ 206.431 Definitions.

* * * * *

Indian Tribal government means any Federally recognized governing body of an Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals.

Local Mitigation Plan is the hazard mitigation plan required of a local government acting as a subgrantee as a condition of receiving a project subgrant under the HMGP as outlined in 44 CFR 201.6.

* * * * *

Tribal Mitigation Plan is the hazard mitigation plan required of an Indian Tribal government acting as a grantee or subgrantee as a condition of receiving a project grant or subgrant under the HMGP as outlined in 44 CFR 201.7.

■ 19. In § 206.432 revise paragraphs (b) introductory text and (b)(2) to read as follows:

§ 206.432 Federal grant assistance.

* * * * *

(b) *Amounts of Assistance.* The total Federal contribution of funds is based on the estimated aggregate grant amount to be made under 42 U.S.C. 5170b, 5172, 5173, 5174, 5177, and 5183 of the Stafford Act for the major disaster (less associated administrative costs), and shall be as follows:

* * * * *

(2) *Twenty (20) percent.* A State with an approved Enhanced State Mitigation Plan, in effect before the disaster

declaration, which meets the requirements outlined in § 201.5 of this subchapter shall be eligible for assistance under the HMGP not to exceed 20 percent of such amounts, for amounts not more than $35.333 billion.

* * * * *

■ 20. In § 206.434 revise paragraphs (b)(1), (c)(1), and (e) introductory text to read as follows:

§ 206.434 Eligibility.

* * * * *

(b) * * *

(1) Local and Indian Tribal government applicants for project subgrants must have an approved local or Tribal Mitigation Plan in accordance with 44 CFR part 201 before receipt of HMGP subgrant funding for projects.

* * * * *

(c) * * *

(1) Be in conformance with the State Mitigation Plan and Local or Tribal Mitigation Plan approved under 44 CFR part 201; or for Indian Tribal governments acting as grantees, be in conformance with the Tribal Mitigation Plan approved under 44 CFR 201.7;

* * * * *

(e) *Property acquisitions and relocation requirements.* Property acquisitions and relocation projects for open space proposed for funding pursuant to a major disaster declared on or after December 3, 2007 must be implemented in accordance with part 80 of this chapter. For major disasters declared before December 3, 2007, a project involving property acquisition or the relocation of structures and individuals is eligible for assistance only if the applicant enters into an agreement with the FEMA Regional Administrator that provides assurances that:

* * * * *

Dated: September 8, 2009.

David Garratt,

Acting Deputy Administrator, Federal Emergency Management Agency.

[FR Doc. E9–22278 Filed 9–15–09; 8:45 am]

BILLING CODE 9110–12–P

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[DA 09–2016; MB Docket No. 09–125; RM–11548]

Television Broadcasting Services; Biloxi, MS

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: The Commission grants a petition for rulemaking filed by WLOX License Subsidiary, LLC, the permittee of station WLOX(TV), channel 13, Biloxi, Mississippi, requesting the substitution of its pre-transition digital channel 39 for its allotted post-transition channel 13 at Biloxi.

DATES: This rule is effective September 16, 2009.

FOR FURTHER INFORMATION CONTACT: Joyce L. Bernstein, Media Bureau, (202) 418–1600.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission's *Report and Order*, MB Docket No. 09–125, adopted September 3, 2009, and released September 4, 2009. The full text of this document is available for public inspection and copying during normal business hours in the FCC's Reference Information Center at Portals II, CY–A257, 445 12th Street, SW., Washington, DC, 20554. This document will also be available via ECFS (*http://www.fcc.gov/cgb/ecfs/*). (Documents will be available electronically in ASCII, Word 97, and/or Adobe Acrobat.) This document may be purchased from the Commission's duplicating contractor, Best Copy and Printing, Inc., 445 12th Street, SW., Room CY–B402, Washington, DC 20554, telephone 1–800–478–3160 or via e-mail *http://www.BCPIWEB.com*. To request this document in accessible formats (computer diskettes, large print, audio recording, and Braille), send an e-mail to *fcc504@fcc.gov* or call the Commission's Consumer and Governmental Affairs Bureau at (202) 418–0530 (voice), (202) 418–0432 (TTY). This document does not contain information collection requirements subject to the Paperwork Reduction Act of 1995, Public Law 104–13. In addition, therefore, it does not contain any information collection burden "for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107–198, *see* 44 U.S.C. 3506(c)(4). Provisions of the Regulatory Flexibility Act of 1980 do not apply to this proceeding.

The Commission will send a copy of this *Report and Order* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional review Act, *see* 5 U.S.C. 801(a)(1)(A).

List of Subjects in 47 CFR Part 73

Television, Television broadcasting.

■ For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR Part 73 as follows:

PART 73—RADIO BROADCAST SERVICES

■ 1. The authority citation for part 73 continues to read as follows:

Authority: 47 U.S.C. 154, 303, 334, 336.

§ 73.622 [Amended]

■ 2. Section 73.622(i), the Post-Transition Table of DTV Allotments under Mississippi, is amended by adding DTV channel 39 and removing DTV channel 13 at Biloxi.

Federal Communications Commission.

James J. Brown,

Deputy Chief, Video Division, Media Bureau.

[FR Doc. E9–22315 Filed 9–15–09; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R3–ES–2009–0063; 92220–1113–0000; C6]

RIN 1018–AW80

Endangered and Threatened Wildlife and Plants; Reinstatement of Protections for the Gray Wolf in the Western Great Lakes in Compliance With Settlement Agreement and Court Order

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are issuing this final rule to comply with a court order that has the effect of reinstating the regulatory protections under the Endangered Species Act of 1973, as amended (ESA), for the gray wolf (*Canis lupus*) in the western Great Lakes. This rule corrects the gray wolf listing in our regulations which will reinstate the listing of gray wolves in all of Wisconsin and Michigan, the eastern half of North Dakota and South Dakota, the northern half of Iowa, the northern portions of Illinois and Indiana, and the northwestern portion of Ohio as endangered, and reinstate the listing of wolves in Minnesota as threatened. This rule also reinstates the former designated critical habitat for gray wolves in Minnesota and Michigan and special regulations for gray wolves in Minnesota.

DATES: This action is effective September 16, 2009.

Appendix C

Hazard Mitigation Planning Committee / Multi-Agency Coordination (MAC) Group Members Listing

Policy Group
Commissioners, Mayors & Sheriff

Operations Section

Includes Public Safety and Security ESF #13, Fire Service ESF #4, Emergency Medical Services ESF #8, Hazardous Materials ESF #10, Search and Rescue ESF #9, and Agriculture and Natural Resources ESF #11

Branches	**Agencies**
Law Enforcement Branch	Elmore County Sheriff's Department
	Millbrook Police Department
	Wetumpka Police Department
	Tallassee Police Department
	Coosada Police Department
	Eclectic Police Department
	Poarch Creek Tribal Police
Fire Service Branch	Elmore County Firefighter's Association
	Buyck Volunteer Fire Department
	Coosada Volunteer Fire Department
	Deatsville Volunteer Fire Department
	Eclectic Volunteer Fire Department
	Elmore Volunteer Fire Department
	Emerald Mountain Volunteer Fire Department
	Friendship Volunteer Fire Department
	Holtville/Slapout Volunteer Fire Department
	Kowaliga Volunteer Fire Department
	Lightwood Volunteer Fire Department
	Millbrook Fire and Rescue
	Prattville Fire Department
	Real Island Volunteer Fire Department
	Red Hill Volunteer Fire Department
	Redland Volunteer Fire Department
	Santuck Volunteer Fire Department
	Seman Volunteer Fire Department
	Tallassee Volunteer Fire Department
	Titus Volunteer Fire Department
	Wetumpka Volunteer Fire Department
	Windermere Volunteer Fire Department
EMS Branch	Haynes Ambulance
	Millbrook Fire and Rescue
	Eclectic Volunteer Fire Department
	Air Evac Lifeteam
	LifeSaver

Hazardous Materials Branch	Elmore County Haz-Mat Response Team Fire Service Branch
Search & Rescue Branch	Law Enforcement Branch Fire Service Branch Search and Rescue of Elmore County
Animal Control Branch	Elmore County Humane Society Elmore County Sheriff's Department (Animal Contol Officer) Elmore County Extension Office Tallassee Animal Control Officer Millbrook Animal Control Officer Wetumpka Animal Control Officer

Infrastructure Section

Includes Transportation ESF #1, Communications ESF #2, Public Works ESF #3, and Utilities ESF #12

Branches	**Agencies**
Transportation Branch	Elmore County Board of Education Tallassee Board of Education Elmore County EMA/HS Office Public Works Branch
Communications Branch	Elmore County E-911 Law Enforcement Branch Elmore County EMA/HS Office
Public Works Branch	Elmore County Highway Department Millbrook Public Works Department Wetumpka Public Works Department Tallassee Public Works Department
Utilities Branch	Alabama Power Company Central Alabama Electric Co-operative Central Elmore Water and Sewer Authority Eclectic Water Works and Sewer Elmore Water Authority Five-Star Water Authority Friendship Water Authority Holtville Water System Millbrook Water and Sewer Department Tri-Community Water System Tallassee Water Department

Wetumpka Water Works and Sewer Board

Marbury Water System
Brighthouse Networks
BellSouth
Southern Natural Gas Company
Dixie Pipeline Company

Community Services Section

Includes Mass Care ESF #6, Public Health ESF #8 and Long Term and Community Recovery ESF #14

Branches	**Agencies**
Mass Care Branch	Elmore County Department of Human Resources American Red Cross Elmore County Board of Education Tallassee Board of Education Churches and Schools Facilities for Shelters
Public Health Branch	Elmore County Health Department Elmore County Hospital Tallassee Community Hospital Elmore County Coroner
Disaster Services Branch	Elmore County VOAD Central Alabama Aging Consortium Elmore County Extension Office 211 Connect of Alabama Hands on River Region Volunteer and Information Center

Planning & External Affairs Section

Includes Emergency Management ESF #5 and External Affairs ESF #15

Branches	**Agencies**
Planning Branch	Elmore County EMA/HS Office All other Branches may have input into the Planning Branch
External Affairs Branch	Elmore County EMA/HS Office Elmore County Administrator/Public Information Officer All other Branches may have input into the External Affairs Branch

Logistics Section

Includes Emergency Management ESF #5 and Logistics Management and Resource Support ESF #7

Agencies

Elmore County EMA/HS Office

All other Branches may have input into the Logistics Branch

Finance/Administration Section Includes Finance and Administration ESF #16

Agencies

Elmore County Administrator

City or Town Clerks

Elmore County EMA/HS Office

Policy Group

Represenatives from other agencies or organizations

Private Sector Section

Neptune Technologies

Russell Lands

Dixie Pipeline

El Paso (Alagasco & Southern Natural)

GKN Aerospace

Apex Gas

Superior Propane

Alabama Power Company

CSX Transportation

Arrowhead Thermoplastics

Turner Oil Company

Freedom Fuels

Elmore County Farmers Exchange

Appendix D

Plan Approval, Adoption and Assurances

Elmore County Commission
Elmore County All Hazards Mitigation Plan
Resolution of Adoption
12-8-2014

WHEREAS, Elmore County recognizes the threat natural, human-caused and technological hazards pose to the people and property of our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Mitigation Plan is a requirement as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, the Elmore County All Hazards Mitigation Plan has been prepared in accordance with FEMA requirements in 44 C.F.R. 201.6 relating to natural hazards; and

WHEREAS, though not mandated Elmore County incorporated technological and human-caused hazards to develop a comprehensive mitigation program and strategy; and

WHEREAS, the Elmore County Emergency Management Agency, Elmore County Commission, all Elmore County municipalities, and FEMA approved the local natural hazard mitigation plan in 2005 and the update in 2010; and,

WHEREAS, 44 C.F.R. 201.6 requires the local mitigation plan to be updated every 5 years; and,

WHEREAS, the Elmore County All Hazards Mitigation Plan will replace the Elmore County Natural Hazards Mitigation Plan as adopted in 2010; and

WHEREAS, the Elmore County All Hazards Mitigation Plan has been prepared in accordance with the requirements to include Elmore County; the Cities of Millbrook, Wetumpka, and Tallassee, and the Towns of Coosada, Elmore, Deatsville, and Eclectic; and,

WHEREAS, the Elmore County All Hazards Mitigation Plan addresses all hazards deemed to threaten the incorporated and unincorporated areas of Elmore County, Alabama;

NOW THEREFORE, BE IT RESOLVED, THE ELMORE COUNTY COMMISSION, adopts the Elmore County All Hazards Mitigation Plan. The Elmore County All Hazards Mitigation Plan shall be effective immediately following approval by the Federal Emergency Management Agency.

APPROVED AND ADOPTED THIS THE 8th **DAY OF** December**, 2014.**

David Bowen, Chairman

ATTEST: Grace McDuffie, Administrator

Appendix D – Plan Approval, Adoption and Assurances

Ref: 2.4 Assurances

The purpose of hazard mitigation is to implement actions that eliminate the risk from hazards or reduce the severity of the effects of hazards on people and property. Mitigation actions are both short-term and long-term activities that reduce the cause or occurrence of hazards; reduce exposure to hazards; or reduce effects of hazards through various means to include preparedness, response and recovery measures.

This plan update applies to all local agencies, boards, commissions, and departments assigned mitigation responsibilities, and to others as designated by the Elmore County Commission or the Director of the Elmore County Emergency Management Agency (EMA).

The 2015 *Elmore County All-Hazards Mitigation Plan* update was prepared in compliance with Public Law 106-390, *Disaster Mitigation Act of 2000,* as amended. This plan update implements hazard mitigation measures intended to eliminate or reduce the effects of future disasters throughout Elmore County, and was developed in a joint and cooperative venture by members of the Elmore County Hazard Mitigation Planning Committee (HMPC) / Elmore County Multi-Agency Coordination (MAC) Group, over the course of the update process.

Elmore County will comply with all applicable state and federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 Code of Federal Regulations (CFR) 13.11c. Elmore County will amend its plan whenever necessary to reflect changes in local/state and/or federal laws and statutes as required in 44 CFR, 13.11d. At a minimum, the Elmore County EMA will ensure periodic plan reviews are conducted, making changes/updates as necessary, and will conduct a comprehensive plan update every five years from the date of approval in accordance with 44 CFR 201.6(5)(d)(3) in order to continue program eligibility.

As Director, Elmore County Emergency Management Agency, I hereby adopt this plan update in accordance to the powers delegated to me and accept this plan update for implementation in order to protect the lives and property of the citizens of Elmore County, Alabama.

12-11-2014
Date

Eric Jones, Director
Elmore County Emergency Management Agency

Appendix E
Glossary of Acronyms and Terms

Glossary of Acronyms and Terms

AACC	Alabama Association of County Commissioners
AARC	Alabama Association of Regional Councils
ACAMP	Alabama Coastal Area Management Plan
ADCNR	Alabama Department of Conservation and Natural Resources
ADECA	Alabama Department of Economic and Community Affairs
ADEM	Alabama Department of Environmental Management
ADHR	Alabama Department of Human Resources
ADPS	Alabama Department of Public Safety
AEMA	Alabama Emergency Management Agency
AFC	Alabama Forestry Commission
AGIC	Alabama Geographic Information Council
AHC	Alabama Historical Commission
ALDOT	Alabama Department of Transportation
ALM	Alabama League of Municipalities
ARC	American Red Cross
CIAP	Coastal Impact Assistance Program
CPYRWMA	Choctawhatchee, Pea and Yellow Rivers Watershed Management Authority
CRS	Community Rating System
CZMP	Coastal Zone Management Plan
EO 19	Executive Order 19
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance Program
GSA	Geological Survey of Alabama
HMGP	Hazard Mitigation Grant Program
HMPC	Hazard Mitigation Planning Committee
IFR	Interim Final Rule
MMP	Map Modernization Program
MAC Group	Multi-Agency Coordination Group
NFIP	National Flood Insurance Program
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
OWR	Office of Water Resources
PA	Public Assistance
PDM	Pre-Disaster Mitigation Program
RPC	Regional Planning Commission
SHMO	State Hazard Mitigation Officer
SHMT	State Hazard Mitigation Team
TAC	Technical Advisory Committee
USACE	United States Army Corps of Engineers

Term	Definition
Acquisition of Hazard-Prone Structures	Local governments can acquire lands in high hazards areas through conservation easements, purchase of development rights, or outright purchase of property.
Base Flood Elevation (BFE)	The elevation of the Base Flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The Base Flood Elevation is used as a standard for the National Flood Insurance Program (NFIP). The Base Flood is the flood that has a 1% chance of being equaled or exceeded in any given year. The Base Flood is also referred to as the 100-Year Flood.
Benefit-cost Analysis (BCA)	Benefit-cost analysis is a systematic, quantitative method of comparing the projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness.
Capability Assessment	An assessment that provides a description and analysis of a community or state's current capacity to address the threats associated with hazards. The capability assessment attempts to identify and evaluate existing policies, regulations, programs, and practices that positively or negatively affect the community or state's ability to address specific hazards or threats.
Coastal Zone	The area along the shore where the ocean meets the land as the surface of the land rises above the ocean. This land / water interface includes barrier islands, estuaries, beaches, coastal wetlands, and land areas with direct drainage to the ocean.
CoBRA	Coastal Barrier Resources Act in 1982. The CoBRA, while not prohibiting privately financed development prohibits most new Federal financial assistance, including flood insurance, within an area designated as part of the Coastal Barrier Resources System (CBRS).
Community Rating System (CRS)	An incentive-based program for NFIP participating communities that implement flood mitigation programming above the NFIP minimum measures that reduce flood hazard risk. In return for enhanced flood mitigation programming, policy holders in participating communities enjoy discounted flood insurance premiums.
Cost-Effectiveness	One evaluation criteria for federal grant programs. FEMA defines a cost-effective project as one whose long-term benefits exceed its costs. That is, a project should prevent more expected financial loss that it costs initially to fund the effort. Benefit-cost analysis is one way to illustrate that a project is cost-effective.

Critical Facilities	Facilities vital to the health, safety, and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, utility facilities, and hospitals.
Disaster Mitigation Act of 2000 (DMA 2000)	DMA 2000 (Public Law 106-390) is the latest legislation to improve the planning process. Signed into law on October 30, 2000, this legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.
Earthquake	A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.
Elevation of Structures	Term used in conjunction with floodplain management. Raising structures above the base flood elevation to protect structures located in areas prone to flooding.
Erosion	Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, through the action of wind, water, or other geologic processes.
Federal Emergency Management Agency (FEMA)	Agency created in 1979 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery. FEMA is now part of the Department of Homeland Security.
Flood	A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.
Flood Elevation	Elevation of the water surface above an established datum, e.g. National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988 or Mean Sea Level.
Flood Insurance Rate Map (FIRM)	Map prepared by the Federal Emergency Management Agency showing both the Special Flood Hazard Area (SFHA) and the risk premium zones applicable in a given community.
Flood Mitigation Assistance (FMA) Program	A program created as part of the National Flood Insurance Reform Act of 1994. FMA provides funding to assist communities and states in implementing actions that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other NFIP insurable structures, with a focus on repetitive loss properties.

Floodplain	Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.
Flood-proofing	Actions that prevent or minimize future flood damage. Making the areas below the anticipated flood level watertight (dry flood proofing) or intentionally allowing floodwater to enter the interior to equalize flood pressures are examples of flood proofing (wet flood proofing).
Flood Zone	A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.
Frequency	A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1% chance of happening in any given year.
Geographic Information System (GIS)	A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.
Goals	General guidelines that express desired results. They are usually broad policy-type statements, long term in nature and represent global visions.
Hazard	A source of potential danger or adverse condition. Hazards include naturally occurring events such as floods, earthquakes, tornadoes, tsunamis, coastal storms, landslides, and wildfires that strike populated areas and have the potential to harm people and property.
Hazard Mitigation	Sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.
Hazard Mitigation Grant Program (HMGP)	Authorized under Section 404 of the Roger T. Stafford Disaster Relief and Emergency Assistance Act, HMGP is administered by implementing hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster.
Hazard Profile	A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent.
HAZUS, HAZUS-MH	A GIS-based, nationally standardized, loss estimation tool developed by FEMA.

	HAZUS-MH is the new multi-hazard version that includes earthquake, wind, hurricane, and flood loss estimate components.
Hurricane	An intense tropical cyclone, formed in the atmosphere over warm ocean seas, in which wind speeds reach 74 miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye". Hurricane circulation is counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
Hydrology	The study of water's overland flow characteristics. A flood discharge is developed by a hydrologic study.
Infrastructure	Infrastructure includes communication technology such as phone lines or internet access, vital services such as public water supplies and sewer treatment facilities, and transportation systems such as airports, highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots, waterways, and canals.
Lowest Floor	Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure.
Magnitude	Measures the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.
Mitigation Plan	The document that articulates results from the systematic process of identifying hazards and evaluating vulnerability, identifying goals, objectives, and actions to reduce or eliminate the effects of identified hazards, and an implementation plan for carrying out the actions.
National Flood Insurance Program (NFIP)	A Federal program created by Congress in 1968 that provides federally backed flood insurance in communities that enact minimum floodplain management regulations in 44 CFR 60.3.
National Weather Service (NWS)	Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to Federal and state entities in preparing weather and flood warning plans.
Nor'easter	An extra-tropical cyclone producing gale-force winds and precipitation in the form of heavy snow and rain.
Objectives	Objectives define strategies or implementation steps to attain identified goals. Unlike goals, objectives are specific and measurable.
Open Space Preservation	Preserving undeveloped areas from development through any number of methods, including low-density zoning, open space zoning, easements, or public or private acquisition. Open space preservation is a technique that can be used to

	prevent flood damage in flood-prone soils, and can enhance the natural and beneficial functions of floodplains.
Post-Disaster Recovery Planning	The process of planning those steps the jurisdiction will take to implement long-term reconstruction with a primary goal of mitigating its exposure to future hazards. The post-disaster recovery planning process can also involve coordination with other types of plans and agencies, but it is distinct from planning for emergency operations.
Probability	In terms of natural hazards, the likelihood a hazard event will occur in a given time period.
Repetitive Loss	Property A property that is currently insured that has two or more NFIP losses (occurring more than ten days apart) of at least $1,000 each and has been paid within any 10-year period since 1978.
Replacement Value	The cost of rebuilding a structure. This is usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality. This is not the same as market value.
Risk	The estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.
Special Flood Hazard Area (SFHA)	An area within a floodplain having 1% or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps by darkly shaded areas with zone designations that include the letter A or V.
Stakeholders	Individuals or groups, including businesses, private organizations, and citizens, that will be affected in any way by an action or policy.
State Hazard Mitigation Officer (SHMO)	The representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.
Storm Surge	Rise in the water surface above normal water levels on the open coast.

Sub-Tropical Depression	A weather system that has some characteristics of a tropical cyclone and some characteristics of an extra tropical cyclone.
Subdivisions and Development Regulations	Regulations and stands governing the division of land for development for sale. Subdivision regulations can control the configuration of parcels, set standards for developer-built infrastructure, and set standards for minimizing runoff, impervious surfaces, and sedimentation during development. They can be used to minimize exposure of buildings and infrastructure to hazards.
Tornado	A violently rotating column of air extending form a thunderstorm to the ground.
Tropical Cyclone	A generic term or a cyclonic, low-pressure system over tropical or subtropical waters.
Tropical Depression	A tropical cyclone with maximum sustained winds of less than 39 mph.
Tropical Storm	A tropical cyclone with maximum sustained winds greater than 39 mph and less than 74 mph.
Vulnerability Assessment	The study of the extent of injury and damage that may result from a hazard event of a given magnitude in a given areas. Vulnerability assessments typically address impacts of hazard events on the existing and future built environment.
Zoning Ordinances	Designation of allowable land use and intensities for local jurisdiction. Zoning ordinances consist of two components: a zoning text and a zoning map.

Area intentionally left blank.

Work Session and Business Meeting
Monday, June 10, 2013
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Gwendolyn Long	Citizen
Randy Lee	
Jessie Jenkins	ECEDA
Jim [illegible]	E-911
Bill [illegible]	West TEA Party
Wayne Mason	Citizen
Steven C. Grooms	LE. Speaker & [illegible]
Joe Rodriguez	

Room for additional entries on reverse side

Work Session and Business Meeting
Tuesday, November 12, 2013
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
[illegible]	[illegible]
[illegible]	citizen
[illegible]	[illegible]
[illegible]	
[illegible]	ECEDA

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, December 9, 2013
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
[illegible]	Citizen
JOHN HAZEL	
Katrina Mitchell	ACES/ELMORE
Randy [illegible]	Maint.
Sara Bynard	CARPDC
James, Odis	Self
Quinn, Stanley	citizen
Pennie Smith	
Lee Greer	ECEDA
[illegible]	Citizen
Ricky Pokel	Citizen

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, January 13, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
SUNIL R. PATEL	LORD GANESH LLC
Lettie McCarty	
Lonnie Smith	Lonnie Smith Properties LLC.
JOHN HAZEL	
[illegible]	
[illegible]	
[illegible]	Maint.
Katrina Mitchell	ACES/Youth Leadership
Emily Strength	Youth Leadership
Sommer Parker	Youth Leadership
Paisley Blackmon	Youth Leadership
Jordan Cantrell	Youth Leadership
Joseph Flemming	Youth Leadership
Madison Roberts	Youth Leadership
Zachary Willis	Youth Leadership
Hunter Woodruff	Youth Leadership
Jack Broom	Youth Leadership
Karen Carter	YOUTH LEADERSHIP
Keith Carter	"
Jason Carter	"
Jerry Carter	"
Noah Carter	

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, January 13, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Jasmine Farrow	Youth Leadership
Latrice Griffin	" "
Percy Gill	Citizen
Bill Wood	West Tea Party
[illegible]	
Latisha Davis-Butler	

Work Session and Business Meeting
Monday, March 24, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are representing an organization, please indicate the name of your organization below.
If you are here for the proposed Dog Containment Law, please indicate if you are for or against the law.

NAME	ADDRESS or ORGANIZATION	FOR or AGAINST
Jake Walker	7526 Grier Rd	against
Shauna Walker	7526 Grier Rd	against
Clint Walker	7526 Grier Rd	against
Rita Maxwell	290 Haggerty Rd	for
Ellen Reece	99 Southern Hills Rdg	for
HARVEY REECE	99 SOUTHERN HILLS RIDGE WETUMPKA	FOR
Evelyn Sherbert	160 Reid Cr Deatsville	FOR
Don Sherbert	160 Reid Cr. Deatsville	FOR
JAMES C. HARRIS	260 WOODLAND CT WETUMPKA	FOR
BARBARA HARRIS	260 WOODLAND CT WETUMPKA	FOR
FRANK VAUTER		
Barbara Jones		
Marcia Nelson	114 Moseley Rd Eclectic 36024	FOR
DONOVAN J. NELSON	114 MOSELEY RD ECLECTIC 36024	FOR
Terri McNeil	1685 LoBoLE Road	NOT SURE
June G Myers	106 Pauline Cir Wetumpka	FOR
Peggy Jeancoat	492 Thornton Rd - Wet. Al	for
Kathy J. Gue	464 Thornton RD Wet. Al	for
J.R. + Sabrina Reeves	6700 Georgia Rd. Wet AL	FOR
Rita B. Mann	192 Mann Cir. Wet. AL	For
MARK CLAYTON	95 BUBBA LANE, ELMORE	FOR

Work Session and Business Meeting
Monday, March 10, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Mack Bazzell	CITIZEN
Barbara Jones	
BOBBY L. MAYS	Citizen
Joe Brooks	
Bill Wood	WTP
Brent Helms	PROBATE OFFICE

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, March 24, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are representing an organization, please indicate the name of your organization below.
If you are here for the proposed Dog Containment Law, please indicate if you are for or against the law.

NAME	ADDRESS or ORGANIZATION	FOR or AGAINST
Buford E Strength	200 Clovd Flethop Rd Eclatic	For
~~Mike Stoudemire~~		
Patricia Brightwell	1018 Dean Circle, Tallassee	For
Norman Dean	612 Old Barn Rd, Tallassee	FOR
Kaye Dean	612 Old Barn Rd, Tallassee	For
Betty Kalita	55 WOODHILL TRCE, Wetumpka	FOR.
Debra Bracy	189 Rose Marie Tr. 36093	For
Kathleen Nall	1470 Butler Mill Rd. Eclectic 36024	FOR
Mike Holmes	67 Cabin Rd Wetumpka 36093	?
Theresa Wayne	55 Trillium Ct, Wetumpka	For
Edwin Bracy	277 Rose Marie Tr Wetumpka	No For
Paula Daily	180 Busch Hill Dr Wc	NO Against

Work Session and Business Meeting
Monday, March 24, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are representing an organization, please indicate the name of your organization below.
If you are here for the proposed Dog Containment Law, please indicate if you are for or against the law.

NAME	ADDRESS or ORGANIZATION	FOR or AGAINST
Delilah Hough	Emerald Mountain HOA	FOR
Christopher Stewart	137 bubba ln Millbrook	For
Sharon Strength	200 Chandler Flannigan Rd Eclectic	For
Gene A Kline	Humane Society of Elmore Co.	For
Robert Kline	Humane Society of Elmore Co.	For
Ken Sanders	1022 Lower Tuskegee Rd-Tallassee	FOR
Mildred Sanders	1022 Lower Tuskegee Rd Tallassee	For
Pamela Johnson	ECPFC	FOR
Paul Walker		Against
Sandra Walker		Against
Henry Tucker		~~For~~ Against
Sue Ellen Tucker		Against
Samuel M Faulk	HSEC	FOR
Wayne Mann	2045 Utica Rd Wetumpka	
Monica Foster	68 Bubba lane	For
Shawn Bygsley	68 Bubba lane	For

Work Session and Business Meeting
Monday, March 24, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are representing an organization, please indicate the name of your organization below.
If you are here for the proposed Dog Containment Law, please indicate if you are for or against the law.

NAME	ADDRESS or ORGANIZATION	FOR or AGAINST
Rodney Baker	6240 Bradley Rd	
Thurl M. Mitchell	446 McQueen Dr.	
Andrea Perkins	131 Weoka Ridge Drive	FOR
Kristina Lewis	2999 Mitchell Creek Rd.	FOR
Julie Dunlap	20 Hill Dr. Eclectic, AL	FON
BARRY WILSON	65 Sunshine Hollow	For
Barbara Monk	Weoka Road	For
Bill Wood	Wet. Tea Party	
Debra Summerlin	724 Mitchell Crk Rd.	For
Bobbie Grier	5160 Balm Rd Wetu, AL	For

Work Session and Business Meeting
Monday, March 24, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are representing an organization, please indicate the name of your organization below.
If you are here for the proposed Dog Containment Law, please indicate if you are for or against the law.

NAME	ADDRESS or ORGANIZATION	FOR or AGAINST
Leigh Dasinger	4230 Vaughn Rd Millbrook	FOR
William Dasinger	4230 Vaughn Rd Millbrook	FOR
Patricia Baddie	5380 Laurel Creek Rd Wetumpka	For
ERIC JOHNSON	1120 HIDDEN FOREST TRAIL WETUMKA	
HEIDI CAOUETTE	95 BUBBA LN, ELMORE	FOR
CIERRA MALONE	95 BUBBA LN, ELMORE	FOR
Jim Bocquin	220 Fraley Lane, Deatsville	For
Brian Clayton	786 Powell Loop, Wetumpka	For
Dawn Sullivan	85 Canal Ct, Wetumpka, AL	FOR
Elizabeth Crouse	262 Bonners Pt Wet	FOR
NAOMI MECTOR	45 SWEET HOLLOW - TALLASSEE AL	FOR
JACK BAKER	65 SWEET HOLLOW TALLASSEE AL	FOR
JOHN HAZEL	1623 BLACKBERRY RD	—
JOHN SAMFORD	209 Old Barn Rd. Wetumpka	FOR
CHARLES GARRISON	9180 WOOKARD	FOR
WANDA GARRISON	9180 WOOKARD	FOR
REA CORD	2280 Weldon Rd Tallassee	FOR
Loyd McBride	173 Woodland ct. Wetumpka, AL	For
Charlene Lovelace	1029 Hollywood Rd West	
Fred Lovelace	1029 Hollywood Rd West	
Carol Armstrong	6230 Bradley Rd	

Addressing the Elmore County Commission
During the Public Hearing on Proposed Dog Containment Law
Monday, March 24, 2014, 5:00 p.m.

Please fill out the information below.
If you are representing an organization, please indicate the name of your organization below.
Please indicate if you are for or against the proposed law.

NAME	ADDRESS or ORGANIZATION	FOR or AGAINST
Exa: Joe Smith	123 Main St, Wetumpka 36092	FOR
CLINT WALKER	7526 GRIER Rd	
Terri McNeil	6685 LoBee Rd Equality	against
[illegible]	7530 Grier Rd	against
[illegible]	3041 Grier Rd	against
Carol Armstrong	6230 Bradley Rd	
Regina Pickron	258 Estes Butler Rd	Against
Shauna Walker	7526 Grier R	Against
Steve Walker		against
Paula Bailey	180 Busch Hill Dr	against
JAMES C HARRIS	260 WOODLAND CT	FOR
Patricia Bobo	5780 Long Creek Rd	For
Kristina Lems	2999 Mitchell Creek Rd.	FOR
Monica Foster	68 Babba lane	FOR
Kathleen Nall	1470 Butler Mill Rd.	FOR
Laura Call	87 Mylon Rd	
Elizabeth Chum	262 Bonnie St	For
Ben Sanders	1022 Lower Tuskegee Rd	FOR
REA CoRD	Shelter	FOR
David Law	364 Law Rd Titus, Al	For

Work Session and Business Meeting
Thursday, April 17, 2014
9:30 a.m. & 10:00 a.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Bill Wood	WTP
Michelle Wood	ECDHR
Maggie Marie Jones	ACES
Chrissy Bushell	ACES
Holly Christian	ECDHR
David D. Goodwin	Herald
[illegible]	Sheriff's Dept.
Angela Cardwell	ACES
Kathy Mitchell	ACES
Jane Allen	ACES
Hatsin Crenshaw	Citizen Crenshaw Community Park

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, May 5, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Jessie Jones	Community Improvement Assn.
Catherine Jones	"
[illegible]	CARPC
Wayne Mason	
Thomas & Bertha Brown	Elmore Democratic Committee
Angel Gray	Community Improvement Assn.
Earl R. Truitt	citizen

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, June 9, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Jack Rooks	
Barbara J. Jones	
[illegible]	
Desmei Smith	

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, June 23, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Barbara Bryant	Humane Society of Elmore County
Barbara Jones	
Bill Ward	
Lee Gill	

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, July 28, 2014
3:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Jennifer Dvorak	MACOA/RSVP
Donna Mariella	MACOA/RSVP
Shirley Stewart	MACOA/RSVP
Catherine Parker	CIA, Millbrook, AL
Pamela Johnson	ECPFC
Neil Probst	Montgomery Advertiser
Bill Wood	Citizen
FAYE HARRELL	ELMORE SWCD-DAC
ROBERT PARKER	ELMORE SWCD - SEC. + TREAS.
Judge Patrick D. Pinkston	Juvenile Court

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, July 28, 2014
3:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
James R. Martin	Elmore County Health Department
Cynthia Brown	Heritage Training & Career Ctr.
[illegible]	Elmore Co Partnership for Children
Terri & Ernie Pritchard	Search And Rescue
Heather Johnson	Envision 2020
Marion Dunlap	Community Action Agency Cent. Co
Karen Sellers	Family Sunshine Center
Kaira McSpadden	Montgomery Area Mental Health Authority
Marc Williams	The Learning Space, Inc
Whitney Hester	
Stephanie Weldon	
Stephen Woerner	Bridge Builders Alabama
Corey Beasley	"
Susie Anderson	Horseshoe Bend Regional Library
Katrina Mitchell	ACES
Denise [illegible]	Jackson Thornton
Bryan D. Cook	Humane Society of Elmore County
Bessie Jones	Community Improvement Assn. Kids Journey
BARBARA BRYAN	HUMANE SOCIETY of Elmore County
Stephen Blackwood	Emergency Room
Jannah Bailey	Child Protect

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, August 11, 2014
3:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Barbara Bryan	Elmore City Humane Society
Lisa Finley	ELEDA
J. Hanson	ECSO
[illegible]	Elmore County Sheriff Dept.
Ruth Lowry	ECSO
Gary Shaw	ECSO
[illegible]	CADTP
R.M. Herline	ECSO
Neil Probst	Montgomery Advertiser
Patrick Pinkston	Judge

Room for additional entries on reverse side

Work Session and Business Meeting
Monday, September 8, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Bill Wood	Citizen
Jack Boots	
Barbara Jones	
Lee Mace	
John E Euslen	
Brent Helms	PROBATE OFFICE
Hattie Jean Duke	
Shirley Moseley	Probate Office
[illegible]	Tag Office
[illegible]	Probate Office
Linda Baker	Tag office
Tateeyanna Edwards	Tag office
Lori White	Tag Office
[illegible]	Tag office
Ann Webb	Tag office
Callie Cook	Tag Office
Melissa Boudreau	Tag Dept
Sarah Edwards	Tag Department
Lisa Hinson	Probate Ofc.
Sheri Marlow	Probate ofc.
Bridget Lewis	Probate Office

Room for additional entries on reverse side
Christina

Work Session and Business Meeting
Monday, September 8, 2014
5:00 p.m. & 6:00 p.m.

Please sign in so we may have a record of your attendance.
If you are here representing an organization, please indicate the name of your organization below.

NAME	CITIZEN or ORGANIZATION
Christina Womble	tag office - millbrook
Wayne Mann	Citizen

HAZARD MITIGATION PLAN – UPDATE

The Elmore County Emergency Management Agency (EMA) will hold a public meeting on December 9, 2014 at 6:00 p.m. at the Elmore County Courthouse in the Commission Meeting room on the second floor. The Elmore County Multi-jurisdictional Hazard Mitigation Plan is being updated for Elmore County by the Elmore County EMA. The meeting will serve to inform the public of the hazard mitigation plan and the planning process.

The requirement for a county-wide Hazard Mitigation Plan is the result of the Disaster Mitigation Act of 2000 (DMA 2000). This act strengthens the importance of mitigation planning before disasters occur. As required by DMA 2000 the Hazard Mitigation Plan is a precondition for pre-disaster hazard mitigation program funding post disaster Hazard Mitigation Grant Program funding. The county and all municipalities are required to have a Hazard Mitigation Plan that has been approved by FEMA to be eligible for mitigation grant funding.

If you require special accommodations at this meeting, please contact the Elmore County EMA at (334) 567-6451.

PROOF OF PUBLICATION
STATE OF ALABAMA
ELMORE COUNTY

Before me, a notary public in and for the county and state above listed, deposes and says that:
"My name is Shannon Elliott. I am the General Manager of The Wetumpka Herald. The Newspaper is printed in the English language, has a general circulation and its principal editorial office in the county above listed and has been mailed under the second or publication class mailing privilege of the United States Postal Service from the post office where it is published at least 51 weeks a year.

The newspaper published the attached legal notice in the issues of: December 3, 2014

The sum charged for these publications was $ 115.94.

The sum charged by the newspaper for said publication is the actual lowest regular price for legal advertising notices as determined by Ala. Code §6-8-64(a).

There are no agreements between the newspaper and the officer or attorney charged with the duty of placing the attached legal advertising notices whereby any advantage, gain or profit accrued to said officer or attorney."

Shannon Elliott
AFFIANT

Sworn and subscribed this
4 day of December 20 14.

Ashley Dunn
Notary Public

My commission expires: 02/12/2018

NOTICE OF PUBLIC MEETING ON THE ELMORE COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN- UPDATE

The Elmore County Emergency Management Agency (EMA) will a hold a public meeting on December 9, 2014 at 6:00 PM at the Elmore County Courthouse in the Commission Meeting room on the second floor. The Elmore County Multi-jurisdictional Hazard Mitigation Plan is being updated for Elmore County by the Elmore County EMA. The meeting will serve to inform the public of the Hazard mitigation plan and the planning process. The requirement for a county-wide Hazard Mitigation Plan is the result of the Disater Mitigation Act of 2000 (DMA 2000). This act strengthens the importance of mitigation planning before disasters occur. As required by DMA 2000 the Hazard Mitigation Plan is a precondition for pre-disaster hazard mitigation program funding post disaster Hazard Mitigation Grant Program funding. The county and all municipalities are required to have a Hazard Mitigation Plan that has been approved by FEMA to be eligible for mitigation grant funding. If you require special accommodations at this meeting, please contact the Elmore County EMA at (334) 567-6451

The Wetumpka Herald
December 3, 2014

HAZARD MITIGATION PLAN – UPDATE

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PROOF OF PUBLICATION
STATE OF ALABAMA
ELMORE COUNTY

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"My name is Shannon Elliott. I am the General Manager of The Wetumpka Herald. The Newspaper is printed in the English language, has a general circulation and its principal editorial office in the county above listed and has been mailed under the second or publication class mailing privilege of the United States Postal Service from the post office where it is published at least 51 weeks a year.

The newspaper published the attached legal notice in the issues of: November 26, 2014

The sum charged for these publications was $115.94.

The sum charged by the newspaper for said publication is the actual lowest regular price for legal advertising notices as determined by Ala. Code §6-8-64(a).

There are no agreements between the newspaper and the officer or attorney charged with the duty of placing the attached legal advertising notices whereby any advantage, gain or profit accrued to said officer or attorney."

Shannon Elliott
AFFIANT

Sworn and subscribed this

1 day of December, 2014.

Ashley Dunn
Notary Public

My commission expires: 02/12/2018

NOTICE OF PUBLIC MEETING ON THE ELMORE COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE

The Elmore County Emergency Management Agency (EMA) will a hold a public meeting on December 1, 2014 at 6:00 PM at the Elmore County Courthouse in the Commission Meeting room on the second floor. The Elmore County Multi-jurisdictional Hazard Mitigation Plan is being updated for Elmore County by the Elmore County EMA. The meeting will serve to inform the public of the Hazard mitigation plan and the planning process. The requirement for a county-wide Hazard Mitigation Plan is the result of the Disater Mitigation Act of 2000 (DMA 2000). This act strengthens the importance of mitigation planning before disasters occur. As required by DMA 2000 the Hazard Mitigation Plan is a precondition for pre-disaster hazard mitigation program funding post disaster Hazard Mitigation Grant Program funding. The county and all municipalities are required to have a Hazard Mitigation Plan that has been approved by FEMA to be eligible for mitigation grant funding. If you require special accommodations at this meeting, please contact the Elmore County EMA at (334) 567-6451

The Wetumpka Herald
November 26, 2014

Hazard Mitigation Plan Briefing
Elmore County Courthouse
December 1, 2014

Name		Phone Number	Email
Eric Jones	EMA		
David R Brinson	EMA		

No one other than EMA staff was in attendance on the Dec. 1, 2014 HMPB Public Meeting

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Planning Process Documentation

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Kim Trost

From: Eric Jones <ejones@elmoreco.org>
Sent: Friday, December 28, 2012 10:02 PM
To: 'David Brunson'; ktrost@elmoreco.org
Subject: FW: MEETING DATE CHANGE: Community Services Section Meeting of the Elmore County Multi-agency Coordination (MAC) Group

FYI

From: Eric Jones [mailto:ejones@elmoreco.org]
Sent: Friday, December 28, 2012 10:01 PM
Subject: FW: MEETING DATE CHANGE: Community Services Section Meeting of the Elmore County Multi-agency Coordination (MAC) Group

Oops! I goofed up again! The date on the next Community Services Section should be Thursday (not Wednesday) February 7th.

See you all there.

Eric

From: Eric Jones [mailto:ejones@elmoreco.org]
Sent: Friday, December 28, 2012 2:39 PM
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Happy New Year!

Eric Jones, Director
Elmore County EMA/HS Office
201 Hill Street

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Eric Jones, Director
Elmore County EMA/HS Office
201 Hill Street
Wetumpka, Alabama 36092
ejones@elmoreco.org
(334) 567-6451 – Office
(334) 514-5213 – Fax

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ejones@elmoreco.org
(334) 567-6451 – Office
(334) 850-5611 – Cell
(334) 514-5213 – Fax
1*77*329 – S Linc

1

Fire Department Contacts:

✓ = Done

As of: 24 Feb 14 Fire Dept. Contacts →

- Try to schedule them for HMP update briefing

4 Feb 14 1253 — Keith Barnes: 657-8330, 296-1074 — Chief Barnes will get w/ asst chief and see what's best time of day, date to get together. Chief Barnes delivers propane and said he wouldn't be available until it warms up.

~~Buffett~~ Wightwood — ✓ Glyn Woodall asst chief — m-w, Th 657-~~[illegible]~~-2498, 318-7890

Windemere — ✓ Rick Borowski — 10 Feb 14/ 256-234-1239 or 256-234-0053 — (A) ✓ 13 Feb/1430 hrs

RHVFD — Charles Chambers: 334-414-~~[illegible]~~ 6235 / 857-2353 — 10 Feb/1049 left msg

KVFD — Kent Clements: 334-651-2387 — 10 Feb 14/1051 left voice msg — Kent called 14/10/ will call me back mtl Feb

ELVFD — ✓ Andrew Crawford: 10 Feb 399-4453, 239-6436 ✓ — (A) 21 Feb 0930 Ed Gray

Friendship — Steve Dennis: 799-3294 — 283-6463 - Should be ok — OK attended MACG mtg

Deatsville — Charles Ellio: 850-1515 — 10 Feb 14/1111 left voice msg

Eclectic — Adam Graham: 391-6151 — ~~any other #'s~~ we'll do a 1630 - he'll let me know

Holt/SL — Forrest Gregg: 850-8432 — Sent an email Fireman888@msn.com ✓ Sent dates

Real Island — Lamar Jones: 256-329-2673, 334-451-2473 — 10 Feb/1308 left msg w/ wife ~~[illegible]~~ — Out of town until 18 Feb 14

☐ 10 Feb/1635: Returned call, in Tampa, driving back on 18 Feb. He'll call but if he don't hear from him by the 20th, call him back!

Coosada — ✓ Rusty Murphree: 850-9529, 313-0134 — ✓ 13 Feb/1430

Emerald Mtn — Eric Porter: 567-0405, 391-2336, 313-5430 — 10 Feb 14/1331 left voice msg

List also used to update Phone Contacts for SwiftReach

Buyck ✓ J.P. Pullen - 313-2653 514-0410 6 Feb 1410

Sandrock Tommy Sanford 10 Feb 850-5183 567-4611 567-5144 ✓ 18 Feb/1830

PCI ✓ April Sells 251 577-1233 ~~251 253~~ will contact Tim Oliver - emailed dabolf times
asells@pci-nsn.gov

Elmore ✓ James Snider 322-9652, 799-5781 left msg 10 Feb 14/ 1510

Gregg Willis 546-4257 567-1333

Dept's already Participating:

millbrook ok Larry Brown 285-6707/6708 391-1408

Wet. FD ok Gregg Willis

Redland VFD Bill Drake

Tallassee - Travis Jones

Contacts

Elmore County BOE: 567-1200

Tallassee BOE: 283-6864

Public Works

millbrook PW Dept:

Utilities

10 Feb/1520
Eclectic WW & S: ? Jennifer Lyle 641-2840/2148, 399-7377
go ~~19-1300~~/X
26-1300/

10 Feb/1528 (A) 20 Feb/1300
Fire Star WA: David Popham: 567-1366, 800-3587 ✓ missed appt reschedule

Friendship WA: Steve Dennis 799-3294 283-6463

John Cain - 799-2927 285-3001
millbrook W & S Dept: michael Harris: 799-1649; Jeremy Hughes: 799-1647
left msg w/Receptionist / 10 Feb, 1540

285-4267/
285-4027
Tri-Comm W Sys: Ken Champion 868-5460
Scott Wilkes 462-4335, 391-4367 10 Feb/1547 left msg to call me on Tues
11 Feb 14/1120: Key unit call back w/ date & time options 205 755-7949

Marbury W Sys: can do over phone Guy Allen: 391-7027 (334)
left msg w/Receptionist 10 Feb/1550

Public Health

10 Feb/1611 ✓ (A) 13 Feb/1300
Elmore Community Hosp - Cindy Futral see note

HMP Update meetings - all in EMA Main

		0930	1300	1430
13 Feb 14 (Th)	1	Winter WX	Gly Woodall Lightwood 318-7890	Rick Borowski Windermere
	2			Rusty Monaff Coastal
	3			Scott Kramer
	4			
	5			
18 Feb 14 (Tues)	1		Tim Oliver	
	2		April Sells	
	3			
	4			
	5			
20 Feb 14 (Th)	1		David Popham 5★ 567-1366	1430
	2		Tim Oliver	
	3		April Sells	1830 - VFD Army mts
	4			Santuck, Seaman, Burgpatk, Redbolad
	5			
21 Feb 14 (Fri)	1	Andrew Crawford Elmore VFD		
	2	Ed Gray		
	3			
	4			
	5			

"No Show" called ob, not there, left at 1300. ~~left~~ 1433 pm to call me back (Stacey-mob)

Evening	1830	Other:
~~18 Feb 14~~	Tommy Sanford ✕	Adam Graham: 1630, _____
↳		

Provided copy to Eric

FYI Only

HMP Update meetings - all in EMA Main

		0930	1300	1430
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	5			
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	2			
	3			
	4			
	5			
20 Feb 14 (Th)	1		David Popham 567-1366 5★	
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	4			
	5			
21 Feb 14 (Fri)	1	Andrew Crawford / Elmore VFD		
	2	Ed Gray		
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	4			
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FYI: As of: 1630, 10 Feb 14 these are "confirmed" so far; waiting on several more return calls

(*) Need to "ok" w/ you

☐ "Go To" Requests:
- Eclectic WW's: 26 Feb / 1300

Need to ok these w/ you before I confirm w/ them.

Evening	1830
18 Feb 14	Tommy Sanford

Other:

Adam Graham: 1630, _____

*Update: 0830, 12 Feb 14

FYI Only

HMP Update meetings - all in EMA Main

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	2		~~Cindy Factrah~~ ~~Hosp~~ F Co. resched.	Rusty Moroff } Coos
	3		1007/13 Feb 14	Scott Kramer
	4			
	5			
18 Feb 14 (Tues)	1		* Tim Oliver } PCI	FYI: As of: 1630, 10 Feb 14
	2		* April Selle	
	3			These are "confirmed" so far; waiting on
	4			several more
	5			return calls
20 Feb 14 (Th)	1		David Popham 5★ 567-1366	(*)
	2			
	3			"Go To" Requests: Need to "ok" w/ you
	4			- Eclectic WWS: 26 Feb / 1300
	5			
21 Feb 14 (Fri)	1	Andrew Crawford } Elmore VFD		Need to ok these w/ you before I confirm w/ them.
	2	Ed Gray		
	3			
	4			
	5			
Evening 18 Feb 14		1830 Tommy Sanford		Other: Adam Graham: 1630, _____

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Monday, February 10, 2014 2:33 PM
To: asells@pci-nsn.gov
Cc: Kim Trost
Subject: HMP Update Briefing Options

Hello April,
Here are the available Hazard Mitigation Plan update briefing dates/times, if one will work for you...plan on one hour and all take place in our office at 201 Hill St.:

0930*, 1300, 1430 on the following days: Feb 13*, 18, 20, and 21 (Exception*: no 0930 on the 13th due to the potential inclement weather/hazardous road conditions).

Added: 18 Feb at 1830

Thanks and we look forward to meeting with y'all!

Kim

Kimberly L. Trost, ALEM
Program Coordinator & PIO
Elmore County Emergency Management Agency &
Homeland Security Office
201 Hill St Wetumpka, AL 36092
(334) 567-6451 – Office (334) 514-5213 – Fax
(334) 850-3269 – Cell 1*77*629 – S Linc
ktrost@elmoreco.org

1

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Monday, February 10, 2014 11:32 AM
To: fireman888@msn.com
Cc: Kim Trost
Subject: HMP Update Briefing Options

Hi Chief!
Here are the available Hazard Mitigation Plan update briefing dates/times, if one will work for you…plan on one hour…:

0930*, 1300, 1430 on the following days: Feb 13*, 18, 20, and 21 (Exception*: no 0930 on the 13th due to the potential inclement weather/hazardous road conditions).

If none of these are good options, please provide me with a couple of better ones and I'll do my best to make it work.

Thanks and have a great day!

Kim

Kimberly L. Trost, ALEM
Program Coordinator & PIO
Elmore County Emergency Management Agency &
Homeland Security Office
201 Hill St Wetumpka, AL 36092
(334) 567-6451 – Office (334) 514-5213 – Fax
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ktrost@elmoreco.org

1

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Wednesday, February 12, 2014 8:31 AM
To: 'Tim Oliver'
Cc: 'Sells, April'; Kim Trost
Subject: RE: Thurs- Feb 18 at 1300hrs

Good Morning Tim, April:
I have you confirmed. See you for about an hour on Thursday the 18th at 1300hrs.

Have a great day!

Kim

Kimberly L. Trost, ALEM
Program Coordinator & PIO
Elmore County Emergency Management Agency &
Homeland Security Office
201 Hill St Wetumpka, AL 36092
(334) 567-6451 – Office (334) 514-5213 – Fax
(334) 850-3269 – Cell 1*77*629 – S Linc
ktrost@elmoreco.org

From: Tim Oliver [mailto:toliver@pcigaming.com]
Sent: Tuesday, February 11, 2014 3:58 PM
To: ktrost@elmoreco.org
Cc: Sells, April
Subject: Thurs- Feb 18 at 1300hrs

Kim,
We would like to confirm this date and time with you if this is available for the briefing.

Thanks,

Tim Oliver
Director of Security, WCW
Office: 334-514-2114
Cell: (251)359-0763

1

✓ = Done

As of: 24 Feb 14 Fire Dept. Contacts →

-- Try to schedule them for HMP update briefing

4 Feb 14
1253

~~Buyer~~ Wightwood

(*) Keith Barnes: 657-8330 296-1074 - Chief Barnes will get w/ asst chief and see what's best time of day, date to get together. Chief Barnes delivers propane

✓ Glyn Woodall asst chief and said he wouldn't be available until it warms up.

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318-7890

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asells@pci-nsn.gov

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Elmore Community Hosp - Cindy Futral see note

Disaster Services

* Elmore Co. Extension Office:

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	4			Santuck, Seaman, Burnpark, Redland
	5			
21 Feb 14 (Fri)	1	Andrew Crawford } Elmore VFD		
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Evening	1830	Other:
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Provided copy to Eric

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FYI Only

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FYI Only

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18 Feb 14	Tommy Sanford

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Happy New Year!

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I hope that you each have had a wonderful Christmas season!

Please accept this email as official notice of the next meeting of the Operations Section of the Elmore County Multi-agency Coordination (MAC) Group. The next meeting will be Wednesday, February 6. The original date was January 9th. Please be sure this is changed on your calendar and make plans to attend. The meeting time for the Operations Section will be at 2:30 p.m. and should concluded by 4:00 p.m.

We will use this opportunity to discuss the development of the Emergency Operations Plan, an overview of the County Staging and Distribution Plan and an overview of the Hazard Mitigation Program.

Please make plans to attend this meeting as your input is essential to enhancing the coordination and collaboration to the Elmore County MAC! If you have any questions regarding this meeting please contact us at the EMA/HS Office at 567-6451. Thanks again for your time!

Happy New Year!

Eric Jones, Director
Elmore County EMA/HS Office
201 Hill Street
Wetumpka, Alabama 36092
ejones@elmoreco.org
(334) 567-6451 – Office
(334) 850-5611 – Cell
(334) 514-5213 – Fax
1*77*329 – S Linc

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Monday, February 10, 2014 2:33 PM
To: asells@pci-nsn.gov
Cc: Kim Trost
Subject: HMP Update Briefing Options

Hello April,
Here are the available Hazard Mitigation Plan update briefing dates/times, if one will work for you...plan on one hour and all take place in our office at 201 Hill St.:

0930*, 1300, 1430 on the following days: Feb 13*, 18, 20, and 21 (Exception*: no 0930 on the 13th due to the potential inclement weather/hazardous road conditions).

Added: 18 Feb at 1830

Thanks and we look forward to meeting with y'all!

Kim

Kimberly L. Trost, ALEM
Program Coordinator & PIO
Elmore County Emergency Management Agency &
Homeland Security Office
201 Hill St Wetumpka, AL 36092
(334) 567-6451 – Office (334) 514-5213 – Fax
(334) 850-3269 – Cell 1*77*629 – S Linc
ktrost@elmoreco.org

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Monday, February 10, 2014 11:32 AM
To: fireman888@msn.com
Cc: Kim Trost
Subject: HMP Update Briefing Options

Hi Chief!
Here are the available Hazard Mitigation Plan update briefing dates/times, if one will work for you...plan on one hour...:

0930*, 1300, 1430 on the following days: Feb 13*, 18, 20, and 21 (Exception*: no 0930 on the 13th due to the potential inclement weather/hazardous road conditions).

If none of these are good options, please provide me with a couple of better ones and I'll do my best to make it work.

Thanks and have a great day!

Kim

Kimberly L. Trost, ALEM
Program Coordinator & PIO
Elmore County Emergency Management Agency &
Homeland Security Office
201 Hill St Wetumpka, AL 36092
(334) 567-6451 – Office (334) 514-5213 – Fax
(334) 850-3269 – Cell 1*77*629 – S Linc
ktrost@elmoreco.org

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Wednesday, February 12, 2014 8:31 AM
To: 'Tim Oliver'
Cc: 'Sells, April'; Kim Trost
Subject: RE: Thurs- Feb 18 at 1300hrs

Good Morning Tim, April:
I have you confirmed. See you for about an hour on Thursday the 18th at 1300hrs.

Have a great day!

Kim

Kimberly L. Trost, ALEM
Program Coordinator & PIO
Elmore County Emergency Management Agency &
Homeland Security Office
201 Hill St Wetumpka, AL 36092
(334) 567-6451 – Office (334) 514-5213 – Fax
(334) 850-3269 – Cell 1*77*629 – S Linc
ktrost@elmoreco.org

From: Tim Oliver [mailto:toliver@pcigaming.com]
Sent: Tuesday, February 11, 2014 3:58 PM
To: ktrost@elmoreco.org
Cc: Sells, April
Subject: Thurs- Feb 18 at 1300hrs

Kim,
We would like to confirm this date and time with you if this is available for the briefing.

Thanks,

Tim Oliver
Director of Security, WCW
Office: 334-514-2114
Cell: (251)359-0763

Sanford Bryck Real Island
Real Island, Santuck Staten 7

18 Feb 14: 0854, Tommy Sanford, we were scheduled for tonight, but we will reschedule. He said they have (Santuck & Real Island) their quarterly mtg this Thursday evening. He'll talk with Lamar Jones about us doing the Plan update then. 1 hr max.

Someone will be there at 7:30 to set up.

Elmore County All-Hazards Mitigation Plan
Public Participation Survey

We need your help!

Our community is currently engaged in a planning process to become less vulnerable to emergency and disaster situations, and your participation is important to us!

Elmore County and its municipalities, and many other agencies to include, but not limited to, boards of education, water authorities, and first responder agencies, are working together to prepare a ***Multi-Jurisdictional All-Hazard Mitigation Plan.*** The purpose of the plan is to identify and assess our community's disaster risk and determine how best to minimize those risks. Upon completion, the plan will be presented to each local governing body for adoption and the submitted to the Alabama Emergency Management Agency and Federal Emergency Management Agency for review and approval.

This survey questionnaire provides an opportunity for you to share your opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and identify area policies and projects that can help lessen the impact of future hazard events.

Please help us by completing the survey and returning it to:

Eric Jones, EMA Director

Elmore County EMA

201 Hill Street

Wetumpka, Alabama 36092

Surveys can also be faxed to: 334-514-5213

If you have any questions regarding this survey, or would like to learn more about how you can participate in the development of the Elmore County All-Hazard Mitigation Plan, Please call (334)567-6451 or email us at ejones@elmoreco.org.

1. **What city or town do you live in?** _____
   (If in an unincorporated area, list the fire district)

2. **Have you ever experienced or been impacted by a disaster?**
   - ☐ Yes (please explain): _____
   - ☐ No

3. **How concerned are you about the possibility of our community being impacted by a disaster?**

   - ☐ Extremely Concerned
   - ☐ Somewhat Concerned
   - ☐ Not Concerned

4. Please select the hazard you think is the *highest threat* to your community:

- ☐ Adversarial Threats
- ☐ Aircraft Accident
- ☐ Aircraft as a Weapon
- ☐ Armed Assault
- ☐ Biological Attack – Food Contamination
- ☐ Biological Attack – Non Food
- ☐ Celestial Impact – (includes space weather)
- ☐ Chemical Attack - Food Contamination
- ☐ Chemical Attack – Non Food
- ☐ Cyber Attack
- ☐ Dam Failure
- ☐ Dense Fog
- ☐ Drought
- ☐ Earthquake
- ☐ Epidemiological
- ☐ Explosive Devices
- ☐ Extreme Temperature – Cold
- ☐ Extreme Temperature – Heat
- ☐ Flooding – Flash Flooding
- ☐ Flooding – River
- ☐ Hail
- ☐ Hazardous Materials
- ☐ High Wind Events
- ☐ Hurricanes & Tropical Storms
- ☐ Land Slides
- ☐ Lightning
- ☐ Nuclear Attack
- ☐ Public Health – Animal Diseases
- ☐ Radiological Dispersal Device
- ☐ Severe Thunderstorms & Thunderstorms
- ☐ Sinkholes & Land Subsidence
- ☐ Tornados
- ☐ Transportation System Failure
- ☐ Wild Fire
- ☐ Winter Storms
- ☐ Other (please explain):_____

5. Please select the hazard you think is the *second highest threat* to your community:

- ☐ Adversarial Threats
- ☐ Aircraft Accident
- ☐ Aircraft as a Weapon
- ☐ Armed Assault
- ☐ Biological Attack – Food Contamination
- ☐ Biological Attack – Non Food
- ☐ Celestial Impact – (includes space weather)
- ☐ Chemical Attack - Food Contamination
- ☐ Chemical Attack – Non Food
- ☐ Cyber Attack
- ☐ Dam Failure
- ☐ Dense Fog
- ☐ Drought
- ☐ Earthquake
- ☐ Epidemiological
- ☐ Erosion
- ☐ Explosive Devices
- ☐ Extreme Temperature – Cold
- ☐ Extreme Temperature – Heat
- ☐ Flooding – Flash Flooding
- ☐ Flooding – River
- ☐ Hail
- ☐ Hazardous Materials
- ☐ High Wind Events
- ☐ Hurricanes & Tropical Storms
- ☐ Land Slides
- ☐ Lightning
- ☐ Nuclear Attack
- ☐ Public Health – Animal Diseases
- ☐ Radiological Dispersal Device
- ☐ Severe Thunderstorm & Thunderstorms
- ☐ Sinkholes & Land Subsidence
- ☐ Tornados
- ☐ Transportation System Failure
- ☐ Wild Fire
- ☐ Winter Storms
- ☐ Other (please explain):_____

6. Is there another hazard not listed in this survey that you think is a wide-scale threat to your community?

- ☐ Yes (please explain):_____
- ☐ No

7. **Is your home located in a floodplain?**
   - ☐ Yes
   - ☐ No
   - ☐ I don't know

8. **Do you have flood insurance?**
   - ☐ Yes
   - ☐ No
   - ☐ I don't know
     - a. **If "No", why not?**
       - ☐ Not located in a flood plain
       - ☐ Too expensive
       - ☐ Not necessary because it never floods
       - ☐ Not necessary because I'm elevated or otherwise protected
       - ☐ Never really considered it
       - ☐ Other (please explain):_____

9. **Have you taken any action to make your home or community more resistant to hazards?**
   - ☐ Yes
   - ☐ No
     - a. **If "Yes" please explain:**

10. **Are you interested in making your home or community more resistant to hazards?**
    - ☐ Yes
    - ☐ No

11. **What is the most effective way for you to receive information about how to make sure your home and community more resistant to hazards?**
    - ☐ Newspaper
    - ☐ Television
    - ☐ Radio
    - ☐ Internet
    - ☐ Mail
    - ☐ Public workshops/meetings

- ☐ Other (please explain):_____

12. In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your community?

13. Are there any other issues regarding the reduction of risk and loss associated with hazards or disaster in the community that you think are important?

14. A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.

Category	Very Important	Somewhat Important	Not Important
1. Prevention Administrative or regulatory actions that influence the way land is developed and buildings are built Examples include: planning and zoning, building codes, open space preservation, and floodplain regulations.	☐	☐	☐
2. Property Protection Action that involves the modification of the existing buildings to protect them from a hazards or removal the hazard area. Examples include: acquisitions, relocation, elevation. structural retrofits. and storm shutters.	☐	☐	☐
3. Natural Resource Protection Actions that, in addition to minimizing hazard losses, also Preserve or restore the functions of natural systems. Examples include: floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.	☐	☐	☐
4. Structural Projects Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include: dams, levees, seawalls, detention or retention basins, channel modification, retaining walls and storm sewers.	☐	☐	☐
5. Emergency Services Actions that protect people and property during and immediately after a hazard event. Examples include: warning systems, evacuation planning, emergency response training and protection of critical emergency facilities and systems.	☐	☐	☐
6. Public Education and Awareness Actions to inform citizens about hazards and the techniques they can use to protect themselves and their property. Examples include: outreach projects, school education programs, library materials and demonstration events.	☐	☐	☐

Name Organization Contact: email

Hazard Mitigation Plan Update mtgs

1:15 (*) 13 Feb 14, 1430 hrs

Lt Scott Kramer 334-850-1009 - 334285-6200 COOSADA Fire Rescue

CHIEF Rusty Monelle (334)850-9529 - (334)285-6200 COOSADA FD

Rick Borowski Chief WVFD 2562341239 RickLake@hotmail

for: Glyn Woodall Asst. Chief Lightwood VFD 318-7890

(*) 18 Feb 2014, 1300 hrs. - moved to 20 Feb 14/1300 * 1430 (as of: 1245, 20 Feb 14)

1:25 * 20 Feb 2014, 1300 hrs: Ø

April Sells Tribal EMA/Fire 251-253-5972
asells@pci-nsn.gov

Jim Oliver WCW Director of Security
251-359-0763 joliver@pcigaming.com

(*) 21 Feb 2014 -

Andrew Crawford Elmore Fire & Rescue 334-399-4453

1:25 Ed Gray Elmore FIRE EdGray66@iCloud.com
334-799-5481

FOR Kim

DATE 2/11/14 TIME 307 A.M. P.M.

M Cindy Futral

OF

PHONE 567-4311 (Call this #) 514-3700

AREA CODE NUMBER EXTENSION

☐ FAX

☐ MOBILE

AREA CODE NUMBER TIME TO CALL

TELEPHONED	✓	PLEASE CALL	✓
CAME TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		RUSH	
RETURNED YOUR CALL		SPECIAL ATTENTION	

MESSAGE checking to see if she could reschedule for Wed Feb 19

She said to please give her a call

Returned call/left voice msg 12 Feb/0831

SIGNED

Office DEPOT

IMPORTANT MESSAGE

FOR Kim

DATE 2/11/14 TIME 927 A.M. P.M.

M Alan Gray

OF Marbury Water System

PHONE (334) 391 7027

AREA CODE NUMBER EXTENSION

☐ FAX

☐ MOBILE

AREA CODE NUMBER TIME TO CALL

TELEPHONED	✓	PLEASE CALL	✓
CAME TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		RUSH	
RETURNED YOUR CALL		SPECIAL ATTENTION	

MESSAGE

SIGNED

Office DEPOT

IMPORTANT MESSAGE

FOR Kim

DATE 2/11/14 TIME 916 A.M. P.M.

M Ken Champion

OF Tri-Community Water

PHONE 285-4267

AREA CODE NUMBER EXTENSION

☐ FAX

☐ MOBILE

AREA CODE NUMBER TIME TO CALL

TELEPHONED	✓	PLEASE CALL	✓
CAME TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		RUSH	
RETURNED YOUR CALL		SPECIAL ATTENTION	

MESSAGE Got your message about meeting w/ you & just wanted to make sure he followed up with you.

1120/11 Feb 14: Spoke w/ Ken, he'll get w/ Scott Superintendent and find a good time for both of them to attend

They'll come to us or we'll go to them.

SIGNED

Office DEPOT

Kim Trost

From: Eric Jones <ejones@elmoreco.org>
Sent: Sunday, September 23, 2012 10:32 PM
To: 'David Brunson'; 'Kim Trost'
Subject: FW: Infrastructure Section Meeting of the Elmore County Multi-agency Coordination Group (MAC)
Attachments: ThreatHazardsSurvey.pdf

Importance: High

From: Eric Jones [mailto:ejones@elmoreco.org]
Sent: Sunday, September 23, 2012 10:22 PM
Subject: Infrastructure Section Meeting of the Elmore County Multi-agency Coordination Group (MAC)
Importance: High

Hello to you all,

In an effort to increase the overall level of coordination, communication and collaboration pertaining to the phases of Emergency Management in Elmore County, the Elmore County EMA/HS Office will be coordinating meetings to provide an opportunity for all stakeholders to come together to discuss various topics to increase and enhance these areas. These meetings will be utilized to update and/or develop the critical plans and programs needed enhance coordination, communication, and collaboration at all times. The Multi-agency Coordination (MAC) Group is made up of the leaders and representatives from all jurisdictions and disciplines of the County. The MAC Group will include municipal and county government agencies and departments; volunteer, non-profit and faith-based organizations; and the private sector.

The MAC group is organized in sections as follows: Policy, Operations, Community Services, Infrastructure, Planning, Logistics, Finance & Administration and External Affairs.

Please accept this notification as your invitation to attend the Elmore County Multi-agency Coordination (MAC) Group meeting on October 24, at the Elmore County Firefighters' Training Facility. We will use this opportunity to discuss the Multi-agency Coordination System and Group; the update of the County's Threat/Hazard Assessment; the update of the Emergency Operations Plan and we may briefly touch on the Hazard Mitigation Program. The meeting for the Infrastructure Section will be at 8:15 a.m. and should concluded by 9:45 a.m.

Please find the Elmore County Threat and Hazards Survey attached. Please have at least one person from your organization print out and complete the survey. Then bring the completed survey with you to the MAC group meeting.

Please make plans to attend this meeting as your input is essential to enhancing the coordination and collaboration to the Elmore County MAC! If you have any questions regarding this meeting please contact us at the EMA/HS Office at 567-6451. Thanks for your time!

Sincerely,

Eric Jones, Director

Elmore County EMA/HS Office
201 Hill Street
Wetumpka, Alabama 36092
ejones@elmoreco.org
(334) 567-6451 – Office
(334) 850-5611 – Cell
(334) 514-5213 – Fax
1*77*329 – S Linc

Eric Jones, Director
Elmore County EMA/HS Office
201 Hill Street
Wetumpka, Alabama 36092
ejones@elmoreco.org
(334) 567-6451 – Office
(334) 514-5213 – Fax

Returned Worksheets

pdates?	
No	Tallassee PD - 17 Dec 2010 - USPS
No	Wetumpka Water Works - 21 Dec 10 - USPS
Yes	Town of Eclectic - PD - 30 Dec 2010
Yes	Tallassee FD - 4 Jan 2011
Yes	Elmore County Commission - 7 Jan 2011
No	City of Millbrook - FD - 1-11-2011
No	Town of Coosada - 1-25-2011
No	Holtville Water System - 2-1-2011
No	Wetumpka - City of, Public Works Dept. - 1 Mar 2011

1 Apr 13

EMA Storage Fac:
add: S: 7 T: 18N R: 19E
32.551535 N
-86.195340 W
8905 US Hwy 231

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT
Eclectic Water Works Board Continued…	Infrastructure/Public Works	Pump Station, Hwy 44, Eclectic	$206,000
	Infrastructure/Public Works	Pump Station, Hwy 63, Eclectic	$150,000
	Infrastructure/Public Works	Water Tank, Main St., Eclectic	$252,782
	Infrastructure/Public Works	Water Tank, Hwy 63, Eclectic	$597,027
	Infrastructure/Public Works	Water Tank, Dean Circle, Eclectic	$660,000
Sub Total			$2,866,556
Elmore Water Authority ✓	Infrastructure/Public Works	Airport Rd. Well, 6370 Airport Rd., Elmore, 36054	$207,479
✓	Infrastructure/Public Works	Blackmon Well, 6330 Airport Rd., Elmore,	$184,481
✓	Infrastructure/Public Works	Estes Well, 5260 Pineview Rd., Elmore,	$184,481
All Good! ✓	Infrastructure/Public Works	Dismukes Well, 20 Mercer Rd., Elmore	$245,974
BK ✓	Infrastructure/Public Works	Kenner Well, 28 Kenner Creek Rd., Elmore	$184,481
✓	Infrastructure/Public Works	Eagle Rock Well, Little Deer Run, Elmore	$491,727
✓	Infrastructure/Public Works	Eagle Rock Tank, Eagle Rock Subdivision, Elmore	$874,182
✓	Infrastructure/Public Works	Ingram Rd. Well, 2514 Ingram Rd., Elmore	$430,000
✓	infrastructure/Public Works	Roy Tank, 1933 Deatsville Hwy., Elmore	$1,229,874
✓	Infrastructure/Public Works	Graves Tank, 157 Sevarg Ln., Elmore	$307,468
✓	Infrastructure/Public Works	Bellview Tank, 4482 Deatsville Hwy., Elmore	$614,938
✓	Infrastructure/Public Works	Flatwood Tank, 1525 Flatwood Rd., Elmore	$1,229,874
✓	Infrastructure/Public Works	Elmore/Montgomery Booster, 158 Blackwell Dr., Elmore	$92,241
✓	Infrastructure/Public Works	County Rd. 3 Booster, 1915 Ingram Rd., Elmore	$61,493
✓	infrastructure/Public Works	Bellview Booster, 3775 Deatsville Hwy., Elmore	$61,493
✓	Infrastructure/Public Works	Office Building, 1633 AL Hwy 14, Elmore	$750,000
✓	Infrastructure/Public Works	Maintenance Building, 6370 Airport Rd., Elmore	$323,000
Sub Total			$7,473,186
Five Star Water Supply	Infrastructure/Public Works	Water Treatment Facility, 751 Lakeview Dr., Wetumpka, 36092	$3,690,412
	Infrastructure/Public Works	Booster Station, 2000-A, Hwy 14 E., Prattville, 36066	$133,709

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** _____

☐ **Reviewing Authority:** Elmore Water + SA ☐ **Date Review Completed:** 5-7-14
☐ **Review Results:** ☐ **Sections I - VI below have been completed.**
☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**
☑ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:
☑ Fire/Wildfire ☑ Flood, Flash Flood, River Flooding ☑ Heat/Drought ☑ High Winds
☑ Hurricane/Tropical Storm ☑ Lightning ☑ Thunderstorm/Severe Weather ☑ Tornado ☑ Winter Storm

2. Are there any other natural hazards/significant events that have or could have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☑ No If yes, please identify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____
Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** Elmore Water + Sewer Auth ☐ **Date Review Completed:** 5-7-14

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** EWSA ☐ **Date Review Completed:** 5-7-14

1. Do the **goals** outlined in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☒ Yes ☐ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

_____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

_____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

_____

☐ Goal # ___ ☐ Added Action to be taken: _____

_____

☐ Goal # ___ ☐ Added Action to be taken: _____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☐ **Reviewing Authority:** EWSA ☐ **Date Review Completed:** 5-7-14

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☑ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

_____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

_____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** EWSA ☐ **Date Review Completed:** 5-7-14

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☑ Yes ☐ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** EWSA ☐ **Date Review Completed:** 5-7-14

☑ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** Elmore County

☐ **Reviewing Authority:** Earl Reeves, Co. Comm. Chair ☐ **Date Review Completed:** _____
☐ **Review Results:** ☐ **Sections I - VI below have been completed.**
☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**
☐ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:
☐ Fire/Wildfire ☐ Flood, Flash Flood, River Flooding ☐ Heat/Drought ☐ High Winds
☐ Hurricane/Tropical Storm ☐ Lightning ☐ Thunderstorm/Severe Weather ☐ Tornado ☐ Winter Storm

2. Are there any other natural hazards/significant events that have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☑ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____
Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** Earl Reeves, County Commission Chair ☐ **Date Review Completed:** 1-07-11

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** Earl Reeves, County Commission Chair ☐ **Date Review Completed:** 1-07-11

1. Do the **goals** described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☒ Yes ☐ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

There is only a change of 2 sentences being added to this section

☐ Goal # 1 ☐ Amended ☐ Deleted Action to be taken: N/A

☐ Goal # 2 ☐ Amended ☐ Deleted Action to be taken: N/A

☐ Goal # 3 ☐ Amended ☐ Deleted Action to be taken: N/A

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # 4 ☐ Added Action to be taken: N/A

☐ Goal # 5 ☐ Added Action to be taken: N/A

☐ Goal # ___ ☐ Added Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☐ **Reviewing Authority:** Earl Reeves, County Commission Chair ☐ **Date Review Completed:** 1-07-11

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☑ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** Earl Reeves, County Commission Chair ☐ **Date Review Completed:** 1-07-11

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☐ Yes ☒ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☒ Amended ☐ Deleted

☐ Facility Name County Jail

Action to be taken: ☐ Added ☒ Amended ☐ Deleted

Replacent Cost = $10,279,288

☐ Facility Name County Health Dept.

Action to be taken: ☐ Added ☒ Amended ☐ Deleted

Replacement Cost = $925,556

☐ Facility Name Sheriff's Maint. Shop

Action to be taken: ☐ Added ☒ Amended ☐ Deleted

Replacement Cost = $36,000

☐ Facility Name Extension Ofc. Barns and Stalls

Action to be taken: ☑ Added ☐ Amended ☐ Deleted

Replacement Cost = $50,000

☐ Facility Name Records Storage - 100 East Commerce

Action to be taken: ☑ Added ☐ Amended ☐ Deleted

Replacement Cost = $525,000

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** Earl Reeves, County Commission Chair ☐ **Date Review Completed:** 1-07-11

☑ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

(Continuation Sheet #1)

Delete - Essential Law Enforcement - DTF - 100 E. Commerce St.

Amend - Voting House, Ware Rd.
Replacement Cost = $111,111

Elmore County weather/emergency sirens will be added per Eric Jones 1-07-11.

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** Tallassee Fire

☐ **Reviewing Authority:** Matt Messilder ☐ **Date Review Completed:** 1-4-11
☐ **Review Results:** ☐ **Sections I - VI below have been completed.**
☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**
☐ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:
☐ Fire/Wildfire ☐ Flood, Flash Flood, River Flooding ☐ Heat/Drought ☐ High Winds
☐ Hurricane/Tropical Storm ☐ Lightning ☐ Thunderstorm/Severe Weather ☐ Tornado ☐ Winter Storm

2. Are there any other natural hazards/significant events that have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☑ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____
Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**
☐ **Reviewing Authority:** Matt Messilder ☐ **Date Review Completed:** 1-4-11

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**
☐ **Reviewing Authority:** Matt Messilder ☐ **Date Review Completed:** 1-4-11

1. Do the **goals** described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☐ Yes ☑ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** (See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)

☐ Reviewing Authority: Matt Mossidis ☐ Date Review Completed: 1-4-11

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☑ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** Matt Messilla ☐ **Date Review Completed:** 1-4-11

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☐ Yes ☑ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Facility Name (See attachment)

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

☐ Facility Name

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

☐ Facility Name

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

☐ Facility Name

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

☐ Facility Name

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** Matt Messilla ☐ **Date Review Completed:** 1-4-11

☑ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

Tallassee, Alabama: Sewer and Water System Estimated Replacement Costs (2011)

Sewer System:

590 Noble Road – Upper Sewer Pumping Station	$150,000
679 Noble Road – Lower Sewer Pumping Station	$150,000
2054 Gilmer Ave. – Sewer Pumping Station (Armory)	$150,000
1227 Al. Hwy 229 S. – Sewer Pumping Station (GKN)	$150,000
20345 Rifle Range Road – Sewer Pumping Station (Ind. Park)	$150,000
38 Weldon Drive – Sewer Pumping Station	$150,000
519 Riverside Drive – Sewer Pumping Station	$150,000
26 Clay Street – Sewer Pumping Station	$150,000
407 4th Street – Sewer Pumping Station	$150,000
2644 Notasulga Road – Sewer Pumping Station	$150,000
37 Sherry Street – Sewer Pumping Station	$150,000
1 Lower Tuskeegee Road – Sewer Pumping Station (Mill)	$150,000
438 N. Ann Street – Riverhills Sewer Pumping Station	$150,000
50 Hanil Drive – Sewer Pumping Station	$150,000
300 North Wesson Street – Sewer Pumping Station	$150,000
Laney Gin Sewer Pumping Station (Al. Hwy 229 S.)	$150,000
	$3,150,000

Water System:

89020 Tallassee Highway Water Tank (Burlington)	$550,000
810 W. Main Street – Tallaweka Water Tank	$550,000
114 McArthur Street – Riverside Heights Water Tank (Recycling Ctr)	$ 40,000
307 Barnett Blvd. – Water Tank (Main)	$800,000
836 Sims Avenue – Carrville Water Tank	$550,000
	$2,490,000

Water Booster Stations:

Hwy 229 just North of Ben Atkinson	$100,000
Hwy 229 just North of McDonalds	$100,000
Camellia Drive	$100,000
North Ann Street	$100,000
South Tallassee Drive (to Wall Street)	$100,000
Carville (Wall Street Booster Station near Tank)	$100,000
	$600,000

Kim Trost

From: Kim Trost [ktrost@elmoreco.org]
Sent: Tuesday, January 04, 2011 11:12 AM
To: 'Matt Missildine'
Cc: 'Eric Jones'; 'George McCain'; 'Kim Trost'
Subject: RE: Tallassee Worksheet

Dear Chief Missildine,

Thank you very much for taking the time to participate in this first annual review of the Elmore County Natural Hazard Mitigation Plan, dated May 2010. I especially want to thank you for providing the clarification and detailed update on the Critical Facilities. Those details very much matter and will be incorporated into this first Plan revision.

Again, thank you for taking the time to provide us with your feedback (and well ahead of schedule, too!)

Sincerely,

Kim

Kimberly L. Trost, CLEM, ALEM
Program Coordinator & PIO
Elmore County Emergency Management Agency &
Homeland Security Office
201 Hill St, Wetumpka, AL 36092
Ofc: (334) 567-6451/1155 Fax: (334) 514-5213
SL: (334) 850-3269 Radio: 1*77*629
email: ktrost@elmoreco.org

From: Matt Missildine [mailto:matt.missildine@tallasseefd.org]
Sent: Tuesday, January 04, 2011 10:24 AM
To: 'Kim Trost'
Cc: 'Eric Jones'; 'George McCain'
Subject: Tallassee Worksheet

Kim, I attached our Review Worksheet. Let me know if I missed anything.

Also, I see on the critical facilities list that we have facilities listed under the City of Tallassee and the Tallassee Sewer and Water System but Millbrook has everything listed under the City of Millbrook. Everything we have listed is owned by the City; just to be clear, there are not two entities involved. It makes no difference to me how they're listed, I just wanted to make sure there wasn't any misunderstanding about jurisdiction.

Thanks,

Matt Missildine, Fire Chief

TALLASSEE FIRE DEPARTMENT

Office: (334) 283-6772
Station: (334) 283-5660
Cell: (334) 657-7429

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** Town of Eclectic

☑ **Reviewing Authority:** Chief Gordon M. Ledbetter ☑ **Date Review Completed:** 12-28-2010
☐ **Review Results:** ☐ **Sections I - VI below have been completed.**
☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**
☐ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:
☑ Fire/Wildfire ☐ Flood, Flash Flood, River Flooding ☑ Heat/Drought ☑ High Winds
☑ Hurricane/Tropical Storm ☑ Lightning ☑ Thunderstorm/Severe Weather ☑ Tornado ☑ Winter Storm

2. Are there any other natural hazards/significant events that have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☑ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____
Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**
☑ **Reviewing Authority:** Chief Gordon M. Ledbetter ☐ **Date Review Completed:** 12-28-2010

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**
☑ **Reviewing Authority:** Chief Gordon M. Ledbetter ☐ **Date Review Completed:** 12-28-2010

1. Do the **goals** described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☑ Yes ☐ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☑ **Reviewing Authority:** Chief Gordon M. Hebbeler ☐ **Date Review Completed:** 12-28-2010

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☑ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** Chief Gordon M. Ledbetter ☑ **Date Review Completed:** 12-28-2010

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☐ Yes ☒ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☑ Amended ☐ Deleted

☐ Facility Name 50 Main St, City Hall

Action to be taken: ☐ Added ☑ Amended ☐ Deleted

Eclectic Library, 50 Main St

☐ Facility Name Conference Room 50 Main St

Action to be taken: ☐ Added ☐ Amended ☑ Deleted

Need Replacement Cost for these facilities

☐ Facility Name

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

☐ Facility Name

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

☐ Facility Name

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☑ **SECTION VI: Other**

☐ **Reviewing Authority:** Chief Gordon M. Ledbetter ☐ **Date Review Completed:** 12-28-2010

☐ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

Elmore County Emergency Management Agency & Homeland Security Office

Natural Hazard Mitigation Plan Annual Review

SECTION VI: Other

Areas of Concern

The Eclectic Police Department has two areas of concern in regards to adequately responding to any natural hazards/significant event.

1. Communication's abilities

a. The Eclectic Police Department present radio system is in need of upgrade in order to allow for and insure proper communication during times of emergency. The present system is in need of a repeater system to allow for total coverage of the Eclectic Police and Fire Jurisdiction. The present system does not allow for officers and response personnel to communicate with the Police Dispatcher.

2. Emergency Response

a. The Eclectic Police Department at present has the ability to emergency situations. The area of concern is the ability to maintain and keep in operation police response vehicles. This is due to the age and high mileage of the police fleet.

In regards to these two concerns the Eclectic Police Department is able to respond to any emergency situation that may arise to protect property and the public. The Town of Eclectic at present is unable to financial make any improvements in these two areas of concern.

Chief Gordon M. Ledbetter

December 28, 2010
Date

RECEIVED
DEC 30 2010

RECEIVED
DEC 30 2010

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** Elmore County - Wetumpka Water Works

☐ **Reviewing Authority:** Wetumpka Water Works ☐ **Date Review Completed:** 12-13-2010

☐ **Review Results:** ☐ **Sections I - VI below have been completed.**

☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**

☑ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:

☐ Fire/Wildfire ☐ Flood, Flash Flood, River Flooding ☐ Heat/Drought ☐ High Winds
☐ Hurricane/Tropical Storm ☐ Lightning ☐ Thunderstorm/Severe Weather ☐ Tornado ☐ Winter Storm

2. Are there any other natural hazards/significant events that have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☑ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____

Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** Wetumpka Water Works ☐ **Date Review Completed:** 12-13-2010

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** Wetumpka Water Works ☐ **Date Review Completed:** 12-13-2010

1. Do the **goals** described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☐ Yes ☑ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☐ **Reviewing Authority:** Wetumpka Water Works ☐ **Date Review Completed:** 12-13-2010

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☑ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** WeTumpka Water Works ☐ **Date Review Completed:** 12-13-2010

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☑ Yes ☐ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** WeTumpka Water Works ☐ **Date Review Completed:** 12-13-2010

☑ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

Rec'd 17 Dec 10

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** City of Tallassee

☐ **Reviewing Authority:** Chief James Rodgers ☐ **Date Review Completed:** 12/15/10
☐ **Review Results:** ☐ **Sections I - VI below have been completed.**
☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**
☐ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:
☐ Fire/Wildfire ☐ Flood, Flash Flood, River Flooding ☐ Heat/Drought ☐ High Winds
☐ Hurricane/Tropical Storm ☐ Lightning ☐ Thunderstorm/Severe Weather ☐ Tornado ☐ Winter Storm

2. Are there any other natural hazards/significant events that have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☒ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____
Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**
☐ **Reviewing Authority:** Chief James Rodgers ☐ **Date Review Completed:** 12/15/10

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☒ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**
☐ **Reviewing Authority:** Chief James Rodgers ☐ **Date Review Completed:** 12/15/10

1. Do the **goals** described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☒ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☐ Yes ☒ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☐ **Reviewing Authority:** Chief James Rodgers ☐ **Date Review Completed:** 12/15/10

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☒ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** James Rodgers ☐ **Date Review Completed:** 12/15/10

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☒ Yes ☐ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** Chief James Rodgers ☐ **Date Review Completed:** 12/15/10

☒ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** City of Millbrook

☐ **Reviewing Authority:** Larry R Broun Fire Chief ☐ **Date Review Completed:** 1-11-11
☐ **Review Results:** ☐ **Sections I - VI below have been completed.**
☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**
☒ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:
☐ Fire/Wildfire ☐ Flood, Flash Flood, River Flooding ☐ Heat/Drought ☐ High Winds
☐ Hurricane/Tropical Storm ☐ Lightning ☐ Thunderstorm/Severe Weather ☐ Tornado ☐ Winter Storm

2. Are there any other natural hazards/significant events that have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☒ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____
Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☒ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Do the **goals** described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☒ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☒ Yes ☐ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

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☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

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☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

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(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

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☐ Goal # ___ ☐ Added Action to be taken: _____

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☐ Goal # ___ ☐ Added Action to be taken: _____

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(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☒ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

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☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

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☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☒ Yes ☐ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

☐ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** Town of Coosada

☐ **Reviewing Authority:** Jon Chapman ☐ **Date Review Completed:** 1-25-11
☐ **Review Results:** ☐ **Sections I - VI below have been completed.**
☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**
☑ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:
☑ Fire/Wildfire ☑ Flood, Flash Flood, River Flooding ☑ Heat/Drought ☑ High Winds
☑ Hurricane/Tropical Storm ☑ Lightning ☑ Thunderstorm/Severe Weather ☑ Tornado ☑ Winter Storm

2. Are there any other natural hazards/significant events that have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☑ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____
Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** Jon Chapman ☐ **Date Review Completed:** 1/25/11

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** Jon Chapman ☐ **Date Review Completed:** 1/25/11

1. Do the **goals** described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☐ Yes ☐ No

If yes, please complete the following: No changes made

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☐ **Reviewing Authority:** Jim Chapman ☐ **Date Review Completed:** 1/25/11

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☑ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** Jim Chapman ☐ **Date Review Completed:** 1/25/11

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☑ Yes ☐ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** Jim Chapman ☐ **Date Review Completed:** 1/25/11

☐ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

TOWN OF COOSADA
P.O. BOX 96
COOSADA, ALABAMA 36020

MONTGOMERY AL 360
27 JAN 2011 PM 3 T

EMA NLT
201 Hill St.
Wetumpka AL 36092

Recv'd 28 Jan 2011

36032+2722

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** _____

☐ **Reviewing Authority:** **HOLTVILLE WATER SYSTEM INC** ☐ **Date Review Completed:** 2-1-11
☐ **Review Results:** ☑ **Sections I - VI below have been completed.**
☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**
☑ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:
☐ Fire/Wildfire ☐ Flood, Flash Flood, River Flooding ☐ Heat/Drought ☐ High Winds
☐ Hurricane/Tropical Storm ☐ Lightning ☐ Thunderstorm/Severe Weather ☐ Tornado ☐ Winter Storm

2. Are there any other natural hazards/significant events that have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☑ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____
Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** **HOLTVILLE WATER SYSTEM INC** ☐ **Date Review Completed:** 2-1-11

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** **HOLTVILLE WATER SYSTEM INC** ☐ **Date Review Completed:** 2-1-11

1. Do the **goals** described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☑ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☐ Yes ☒ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

☐ Goal # ___ ☐ Added Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☐ **Reviewing Authority:** HOLTVILLE WATER SYSTEM INC ☐ **Date Review Completed:** 2-1-11

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☒ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** HOLTVILLE WATER SYSTEM INC ☐ **Date Review Completed:** 2-1-11

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☑ Yes ☐ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

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(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** HOLTVILLE WATER SYSTEM INC ☐ **Date Review Completed:** 2-1-11

☑ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☑ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** City of Wetumpka

☑ **Reviewing Authority:** Lynn Weldon ☑ **Date Review Completed:** 2/25/2011

☐ **Review Results:** ☐ **Sections I - VI below have been completed.**

☐ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**

☑ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:

☐ Fire/Wildfire ☐ Flood, Flash Flood, River Flooding ☐ Heat/Drought ☐ High Winds
☐ Hurricane/Tropical Storm ☐ Lightning ☐ Thunderstorm/Severe Weather ☐ Tornado ☐ Winter Storm

2. Are there any other natural hazards/significant events that have impacted your jurisdiction over the past year and should now be included in the Plan? ☐ Yes ☐ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☐ Other: _____

Notes/Details: _____

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☐ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Do the **goals** described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☐ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☐ Yes ☐ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

_____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

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☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

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(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

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☐ Goal # ___ ☐ Added Action to be taken: _____

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☐ Goal # ___ ☐ Added Action to be taken: _____

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(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☐ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

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☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

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☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☐ Yes ☐ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

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(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

☐ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

(Continuation Sheet #1)

Transmittal Letter

February 25, 2011

City of Wetumpka
Department of Public Works
110 Red Eagle Drive
Wetumpka, Alabama 36092
334.567.1328 Phone 334.567.1339 Fax

To: Eric Jones
Director EMA/HS Office
201 Hill Street
Wetumpka, AL 36092

Deliver Via: USPS

We are sending you			
X Attached	☐ Under Separate Cover via: [Type text here] the following:		
☐ Shop Drawings	☐ Prints	☐ Plans	X Other:
☐ Copy of Letter	☐ Change Order	☐ Samples	
☐ Total Quantity	☐ Reproducible	☐ Specification	

Quantity	Date	Description
1	2/25/2011	Elmore Count EMA /HS Ofice Natural Hazard Mitigation Plan Annual Review Worksheet

These are transmitted as checked below		
For Approval	Approved as Submitted	Resubmit copies for approval
For Your Use	Approved as Noted	Submit [#] copies for distribution
As Requested	Returned for Corrections	Return [#] corrected prints
For Review and Comment	Revise and Resubmit/Work May Not Proceed	
FOR BIDS DUE: [Type text here]		PRINTS RETURNED AFTER LOAN
Copy : File	Signature	

City of Wetumpka
P. O. BOX 1180
WETUMPKA, ALABAMA 36092-1180

UNITED STATES POSTAGE
PITNEY BOWES
02 1P $ 000.44⁰
0003874754 FEB 25 2011
MAILED FROM ZIP CODE 36092

Eric Jones
Director EMA/HS Office
201 Hill Street
Wetumpka, Alabama 36092

Recvd
1 Mar 2011

36092+2722

mm: 121 144

Starting mileage 120880
955
75 Completed

Wet Water Works - 1028

Five Star

Coosada PD — Town of Elmore 1107

Millbrook PW, — Elmore Water 1125

Town of Coosada 1139

City of Millbrook 1156

Millbrook PD 1203

Lunch 12:10 drive Thru 1233 — City of Prattville - 1251 - out to lunch - left w/ finance

1333 - Marbury Water - Mr. Gary

Holtville Water Syste - 1357

Wetumpka PD 1414

Eclectic - Mayor Dawn 1352 1358

PD — Tallassee FD 1434 1436 chiefs out of town

" PD 1444 - chief in mtg

Mayor 1447 Donna 1455

Water 1447 City Hall

Tallass P.W. - Donna - City Hall

Eclectic PD ✓ 1541

Mill St to Eclectic 14

electric to Tallassee 12.6 — FD, City Hall, PD + 2

Tall → eclectic 12.6

Eclectic to Hill 14.00

55.20

120880
120955
75

Mon

121144

Fri

121369
121377
8

121312 Thur
121357
45

Thurs
121312
357 / 45 miles

Millbrook: Fire Dept 1212 Capt Campbell
1202 Public Works Water & Sewer 1217 3861 Grandview next to Police Station
Mr. Harris out 1227

Deatsville Mayor Sandy Dowey (Times) non-NFIP NFIP

Coosada PD ✓ 1235

Five Star 1257

Wet. Mayor
FD
Water: Five Star,
PW -

Eclectic Mayor -
Water -
✓ PD

Tallassee Mayor
FD,
PD
Water
Pub Wks

County Sheriff
Co. Engineer
Co. Comm.
Central Elmore Water Auth.

MUNICIPAL CONTACT LIST

Location	Section	Contact	Work #	Fax #	Home #	Cell #
Coosada		Mayor John Chapman	285-3700	285-3740		
	Town Hall	Clerk Jeanie Ward Thursday	285-3700	285-3740		
	Fire Administrator	Fire Chief Ed Gray	285-6200			
	Police Dept.	Police Chief Leon Smith				
Deatsville		Mayor Clayton Edgar	230-0521		285-7470	
	Councilman	Douglas McGlamry (Mayor Pro Tem)			285-3900	220-3645
	Town Hall	Sandy Bradshaw(Clerk) Cell) 657-0438	285-9881	285-1821	285-6060	657-0438
		//				
Eclectic		Mayor Gary Wright		541-2854		224-7194
	Town Clerk	Dawn Webb (Clerk)	541-3581			
	Fire Administration	Fire Chief Mike Holton				
	Police Dept.	Police Chief Gordon Ledbetter	639-4716			
		//				
Elmore		Mayor Margaret White			567-7829	546-7829
	Town Hall	Jo McWhorter - Town Clerk Thursday	514-5988	514-5778		239-1990
	Fire Administration	Fire Chief Buddy Broadway	567-3490			
Millbrook		Mayor Al Kelley	285-7231	285-7234	285-8762	799-1638
	City Hall	Teresa Mercer - Town Clerk Thursday	285-6428			391-6222
	Fire Administrator	Fire Chief Larry Brown (83*9356)	285-6707	285-6460		
	Police Chief	Police Chief P.K. Johnson (83*3867)	285-5603			
	Public Works	Morris Sherill				799-1639
Tallassee		Mayor George McCain Donna Thursday	283-6571	283-3335	283-4298	850-4158
	City Hall	Barbara Garnet	283-6571	283-3335		
		Marilyn Sayers	283-6571			
	Public Works	Rachel Barker (CARPDC Contractor)	334-750-4449			
	Fire Administration	Fire Chief Matt Missildine	283-			
	Police Dept.	Police Chief Jimmy Rodgers	283-6588			
	City Attorney	Mike Harper	283-6855			
Wetumpka		Mayor Jerry Willis	567-5147			303-2628
		mayorofwetumpka@bellsouth.net				
	City Hall	Linda Lewis (Mayor's Assistant)	567-1304	567-1307		300-1378
	City Clerk	Janice Whorton	567-5147			
	Councilman	Greg Jones				
	Fire Administration	Fire Chief Greg Willis	567-1333			
	Police Dept.	Police Chief Celia Dixon (Linc 83*1310)	567-5321	567-1322		850-1148
	Police Dept.	Deputy Chief Anthony Crenshaw				83*934
	Public Works	Lynn Weldon	567-1303			
	Public Works	Larry Bryson				850-1923
	Councilman	Lewis Washington			567-9400	221-8846
Prattville	City Hall	Mayor Jim Byard	361-3609			
		Mayor's Assistant	361-3649			
	Police Dept.	Police Chief Alfred Wadsworth	361-3632			
	Fire Administration	Fire Chief Stanley Gann	361-3660			

Email
coosada@elmore.rr.com

Clayton.edgar@ssainc.com

sandyray101@aol.com

mayorofeclectic@elmore.rr.com
clerkeclecticcity@elmore.rr.com

clerk@townofelmore.com

mayoralkelley@yahoo.com
milbrk@mindspring.com

msayers@elmore.rr.com

Barber Shop 567-2044

cityclerk@bellsouth.net

Fri - 121369

Wetumpka City Hall - 0952

Mayor, PW - neither delivered in-person

Wet FD - Chief Wilder - ✓ 1006

John Wilson - Fire Association ✓ 1038

Sheriff - ✓ ~~1105~~ 1115 / 121377 miles

Town of Deatsville - ending up mailing -- spoke with Sandy.

Fri	120880 → 120955	= 75 miles
mon	121144 → 121199	= 55.
Thurs	121312 → 121357	= 45
Fri	121369 → 121377	= 8
		183

JUI), 2014
9:30 AM

Elmor ounty
Elmore County HMGP/HMP/COOP
STAKEHOLDER MEETING
CITY OF TALLASSEE

	Name	Agency	Telephone #	Email
1	Travis Jones	TFD	207-3441	travis.jones@tallasseefd.org
2	Steve Oswalt	Tallassee Water Plant	283-2347	carrfilton plant@elmore.rr.com
3	Lee Blalock	TPD	239-5693	lblalock@tallassee-al.gov
4	James Rodgers	TPD	657-8109	jrodgers@tallassee-al.gov
5	TROY WALLACE	Public Works	283-5536	TWALLACE COT@YAhoo.Com
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JU 9, 2014
2:00 PM

Elmor ounty
Elmore County HMGP/HMP/COOP
STAKEHOLDER MEETING
CITY OF MILLBROOK

	Name	Agency	Telephone #	Email
1	GREGG GUTHRIE	UTILITIES	334-651-1723	gregg.guthrie@yahoo.com
2	MORRIS SHERRILL	STREET DP	334 799 [illegible]	
3	P.K. Johnson	Police Dept	285-5603	pk.johnson@cityofmillbrook-al.gov
4	Larry R Brown	MFD	285-6707	larry.brown@cityofmillbrook-al.gov
5	Doyle Campbell	Millbrook Fire	285-6707	d.campbell@cityofmillbrook-al.gov
6				
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List with Eric's updates
as of 17 Sep 14

HMPG BRIEFINGS SCHEDULE

	Name	Agency	Number	E/D	Contacted	Meeting	Time	Complete
1	JP Pullins	Buyck VFD	334-313-2653	D				
2	Charles Ellis	Deatsville VFD	334-850-1515	D				7/16/2014
3	Andrew Crawford	Elmore VFD	334-399-4453	D	E Gray	2/21/2014	9:30	2/21/2014
4	Eric Parten	Emerald Mountain VFD	391-2336	D				
5	Kent Clements	Kowligia VFD	651-2387	D				
6	Forrest Gregg	Holtville/Slapout VFD	850-8432	D		5/23/2014	13:00	
7	Lamar Jones	Real Island VFD	256-329-2673	D				
	Paul Parrett	Real Island VFD		E				
8	Charles Chambers	Red Hill VFD	414-5283	D				
9	Howard Shaw	Semen VFD	799-8519	D				
10	Wayne Moore	Titus VFD	300-6857	D				
11	Frank Coupland	Windermere VFD	256-234-2727	D				
12	Dr. Langham	Elmore County BOE	567-1200	D	5/21/2014	5/28/2014	10:00	5/28/2014
13	Dr. Varner	Tallassee BOE	283-6864	D	5/22/2014	5/29/2014	9:00	5/29/2014
14	Richie Beyer	Elmore County Hwy Dept	567-1162	D	5/19/2014	5/19/2014		5/19/2014
15	Chad Shaw	Central Elmore Water	612-3670	D				Mac Mtg
16	Jennifer Lyle	Eclectic Water	541-2840	D	5/21/2014	6/4/2014	9:30	6/4/2014
17	David Popham	5 Star Water	567-1366	D				
18	Micheal Harris	Millbrook Water	799-1647	D	5/19/2014	6/9/2014	2:00 PM	6/9/2014
19	Ken Champion	Tri Community WW	868-5460	D				
20	Guy Allen	Marbury WS	334-391-7027	D				
21	Chris Bowar	Wetumpka Water	850-2871	D				Mac Mtg
22	Sandi Bradshaw	Town of Deatsville	657-0438	D				7/16/2014
23	Barbara Garnett	City of Tallassee	283-6571	D	5/19/2014	6/10/2014	9:30 AM	6/10/2014
24	Greg Willis	City of Wetumpka	567-1333	D				7/1/2014
25	Teresa Mercer	City of Millbrook	334-285-6428	D	5/19/2014	6/9/2014	2:00 PM	6/9/2014
26	Mayor Hand	Town of Coosada	285-3700	E/D	5/19/2014	6/3/2014	9:00	6/3/2014
	Mayor Hand			E		7/2/2014		
	Mayor Hand			E		2/3/2014		
27	Mayor White	Town of Elmore		E/D				4/15/2014
28	John Wilson	ECFFA		D		4/21/2014		4/21/2014
29	Chief Terry Brown	Prattville FD		D		4/22/2014		4/22/2014
30	Dale Grimmes	Haynes Ambulance		D		5/8/2014		5/8/2014
31	Travis Jones	Tallassee FD		D		4/16/2014		4/16/2014
32	Steve Oswalt	Tallassee Waste Water	283-5536	D		4/16/2014		4/16/2014
33	Billy Eddins	Elmore Water	201-7020	D		5/8/2014		5/8/2014
34	Lynn Wheldon	Wetumpka Airport		D		5/8/2014		5/8/2014
35	Steve Dennis	Friendship-VFD, Water, 911		E				
36	Larry Brown	City of Millbrook FD		E	5/19/2014	6/9/2014	2:00 PM	6/9/2014
37	Tommy Sanford	Santuck VFD		E				
38	Morris Sherrill	Millbrook Publikworks		D	5/19/2014	6/9/2014	2:00 PM	6/9/2014
39	Tex Grier	Wetumpka Publicworks		D				7/1/2014
40	James Garner	Tallassee Publicworks		D	5/19/2014	6/10/2014	9:30 AM	6/10/2014
41	Adam Grham	Eclectic Fire Department		D		6/11/2014	11:00 AM	6/30/2014
42	Dixon/Crenshaw	City of Wetumpka PD		D				7/1/2014
43		City of Wetumpka IT Dept		D				7/1/2014
44		City of Wetumpka Finance		D				7/1/2014
45	Jerry Willis	City of Wetumpka Mayor		D				7/1/2014
46	Gary Davenport	Mayor of Eclectic		E		4/8/2014	✓	
47	Mayor Kelley	Mayor of Millbrook		E		9/23/2014	✓	
48	Mayor Payne	Mayor of Tallassee		E		10/21/2014	1 pm ✓	
49	Mayor Willis	Mayor of Wetumpka		E		9/25/2014	✓	
	Coosada VFD	Chief and other officers		E		5/30/2014	✓	
	ECFA Meetings			E		1/8/2014	✓	
				E		3/12/2014	✓	
				E		5/14/2014		
	County Commission			E		6/10/2013		
				E		11/12/2013		
				E		12/9/2013	grant	
				E		1/13/2014		
				E		4/17/2014		
				E		6/9/2014		
				E		7/28/2014		

David's original list

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3	Andrew Crawford	Elmore VFD	334-399-4453	D	E Gray	2/21/2014	9:30	2/21/2014
4	Eric Parten	Emerald Mountain VFD	391-2336	D				
5	Kent Clements	Kowligia VFD	651-2387	D				
6	Forrest Gregg	Holtville/Slapout VFD	850-8432	D		5/23/2014	13:00	
7	Lamar Jones	Real Island VFD	256-329-2673	D				
8	Charles Chambers	Red Hill VFD	414-5283	D				
9	Howard Shaw	Semen VFD	799-8519	D				
10	Wayne Moore	Titus VFD	300-6857	D				
11	Frank Coupland	Windermere VFD	256-234-2727	D				
12	Dr. Langham	Elmore County BOE	567-1200	D	5/21/2014	5/28/2014	10:00	5/28/2014
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28	John Wilson	ECFFA		D		4/21/2014		4/21/2014
29	Chief Terry Brown	Prattville FD		D		4/22/2014		4/22/2014
30	Dale Grimmes	Haynes Ambulance		D		5/8/2014		5/8/2014
31	Travis Jones	Tallassee FD		D		4/16/2014		4/16/2014
32	Steve Oswalt	Tallassee Waste Water	283-5536	D		4/16/2014		4/16/2014
33	Billy Eddins	Elmore Water	201-7020	D		5/8/2014		5/8/2014
34	Lynn Wheldon	Wetumpka Airport		D		5/8/2014		5/8/2014
35	Steve Dennis	Friendship-VFD, Water, 911		E				
36	Larry Brown	City of Millbrook FD		E	5/19/2014	6/9/2014	2:00 PM	6/9/2014
37	Tommy Sanford	Santuck VFD		E				
38	Morris Sherrill	Millbrook Publikworks		D	5/19/2014	6/9/2014	2:00 PM	6/9/2014
39	Tex Grier	Wetumpka Publicworks		D				7/1/2014
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41	Adam Grham	Eclectic Fire Department		D		6/11/2014	11:00 AM	6/30/2014
42	Dixon/Crenshaw	City of Wetumpka PD						7/1/2014
43		City of Wetumpka IT Dept						7/1/2014
44		City of Wetumpka Finance						7/1/2014
45		City of Wetumpka Mayor						7/1/2014
46								
47								
48								
49								

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Monday, October 22, 2012 5:19 PM
To: 'chamber@tallasseechamber.com'; 'vlynch@wetumpkachamber.org'; 'info@millbrookareachamber.com'
Cc: 'Eric Jones'; 'David Brunson'; 'Kim Trost'
Subject: Elmore Co EMA Needs Your Input
Attachments: ThreatHazardsSurvey.pdf

Importance: High

Good Afternoon Executive Directors,

On behalf of my Director, Eric Jones, I'd like to tell you briefly about one aspect of a recently announced emergency management planning project we've undertaken and ask for your assistance disseminating this information to your membership body for their possible participation. Bottom line: The products that result from this project, and ultimately Elmore County, will be much better served if this analysis phase includes input from our highly valued private business partners.

By completing the attached Elmore County Threat and Hazards Survey, the participant speaks to his/her perceptions regarding a variety of local area hazards by assigning a *Probability Value* to each type of hazard. The resulting survey data provides those of us in the emergency management planning business with invaluable insight into the public's perception of the level of threat these specific hazards pose to Elmore County. The information is then incorporated into a variety of county emergency plans, such as the Elmore County Emergency Operations Plan and the Elmore County Natural Hazards Mitigation Plan, to name a few.

Please consider joining us in this effort by completing the attached survey and returning it to our office at your earliest convenience, but please, not later than **Nov 5, 2012**. Completed surveys may be returned to our office by mail, fax, or email:

Elmore County Emergency Management Agency & Homeland Security Office
201 Hill St, Wetumpka, AL 36092
Fax: (334) 514-5213
email: ktrost@elmoreco.org

We sincerely appreciate the support in disseminating this information to your Chambers of Commerce Memberships and hope to hear back from many of you real soon. If you have any questions, please call the Elmore County EMA/HS Office at 334-567-6451.

We have hard copies of the entire Department of Homeland Security, Be Ready Business Series training and preparedness materials on hand. As a small token of our appreciation for completing the survey, we'll be happy to mail each business with a set of these tools. View them online at www.ready.gov.

Respectfully,

Kim Trost

Kimberly L. Trost, CLEM, ALEM
Program Coordinator & PIO

Elmore County Emergency Management Agency &
Homeland Security Office
201 Hill St, Wetumpka, AL 36092
Ofc: (334) 567-6451/1155 Fax: (334) 514-5213
SL: (334) 850-3269 Radio: 1*77*629
email: ktrost@elmoreco.org

Titus: Lake Jordan mania

?

12/10/2012: "The El Co EMA/HS Office Progression was read."

4/13/2010: motion to approve Resolution adopting the El Co Natural Hazards Mit Plan, Resolution 4-13-10

Tallassee nearly 175 mbrs
Wet 391 mbrs

Completed THIRA Surveys

- Redland VFD
- ECSO
- Em Mtn VFD
- VOAD

71 CERT mbrs

Chambers of Commerce
- Millbrook, Wet, Tall

Elmore Co Ec. Dev - Lisa Fuller

Completed THIRAs

Water: CEWSA, El Wat & Sew Auth
Holtville Wat Sys

LE:
Eclectic, Tall PD, Wet PD,
ECSO

VFD: Eclectic, Real Island,
Tall, Redland, Em Mtn VFD

El Co Hwy Dept

Citizen Vols: CERT (x2), VOAD (x2)

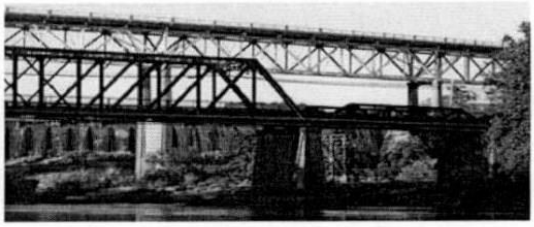
Citizens: 1

search...

Home News Area Info Community Calendar Seven Gables Documents Chamber Members Contact Gallery Local Store

Tallassee
CHAMBER OF COMMERCE

Treasure on the Tallapoosa



Categories

0-9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

- Accounting Services (3)
- Barber Shop/Hair Salon (1)
- Church (3)
- County Government (2)
- Education (2)
- Finance/Bank (8)
- Forestry (1)
- Hospital (1)
- Individual (23)
- Land Excavation/Surveying/Engineering (4)
- Laundry/Dry Cleaning (1)
- Manufacturing (7)
- Newspaper/Publishing (4)
- Pest Control (1)
- Radio (2)
- Recreation (2)
- Retail -Grocery (3)
- Retail-Clothing (2)
- Retail-Medical Supplies (1)
- Signs/Printing (2)
- Staffing/Employment Service (1)
- Utility (2)
- Automobile (4)
- Catering Services (3)
- Construction (4)
- Dance Studio/Health and Fitness (5)
- Electrical/AC/Plumbing (3)
- Florist (1)
- Funeral Homes/Monuments (2)
- Hotel/ Lodging (3)
- Insurance (4)
- Landscape Contractor (3)
- Legal Services (5)
- Medical Services (9)
- Other (5)
- Professional Service (7)
- Real Estate- Sell/Rental (5)
- Restaurants (9)
- Retail- Pharmacy (3)
- Retail-Gifts (2)
- Retail-Misc (9)
- Social Organizations (4)
- State/City Government (4)
- Veterinary Services (2)

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Register Online

2015 Membership Application

Member Benefits

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For Email Marketing you can trust

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Tallassee Sky Cam

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1300 WTLS 106.5

Tallassee Times

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Design by KMS-Inc

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Enter Keyword... GO

MEMBERSHIP CHAMBER INFO COMMUNITY RELOCATING? ECONOMIC DEVELOPMENT EVENTS ADS

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Company Name:

Name:

Alphabetical:

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DIRECTORY CATEGORIES

Accommodations (6)
Arts & Entertainment (2)
Automotive (20)
Business & Professional Services (26)
Clothing & Accessories (6)
Community & Government (45)
Computers & Electronics (6)
Construction & Contractors (24)
Education (9)
Food & Dining (16)
Health & Medicine (24)
Home & Garden (18)
Industry & Agriculture (3)
Insurance (11)
Legal & Financial (47)
Media & Communications (16)
Personal Care & Services (7)
Real Estate (36)
Shopping (11)
Sports & Recreation (4)
Travel & Transportation (8)

TAGS

30th district a/c & heating repair academics accident attorney accountant accounting after school care after-school care air evac alabama alabama legislature alabama state house amps and much more and personal injury antique jewelry asphalt paving attorney auto auto insurance auto repair auto service automotive automotive repair awards b-b-q bakery band instruments bank bank loans

1-30 of **280** 1 2 3 4

LISTINGS AD

PREMIUM DIRECTORY LISTINGS

RSS

Dunn & Schreiber Orthodontics, PC
1490 days ago 0 comments Categories: Cosmetic Dentists Tags: Dental Clinic Orthodontics

Humane Society of Elmore County
1490 days ago 0 comments Categories: Humane Societies Tags: Humane Society Millbrook

In the Box Catering and Events
120 days ago 0 comments Categories: Tags:

Johnston & Daniel Attorneys and Counselors at Law
1490 days ago 0 comments Categories: Attorneys' Information & Referral Services Tags:

New Life Christian Academy
1490 days ago 0 comments Categories: Academic Specialty Schools Tags: christian

At New Life Christian Academy, students in K-3 through the twelfth grade receive a quality education that is fully integrated with God's Word and Christian principles. Class sizes are limited to maxi...

Montgomery Area Association of Realtors
1490 days ago 0 comments Categories: Real Estate Tags: Realtor Organization Real Estate

NewBath Alabama
1490 days ago 0 comments Categories: Building Contractors Tags: bathroom

Aldridge, Borden & Company, P.C.
525 days ago 0 comments Categories: Accountants Tags: tax planing bookkeeping accounting

Aldridge, Borden & Company, P.C. is a full-service certified public accounting firm founded in 1918 and located in downtown Montgomery, Alabama. In addition to the core practice areas of tax com...

Home Towne Suites
1490 days ago 0 comments Categories: Hotels Tags: Hotel Extended Stay Hotel Millbrook

34	A	18 P	MILBRV
27	B	2 Q	
43	C	23 R	
9	D	33 S	
27	E	2 T	
9	F	3 U	
16	G	3 V	
18	H	39 W	
3	I	0 X	
7	J	30 Y	
6	K	3 Z	
11	L	391	
20	M		
4	N		
4	O	Watempka	

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Wednesday, October 24, 2012 11:16 AM
To: 'lfinley@eda.com'
Cc: 'Eric Jones'; 'Kim Trost'
Subject: Elmore Co EMA Needs Yr Input
Attachments: ThreatHazardsSurvey.pdf

Good Morning All,

On behalf of my Director, Eric Jones, I'd like to tell you briefly about one aspect of a recently announced emergency management planning project we've undertaken and ask for your assistance disseminating this information to your membership body for their possible participation in the survey portion of it. Bottom line: The products that result from this project, and ultimately Elmore County, will be much better served if this analysis phase includes input from our highly valued private business partners.

By completing the attached Elmore County Threat and Hazards Survey, the participant speaks to his/her perceptions regarding a variety of local area hazards by assigning a *Probability Value* to each type of hazard. The resulting survey data provides those of us in the emergency management planning business with invaluable insight into the public's perception of the level of threat these specific hazards pose to Elmore County. The information is then incorporated into a variety of county emergency plans, such as the Elmore County Emergency Operations Plan and the Elmore County Natural Hazards Mitigation Plan, to name a few.

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Fax: (334) 514-5213
email: ktrost@elmoreco.org

We sincerely appreciate the support in disseminating this information to your Chambers of Commerce Memberships and hope to hear back from many of you real soon. If you have any questions, please call the Elmore County EMA/HS Office at 334-567-6451.

We have hard copies of the entire Department of Homeland Security, Be Ready Business Series training and preparedness materials on hand. As a small token of our appreciation for completing the survey, we'll be happy to mail each business with a set of these tools. View them online at www.ready.gov.

Respectfully,

Kim Trost

Kimberly L. Trost, CLEM, ALEM
Program Coordinator & PIO
Elmore County Emergency Management Agency &
Homeland Security Office
201 Hill St, Wetumpka, AL 36092

Ofc: (334) 567-6451/1155 Fax: (334) 514-5213
SL: (334) 850-3269 Radio: 1*77*629
email: ktrost@elmoreco.org

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email: ktrost@elmoreco.org

Titus. Lake Jordan mania

?

12/10/2012: "The El Co EMA/HS Office Progression was read."

4/13/2010: motion to approve Resolution adopting the El Co Natural Hazards Mit Plan, Resolution 4-13-10

Tallassee nearly 175 mbrs
Wet 391 mbrs

Completed THIRA Surveys

- Redland VFD
- ECSO
- Em Mtn VFD
- VOAD

71 CERT mbrs
Chambers of Commerce
- Millbrook, Wet, Tall
Elmore Co Ec. Dev - Lisa Fuller

Completed THIRA

Water: CEWSA, El Wat & Sew Auth
Holtville Wat Sys
LE:
Eclectic, Tall PD, Wet PD,
ECSO
VFD: Eclectic, Real Island,
Tall, Redland, Em Mtn VFD
El Co Hwy Dept
Citizen Vols: CERT (x2), VOAD (x2)
Citizens: 1

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Tuesday, October 23, 2012 11:05 AM
To: 'Adam Graham'; 'Alana Wood'; 'Alex Mitchell'; 'Amanda Smith'; 'Andrew Law'; 'Andrew Wood'; 'Angie Mitchell'; 'Anita Edwards'; 'Babette Barmettler'; 'Barbara Stout'; Baron Preston Jr. (sherrylpreston@bellsouth.net); Becki Loza (becki.loza@elmore.kiz.al.us); Ben Cleghorn (crzfree@yahoo.com); Beryl Sabb (bsabb@msn.com); BILL Drake; 'Billie Thrash'; 'Carl Reed'; Carl Stephens (chscobra1@aol.com); Chris Bowar (cbff192 @yahoo.com); Chris Cleghorn (chriscleghorn@wildblue.net); 'Chris Hall'; Chris Moore (cmoore840@yahoo.com); 'Christian Dapprich'; Christorpher W. Perry (chris@rsum.org); 'Dan Brooks'; 'Daphne Law'; David Brunson; 'David Coleman'; 'Dawn Cermak'; Delbert Allman (allman.delbert@yahoo.com); Donna Wilson (dwilson832k9@yahoo.com); 'Donna Woodfin'; 'Emily Bohannon'; epritch123@bellsouth.net; Eric Jones; Frank Bertarelli (fbertarelli@elmore.rr.com); 'Gary Wright'; Greg Oswalt (743gregoswalt@gmail.com); Greg Oswalt (goswalt@elmore.rr.com); 'Hunter Meadows'; 'Jacob Davis'; 'Jason Smith'; jgallups@progressive.com; Judy Whidbee (jwhidbee1 @elmore.rr.com); Karen Stewart (twrsplus3@aol.com); Kathryn Katechis (kkatechis@hotmail.com); Kathy Coleman; 'Katrina Mitchell'; Kayla Latham (heltonsgirl@yahoo.com); 'Kelsie Green'; Kim Trost; 'Larry Williams'; Lee Bullock (jlb1217 @yahoo.com); 'Les Sliter'; 'Lisa Echols'; 'MaegenMarie Speake'; 'Marilyn Rhodes'; 'Modie McNeal'; 'Nancy Brunson & Charlie'; Neal Zeanah (neal.zeanah@gmail.com); Nicholas Bryant (hb.castaway@gmail.com); Niki Bullock (nikib1114@yahoo.com); Patick Smith (sasquatchsmith@hotmail.com); 'Ralph Hickey'; 'Rodney Barrett'; Ron Anderson (eed@mindspring.com); 'Selena Mitchell'; 'Shelia Douglas'; Stephen Qrys (3qrys@att.net); Taylor Deininger (tmd8807@hotmail.com); 'Terri Pritchard'; Tina Pollock (tinapollock@bellsouth.net); 'Verdie Nummy'; 'Willie Currey'; 'Angela Cardwell'; 'Betty Blue'
Cc: 'Eric Jones'; 'Kim Trost'; 'David Brunson'
Subject: Elmore Co EMA Needs Yr Input
Attachments: ThreatHazardsSurvey.pdf

Good Morning Elmore County CERT Members!

On behalf of my Director, Eric Jones, I'd like to tell you briefly about one aspect of a recently announced emergency management planning project we've undertaken and ask for your possible participation in the survey portion of it. Bottom line: The products that result from this project, and ultimately Elmore County, will be much better served if this analysis phase also includes input from private citizens of Elmore County.

By completing the attached Elmore County Threat and Hazards Survey, the participant speaks to his/her perceptions regarding a variety of local area hazards by assigning a *Probability Value* to each type of hazard. The resulting survey data provides those of us in the emergency management planning business with invaluable insight into the public's perception of the level of threat these specific hazards pose to Elmore County. The information is then incorporated into a variety of county emergency plans, such as the Elmore County Emergency Operations Plan and the Elmore County Natural Hazards Mitigation Plan, to name a few.

Please consider joining us in this effort by completing the attached survey and returning it to our office at your earliest convenience, but please, not later than **Nov 5, 2012**. Completed surveys may be returned to our office by mail, fax, or email:

Elmore County Emergency Management Agency & Homeland Security Office

201 Hill St, Wetumpka, AL 36092
Fax: (334) 514-5213
email: ktrost@elmoreco.org

We sincerely appreciate your support and hope to hear back from many of you real soon. If you have any questions, please call the Elmore County EMA/HS Office at 334-567-6451.

Thanks for your time,

Kim

Kimberly L. Trost, CLEM, ALEM
Program Coordinator & PIO
Elmore County Emergency Management Agency &
Homeland Security Office
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Ofc: (334) 567-6451/1155 Fax: (334) 514-5213
SL: (334) 850-3269 Radio: 1*77*629
email: ktrost@elmoreco.org

Commission Meeting Notes (3-24-2014)

Administrative

Preparedness

1. We have the Gov's Emergency Preparedness Conference is next week in Montgomery.
2. We are working on the update of the EOP, HMGP, ~~SNS Plan~~ COOP, and our Dam Break plans. You all should have a copy of the Draft of the EOP Basic Plan.
3. We are hosting a Course (Mobilizing Faith Based Organizations in Preparing for Disaster) aimed at helping our Faith Based organizations to be a little better prepared. It will be held on Saturday, April 26th from 8 to 4 at the Wetumpka Civic Center.

Mitigation

4. Generator project for the Wetumpka Water Works and Sewer Authority has been installed and load-tested and we are working to get this project closed out.
5. Several Hazard Mitigation Grant projects that we are still working on include:
   - Some individual saferooms
   - Holtville/Slapout VFD Community Saferoom
   - Wetumpka Water Works and Sewer Board – Generator project on Boundary Street Lift station
   - Emergency Notification System

   We are in the process of closing some out to include: **(Reported 11/12/2014)**
   - KVFD siren project
   - Polygon upgrade to the siren system
   - Some of the individual safe room grants

Response

6.

Recovery

Homeland Security The first reimbursement claim has put together & the extension for the FEMA Grant funding has been requested.

7. EOC Project –
   - Building project update.

     Site work:

     Concrete:

     Electrical:

     Plumbing:

     Earl Ryser:

     General Contractor:

Comm. Taylor – Thanks to everyone for coming out tonight

Comm. Faulk – Cond. on death of Ralph Hull

Comm Smoke – No

Comm Mraz

Chairman –

Commission Meeting Notes (4-17-2014)

Administrative

Preparedness

1. We have the Gov's Emergency Preparedness Conference is next week in Montgomery.
2. We are working on the update of the EOP, HMGP, SNS Plan, and our Dam Break plans. You all should have a copy of the Draft of the EOP Basic Plan.
3. We are hosting a Course (Mobilizing Faith Based Organizations in Preparing for Disaster) aimed at helping our Faith Based organizations to be a little better prepared. It will be held on Saturday, April 26th from 8 to 4 at the Wetumpka Civic Center.

Mitigation

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    - KVFD siren project
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    - Some of the individual safe room grants

Response

6.

Recovery

Homeland Security

7. EOC Project –
    - Building project update.

      Site work:

      Concrete:

      Electrical:

      Plumbing:

      Earl Ryser:

      General Contractor:

5-5-14 Commission Meeting Notes

- Plan updates - (HMP) (COOP) (EOP)
- Mutual Aid Agreements -

(*) We hosted a Course on 4/26/14 - Mobilizing Faith-Based Organizations in Preparing for Disaster.

(*) At Wet. Civic Center - We had a great turnout + training event

(*) Severe Weather last week [redacted] And then mag. + stored to keep our stakeholders aware

(*) EOC Building Project - * Since the last meeting Most of the site drainage work has been completed + the concrete work on the project has been slow [redacted] hopefully it will be to a point that we'll be able to plug speed.

(*) Fire Chief Rick Borowski of the (Windermere VFD) Memorial Service for him on Wednesday May 14th @ 4:00 p.m. @ the Church in the Pines on Lake Martin at Kavaliga

-ast but certainly not least!

Taylor

Faulk -

Smoke

Hragyl -

Chairman

No report

Commission Meeting Notes (6-9-2014)

Administrative

Preparedness

1. We are working on the update of the EOP, HMGP, SNS Plan, and our Dam Break plans. You all should have a copy of the Draft of the EOP Basic Plan.
2. We participated in a Planning Meeting/Tabletop Exercise with the APCO last week. We are looking forward to working with several of our stakeholder agencies in planning for the Functional Exercise required by FERC with the APCO. This exercise will take place in August.
3. We are partnering with the Elmore County Partnership for Children and many other agencies on their Rocking with Responders event on Friday, June 20th. This will be a great opportunity for teaching children about emergency preparedness.
4. We have been working on the SAFER Places Program along with the VOAD and we are making great progress. This will be a very helpful resource for individuals to know the location of SAFER Places to go to if they are not safe staying home during times of inclement weather conditions.

Mitigation

5. The generator project for the Wetumpka Water Works and Sewer Authority has been completed and the reimbursement has been made to the County. We will be waiting on the AEMA to get this project closed out.
6. Several Hazard Mitigation Grant projects that we are still working on include:
   - Some individual saferooms
   - Holtville/Slapout VFD Community Saferoom
   - Emergency Notification System

   We are in the process of closing some out to include:
   - KVFD siren project
   - Polygon upgrade to the siren system
   - Some of the individual safe room grants

Response

7. We have had several Thunderstorm Watches and Warnings over the last few weeks

Recovery

Homeland Security

8. EOC Project –
   - Building project update.

     Site work:

     Concrete:

     Electrical:

     Plumbing:

     Earl Ryser:

     General Contractor:

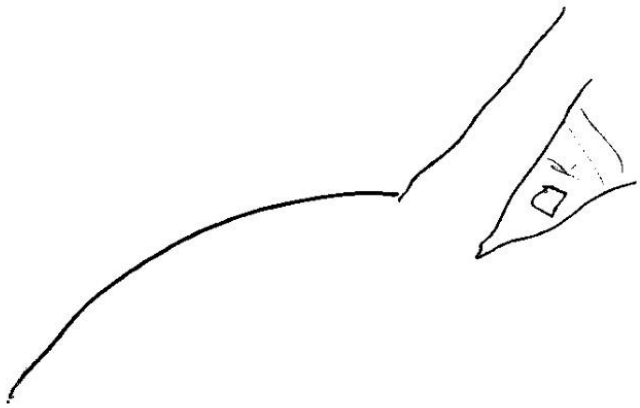
Comm. Taylor - Tallassee Now Festival downtown
- Thank the Vol. Fire Depts. for help cutting trees

Comm. Faulk - Election season - Sales tax in Prattville update
- People need to know how its really broken down

Comm. Smoke - No Report

Comm. Hragur] " "

Comm. Bowen - Thanks to everyone for their thoughts + prayers during passing of his mother in law.



Commission Meeting Notes (6-23-2014)

Administrative

Preparedness (X). Attended Annual AAEM Conf. last week in Prattville

1. We are working on the update of the EOP, HMGP, SNS Plan, and our Dam Break plans. You all should have a copy of the Draft of the EOP Basic Plan.
2. We participated in a Planning Meeting/Tabletop Exercise with the APCO. We are looking forward to working with several of our stakeholder agencies in planning for the Functional Exercise required by FERC with the APCO. This exercise will take place in August.
3. We partnered with the Elmore County Partnership for Children and many other agencies on their Rocking with Responders event last Friday. This was a great opportunity for teaching children about emergency preparedness and the first responder agencies in the County.
4. We have been working on the SAFER Places Program along with the VOAD and we are making great progress. This will be a very helpful resource for individuals to know the location of SAFER Places to go to if they are not safe staying home during times of inclement weather conditions.
5. We've been working on updating the mutual aid agreements with the municipalities and fire departments.

Mitigation

6. The generator project for the Wetumpka Water Works and Sewer Authority has been completed and the reimbursements have been made. We will be waiting on the AEMA to get this project closed out.
7. Several Hazard Mitigation Grant projects that we are still working on include:
   - Some individual saferooms
   - Holtville/Slapout VFD Community Saferoom
   - Emergency Notification System

   We are in the process of closing some out to include:
   - KVFD siren project
   - Polygon upgrade to the siren system
   - Some of the individual safe room grants

Response

8. We have had several Thunderstorm Watches and Warnings over the last few weeks
9. We assisted the ECSO, and Wetumpka F.D. with search and recovery operations on the Coosa River last Wednesday.
10. We had a haz-mat situation that we assisted on with DPS and ADEM on Saturday.

Recovery

Homeland Security

11. EOC Project – Grant extension has been made by FEMA through May 31, 2015
    - Building project update. Site work:
      Concrete:
      Electrical:
      Plumbing:
      Earl Ryser & General Contractor:

Commission Meeting Notes (9-8-2014)

Administrative

1. All FY 14 EMPG Compliance reports were submitted by August 15th. This included our training requirements, exercise requirements, the THIRA requirement, the EOP requirement and the training and exercise calendar. through 2016

Preparedness

2. We have scheduled and begun contacting our stakeholders for the 6th Annual Preparedness Fair at Lowe's here in Wetumpka. I have a list of those that we have received notice that they will be in attendance.
3. Last month on Thursday, August 18 - 20th, we hosted a ICS 300 training course and we had 22 people complete the training.
4. We are hosting a ICS 400 training course on Sept. 16 & 17. We have around 35 people signed up for that course.
5. We are working on the update of the EOP, HMP, SNS Plan, and our Dam Break plans. You all should have a copy of the Draft of the EOP Basic Plan.
6. On August 30th we started a Community Emergency Response Team training course at St. James Baptist Church. We have 22 people attending the training.

Mitigation

7. The generator project for the Wetumpka Water Works and Sewer Authority has been completed and the reimbursements have been made. We will be waiting on the AEMA to get this project closed out.
8. Several Hazard Mitigation Grant projects that we are still working on include:
   - Some individual saferooms
   - Holtville/Slapout VFD Community Saferoom
   - Emergency Notification System

   We are in the process of closing some out to include:
   - KVFD siren project
   - Polygon upgrade to the siren system
   - Some of the individual safe room grants

Response

Recovery

Homeland Security

9. EOC Project Building project update. Site work: no change in the last 2 weeks 35 to 38% complete to this
   - Concrete: roof was poured last week
   - Electrical: inside the building
   - Framing: 911 complete, EMA admin. complete
   - Plumbing: inside the building
   - Mechanical: inside the building

   Earl Ryser: Inspecting the project very closely and on the job nearly everyday.

   General Contractor: Working with Earl with the 40 days allowed in the Change Order, they are right on time. Earl is tracking their progress very closely. - The next couple of months they have about 30% of the work to complete

Commission Meeting Notes (8-11-2014)

Administrative

1. We have been working on the FY15 Budget

Preparedness

2. We have scheduled and begun contacting our stakeholders for the 6th Annual Preparedness Fair and Safety Saturday at Lowe's here in Wetumpka.
3. Last week on Thursday, August 7th, we had a dam break exercise with many of our stakeholder organizations that is being held by APCO per their requirements with FERC.
4. We are working on the update of the EOP, HMGP, SNS Plan, and our Dam Break plans. You all should have a copy of the Draft of the EOP Basic Plan.
5. We've continued to work on updating the mutual aid agreements with the municipalities and fire departments.

Mitigation

6. The generator project for the Wetumpka Water Works and Sewer Authority has been completed and the reimbursements have been made. We will be waiting on the AEMA to get this project closed out.
7. Several Hazard Mitigation Grant projects that we are still working on include:
   - Some individual saferooms
   - Holtville/Slapout VFD Community Saferoom
   - Emergency Notification System

   We are in the process of closing some out to include:
   - KVFD siren project
   - Polygon upgrade to the siren system
   - Some of the individual safe room grants

Response

Recovery

Homeland Security - Reimbursement of FEMA funding today ~~today~~ by the FEMA Grant + Tribal funding that was rec.

8. EOC Project – Grant extension has been made by FEMA through May 31, 2015
   - The reimbursement request has been filed and we had some follow up discussions with the ALEA to answer some of their questions. The claim has been forwarded to be paid. We should receive this funding very soon.
   - Building project update. Site work:
     Concrete:
     Electrical:
     Plumbing:
     Earl Ryser & General Contractor:

Commission Meeting Notes (7-28-2014)

Administrative

1. We have been working on the FY15 Budget

Preparedness

2. We have scheduled and begun contacting our stakeholders for the 6th Annual Preparedness Fair and Safety Saturday at Lowe's here in Wetumpka. Sept. 27th
3. Next week on Thursday, August 7th, we have a dam break exercise with many of our stakeholder organizations that is being held by APCO per their requirements with FERC.
4. We are working on the update of the EOP, HMGP, SNS Plan, and our Dam Break plans. You all should have a copy of the Draft of the EOP Basic Plan.
5. We've been working on updating the mutual aid agreements with the municipalities and fire departments.

Mitigation

6. The generator project for the Wetumpka Water Works and Sewer Authority has been completed and the reimbursements have been made. We will be waiting on the AEMA to get this project closed out.
7. Several Hazard Mitigation Grant projects that we are still working on include:
   - Some individual saferooms
   - Holtville/Slapout VFD Community Saferoom
   - Emergency Notification System

   We are in the process of closing some out to include:
   - KVFD siren project
   - Polygon upgrade to the siren system
   - Some of the individual safe room grants

Response

8. We mobilized the Mobile Command Post to Millbrook for the Millbrook P.D. to utilize during Millbrook's Summer Fest

Recovery

Homeland Security

9. EOC Project – Grant extension has been made by FEMA through May 31, 2015
   - The reimbursement request has been filed and we had some follow up discussions with the ALEA to answer some of their questions. The claim has been forwarded to be paid. We should receive this funding very soon.
   - Building project update. Site work:
     Concrete:
     Electrical:
     Plumbing:
     Earl Ryser & General Contractor:

Commission Meeting Notes (3-10-2014)

Administrative

1. We have submitted our first quarterly FY13 EMPG work plan and quarterly reports. We have submitted our first FY14 HMGP quarterly reports.

Preparedness

2. We are working on the update of the EOP, HMGP, SNS Plan, and our Dam Break plans. You all should have a copy of the Draft of the EOP Basic Plan.
3. We hosted a Spotter Training Course at the Wetumpka Civic Center on 2/25. We had approximately 63 people in attendance. We appreciate the NWS providing this training.
4. We are hosting a Course (Mobilizing Faith Based Organizations in Preparing for Disaster) aimed at helping our Faith Based organizations to be a little better prepared. It will be held on Saturday, April 26th from 8 to 4 at the Wetumpka Civic Center.

Mitigation

5. Generator project for the Wetumpka Water Works and Sewer Authority has been installed and load-tested and we are working to get this project completed.
6. Several Hazard Mitigation Grant projects that we are still working on include:
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   We are in the process of closing some out to include: **(Reported 11/12/2014)**
   - KVFD siren project
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   - Some of the individual safe room grants

Response

7.

Recovery

Homeland Security

8. EOC Project –
   - Building project update.
     Site work:
     Concrete:
     Electrical:
     Plumbing:
     Earl Ryser:
     General Contractor:

TASK / RECORD OF: 6 & 7 Feb 13 mtgs
Operations & Community Services

Elmore CountyMulti-Agency Coordination Group

Policy Group
Commissioners, Mayors & Sheriff

Operations Section

Includes Public Safety and Security ESF #13, Fire Service ESF #4, Emergency Medical Services ESF #8, Hazardous Materials ESF #10, Search and Rescue ESF #9, and Agriculture and Natural Resources ESF #11

Branches	Agencies
Law Enforcement Branch	Elmore County Sheriff's Department ✓
	Millbrook Police Department ✓
	Wetumpka Police Department ✓
	Tallassee Police Department ✓
	Coosada Police Department ✓
	Eclectic Police Department
	Poarch Creek Tribal Police
Fire Service Branch	Elmore County Firefighter's Association
	Buyck Volunteer Fire Department
	Coosada Volunteer Fire Department
	Deatsville Volunteer Fire Department
	Eclectic Volunteer Fire Department
	Elmore Volunteer Fire Department
	Emerald Mountain Volunteer Fire Department
	Friendship Volunteer Fire Department
	Holtville/Slapout Volunteer Fire Department
	Kowaliga Volunteer Fire Department
	Lightwood Volunteer Fire Department
	Millbrook Fire and Rescue
	Prattville Fire Department
	Real Island Volunteer Fire Department
	Red Hill Volunteer Fire Department
	Redland Volunteer Fire Department ✓
	Santuck Volunteer Fire Department
	Seman Volunteer Fire Department
	Tallassee Volunteer Fire Department ✓
	Titus Volunteer Fire Department
	Wetumpka Volunteer Fire Department ✓
	Windermere Volunteer Fire Department
EMS Branch	Haynes Ambulance ✓
	Millbrook Fire and Rescue
	Eclectic Volunteer Fire Department
	~~Air Evac Lifeteam~~ Deactivated Jan 2014
	LifeSaver

Elmore CountyMulti-Agency Coordination Group

Hazardous Materials Branch	Elmore County Haz-Mat Response Team ✓ Fire Service Branch
Search & Rescue Branch	Law Enforcement Branch Fire Service Branch Search and Rescue of Elmore County
Animal Control Branch	Elmore County Humane Society Elmore County Sheriff's Department (Animal Contol Officer) Elmore County Extension Office Tallassee Animal Control Officer Millbrook Animal Control Officer Wetumpka Animal Control Officer

Infrastructure Section

Includes Transportation ESF #1, Communications ESF #2, Public Works ESF #3, and Utilities ESF #12

Branches	**Agencies**
Transportation Branch	Elmore County Board of Education Tallassee Board of Education Elmore County EMA/HS Office Public Works Branch
Communications Branch	Elmore County E-911 Law Enforcement Branch Elmore County EMA/HS Office
Public Works Branch	Elmore County Highway Department Millbrook Public Works Department Wetumpka Public Works Department Tallassee Public Works Department

Utilities Branch

Alabama Power Company
Central Alabama Electric Co-operative
Central Elmore Water and Sewer Authority
Eclectic Water Works and Sewer
Elmore Water Authority
Five-Star Water Authority
Friendship Water Authority
Holtville Water System
Millbrook Water and Sewer Department
Tri-Community Water System
Tallassee Water Department
Wetumpka Water Works and Sewer Board

Elmore CountyMulti-Agency Coordination Group

Marbury Water System
Brighthouse Networks
BellSouth
Southern Natural Gas Company
Dixie Pipeline Company

Community Services Section

Includes Mass Care ESF #6, Public Health ESF #8 and Long Term and Community Recovery ESF #14

Branches	Agencies
Mass Care Branch	Elmore County Department of Human Resources ✓ American Red Cross Elmore County Board of Education Tallassee Board of Education Churches and Schools Facilities for Shelters
Public Health Branch	Elmore County Health Department Elmore County Hospital Tallassee Community Hospital ✓ Elmore County Coroner
Disaster Services Branch	Elmore County VOAD ✓ Central Alabama Aging Consortium Elmore County Extension Office 211 Connect of Alabama Hands on River Region Volunteer and Information Center

Alabama Department of Public Health

Elmore CountyMulti-Agency Coordination Group

Planning & External Affairs Section

Includes Emergency Management ESF #5 and External Affairs ESF #15

Branches	**Agencies**
Planning Branch	Elmore County EMA/HS Office All other Branches may have input into the Planning Branch
External Affairs Branch	Elmore County EMA/HS Office Elmore County Administrator/Public Information Officer All other Branches may have input into the External Affairs Branch

Logistics Section

Includes Emergency Management ESF #5 and Logistics Management and Resource Support ESF #7

Agencies

Elmore County EMA/HS Office
All other Branches may have input into the Logistics Branch

Finance/Administration Section

Agencies

Elmore County Administrator
City or Town Clerks
Elmore County EMA/HS Office
Policy Group

Multi-Agency Coordination Group - Operations Section
February 6, 2013

Name	Department	Phone #	Email
Jimmy Rodgers	Tallassee PD	283-6588	jrodgers@tallassee-al.gov
TROY MANN	TALLASSEE FIRE	334.657.7429	troy.mann@tallasseefd.org
Johnny Montgomery	Millbrook PD	334-285-5603	John.montgomery@cityofmillbrook-al.gov
P.K. Johnson	Millbrook PD	334-285-5603	Lovra2mpd@yahoo.com pk.Johnson@cityofmillbrook-al.gov

Multi-Agency Coordination Group - Operations Section
February 6, 2013

Name	Department	Phone #	Email
Celia Dixon	Wetumpka Police	334 567-5321	Chief.dixon@elmore.rr.com
Ricky Lowery	Elmore Co SO	334 514 5802	Chief@elmoreso.com

Multi-Agency Coordination Group - Operations Section
February 7, 2013

wants Slides

Name	Department	Phone #	Email	
Bill Drake	Redland VFD	334-567-4465	[illegible]	✓
	Elmore Co HazMat	334 [illegible]		
Leon Smith	COOSADA CHIEF OF POLICE	334 850-4249 334 285-3700	COOSADA@elmore.rr.com	✓
Dale Grimes	Haynes Ambulance	334-514-4409 334-239-1213	DGrimes@Haynes-Ambulance.com	

Multi-Agency Coordination Group - Operations Section
February 7, 2013

Name	Department	Phone #	Email
Andrew McCullers	Wetumpka Fire	567-1333	amccullers@cityofwetumpka.com
Ronnie H Bozeman Jr	Wetumpka Fire	334-391-0908	ronniehbozemanjr@gmail.com

Multi-Agency Coordination Group - Community Services Section
February 7, 2013

Name	Department	Phone #	Email
Judy Whidbee	VOAD	312-4210	JWHIDBEE2@elmore.RR.com
Don Woodall	VOAD	569-3854	DWOODALL40@Juno.Com
Michelle Wood	ECDHR	514-3240	[redacted] michelle.wood@dhr.alabama.gov

Multi-Agency Coordination Group - Community Services Section
February 7, 2013

Name	Department	Phone #	Email
Mary Conway	ADPH	277-8464	mary.conway@adph.state.al.us
Patti Stadlberger	ADPH	277-8464	patti.stadlberger@adph.state.al.us
Heather Johnson	Community Hospital	283 3727	hjohnson@chal.org

TASK / RECORD OF: 5 & 7 Nov 13 mtgs
Operations, Infrastructure, & Community Services

Elmore CountyMulti-Agency Coordination Group

Policy Group
Commissioners, Mayors & Sheriff

Operations Section

Includes Public Safety and Security ESF #13, Fire Service ESF #4, Emergency Medical Services ESF #8, Hazardous Materials ESF #10, Search and Rescue ESF #9, and Agriculture and Natural Resources ESF #11

Branches	Agencies
Law Enforcement Branch	Elmore County Sheriff's Department ✓
	Millbrook Police Department ✓
	Wetumpka Police Department ✓
	Tallassee Police Department ✓
	Coosada Police Department
	Eclectic Police Department
	Poarch Creek Tribal Police
Fire Service Branch	Elmore County Firefighter's Association
	Buyck Volunteer Fire Department
	Coosada Volunteer Fire Department
	Deatsville Volunteer Fire Department
	Eclectic Volunteer Fire Department
	Elmore Volunteer Fire Department
	Emerald Mountain Volunteer Fire Department
	Friendship Volunteer Fire Department
	Holtville/Slapout Volunteer Fire Department
	Kowaliga Volunteer Fire Department
	Lightwood Volunteer Fire Department
	Millbrook Fire and Rescue
	Prattville Fire Department
	Real Island Volunteer Fire Department
	Red Hill Volunteer Fire Department
	Redland Volunteer Fire Department ✓
	Santuck Volunteer Fire Department
	Seman Volunteer Fire Department
	Tallassee Volunteer Fire Department
	Titus Volunteer Fire Department
	Wetumpka Volunteer Fire Department
	Windermere Volunteer Fire Department
EMS Branch	Haynes Ambulance ✓
	Millbrook Fire and Rescue
	Eclectic Volunteer Fire Department
	~~Air Evac Lifeteam~~ Deactivated Jan 2014
	LifeSaver

Elmore CountyMulti-Agency Coordination Group

Hazardous Materials Branch	Elmore County Haz-Mat Response Team ✓ Fire Service Branch
Search & Rescue Branch	Law Enforcement Branch Fire Service Branch Search and Rescue of Elmore County
Animal Control Branch	Elmore County Humane Society Elmore County Sheriff's Department (Animal Contol Officer) Elmore County Extension Office Tallassee Animal Control Officer Millbrook Animal Control Officer Wetumpka Animal Control Officer

Infrastructure Section

Includes Transportation ESF #1, Communications ESF #2, Public Works ESF #3, and Utilities ESF #12

Branches	Agencies
Transportation Branch	Elmore County Board of Education Tallassee Board of Education Elmore County EMA/HS Office ✓ Public Works Branch
Communications Branch	Elmore County E-911 Law Enforcement Branch Elmore County EMA/HS Office
Public Works Branch	Elmore County Highway Department ✓ Millbrook Public Works Department Wetumpka Public Works Department Tallassee Public Works Department

Utilities Branch

Alabama Power Company
Central Alabama Electric Co-operative
Central Elmore Water and Sewer Authority
Eclectic Water Works and Sewer
Elmore Water Authority
Five-Star Water Authority
Friendship Water Authority
Holtville Water System
Millbrook Water and Sewer Department
Tri-Community Water System
Tallassee Water Department
Wetumpka Water Works and Sewer Board

Elmore CountyMulti-Agency Coordination Group

Marbury Water System
Brighthouse Networks
BellSouth
Southern Natural Gas Company
Dixie Pipeline Company

Community Services Section

Includes Mass Care ESF #6, Public Health ESF #8 and Long Term and Community Recovery ESF #14

Branches	Agencies
Mass Care Branch	Elmore County Department of Human Resources ✓ American Red Cross ✓ Elmore County Board of Education Tallassee Board of Education Churches and Schools Facilities for Shelters
Public Health Branch	Elmore County Health Department ✓ Elmore County Hospital Tallassee Community Hospital ✓ Elmore County Coroner
Disaster Services Branch	Elmore County VOAD ✓ Central Alabama Aging Consortium Elmore County Extension Office 211 Connect of Alabama Hands on River Region Volunteer and Information Center

Alabama Dept of Public Health ✓

Elmore County Amateur Radio Emergency Services ✓
(ECAR - Elmore County Amateur Radio Society)

Alabama Dept. Rehab Svc ✓

Elmore CountyMulti-Agency Coordination Group

Planning & External Affairs Section Includes Emergency Management ESF #5 and External Affairs ESF #15

Branches	**Agencies**
Planning Branch	Elmore County EMA/HS Office All other Branches may have input into the Planning Branch
External Affairs Branch	Elmore County EMA/HS Office Elmore County Administrator/Public Information Officer All other Branches may have input into the External Affairs Branch

Logistics Section Includes Emergency Management ESF #5 and Logistics Management and Resource Support ESF #7

Agencies

Elmore County EMA/HS Office

All other Branches may have input into the Logistics Branch

Finance/Administration Section

Agencies

Elmore County Administrator

City or Town Clerks

Elmore County EMA/HS Office

Policy Group

Multi-Agency Coordination Group - Operations Section
November 5, 2013

Name	Department	Phone #	Email
Bill Drake	Redland HazMat	334-320-1904	wdrake@elmcirt.rr.com
Capt. M. Whatley	Wetumpka P.D.	567-3321 / 456-9365	
Jeremy Rodgers	Tallassee PD	657-8109 / 283-6588	jrodgers@tallassee-al.gov
Pat Johnson	Millbrook PD	285-5603 / 514-4230	pk.johnson@cityofmillbrook.al.gov
Ricky Lowery	Elmore Co. S.O.	514-5802 / 850-9991	ChiefD@elmoreso.com
Dale Grimes	Haynes Ambulance	241-5279 / 239-1213	DGrimes@haynesAmbulance.com
Eric Jones	Elmore Co. EMA	567-6451	ejones@elmoreco.org
Kim Trost	EMA/HS ofc	567-6451	ktrost@elmoreco.org

Multi-Agency Coordination Group - Infrastruction Section
November 5, 2013

Name	Department	Phone #	Email
Kim Trost	EMA/HS ofc	567-6451	Ktrost@elmoreco.org
Luke McGinty	Hwy Dept	567-1162	lmechd@elmore.rr.com
Eric Jones	EMA/HS Office	567-6451	ejones@elmoreco.org

Multi-Agency Coordination Group - Community Services Section
November 7, 2013

Name	Department	Phone #	Email
DEE HARDIN	ECHD	567-1196	dee.hardin@adph.state.al.gov
Judy Whidbee	VOAD	312-4210	JWHIDBEE2@elmore.RR.com
FARRIS MOSLEY	ARES	415-0437	KD4PDQ@GMAIL.COM
Deborah Mosley	ECares	415-3807	Dajm1955@yahoo.com
Jana Munro	Al. Dept. Rehab (ADRS)	293-7145	jana.munro@rehab.alabama.gov
Kim Trost	EMA/HS	567-6451	Ktrost@elmoreco.org
Eric Jones	EMA/HS	567-6451	ejones@elmoreco.org

Multi-Agency Coordination Group - Community Services Section
November 7, 2013

Name	Department	Phone #	Email
Heather Johnson	Community Hospital	334-283-3727	hjohnson@chal.org
Ann Langley	El Co. Health Dept	334-567-1171	ann.langley@adph.state.al.us
Michelle Wood	El. Co. DHR	334-514-3240	michelle.wood@dhr.alabama.gov
Niki Davidson	Red Cross	334-260-3985 334-399-1914 (cell)	Niki.Davidson@redcross.org
MARY CONWAY	ADPH AREA 8	334-277-8464	MARY.CONWAY@ADPH.STATE.AL.US

TASK / RECORD OF: 7 Nov 12 mtg
1000 - Community Services

Elmore CountyMulti-Agency Coordination Group

Policy Group
Commissioners, Mayors & Sheriff

Operations Section

Includes Public Safety and Security ESF #13, Fire Service ESF #4, Emergency Medical Services ESF #8, Hazardous Materials ESF #10, Search and Rescue ESF #9, and Agriculture and Natural Resources ESF #11

Branches	Agencies
Law Enforcement Branch	Elmore County Sheriff's Department Millbrook Police Department Wetumpka Police Department Tallassee Police Department Coosada Police Department Eclectic Police Department Poarch Creek Tribal Police
Fire Service Branch	Elmore County Firefighter's Association Buyck Volunteer Fire Department Coosada Volunteer Fire Department Deatsville Volunteer Fire Department Eclectic Volunteer Fire Department Elmore Volunteer Fire Department Emerald Mountain Volunteer Fire Department Friendship Volunteer Fire Department Holtville/Slapout Volunteer Fire Department Kowaliga Volunteer Fire Department Lightwood Volunteer Fire Department Millbrook Fire and Rescue Prattville Fire Department Real Island Volunteer Fire Department Red Hill Volunteer Fire Department Redland Volunteer Fire Department Santuck Volunteer Fire Department Seman Volunteer Fire Department Tallassee Volunteer Fire Department Titus Volunteer Fire Department Wetumpka Volunteer Fire Department Windermere Volunteer Fire Department
EMS Branch	Haynes Ambulance Millbrook Fire and Rescue Eclectic Volunteer Fire Department ~~Air Evac Lifeteam~~ Deactivated Jan 2014 LifeSaver

Elmore CountyMulti-Agency Coordination Group

Hazardous Materials Branch	Elmore County Haz-Mat Response Team Fire Service Branch
Search & Rescue Branch	Law Enforcement Branch Fire Service Branch Search and Rescue of Elmore County
Animal Control Branch	Elmore County Humane Society Elmore County Sheriff's Department (Animal Contol Officer) Elmore County Extension Office Tallassee Animal Control Officer Millbrook Animal Control Officer Wetumpka Animal Control Officer

Infrastructure Section

Includes Transportation ESF #1, Communications ESF #2, Public Works ESF #3, and Utilities ESF #12

Branches	**Agencies**
Transportation Branch	Elmore County Board of Education Tallassee Board of Education Elmore County EMA/HS Office Public Works Branch
Communications Branch	Elmore County E-911 Law Enforcement Branch Elmore County EMA/HS Office
Public Works Branch	Elmore County Highway Department Millbrook Public Works Department Wetumpka Public Works Department Tallassee Public Works Department

Utilities Branch

Alabama Power Company
Central Alabama Electric Co-operative
Central Elmore Water and Sewer Authority
Eclectic Water Works and Sewer
Elmore Water Authority
Five-Star Water Authority
Friendship Water Authority
Holtville Water System
Millbrook Water and Sewer Department
Tri-Community Water System
Tallassee Water Department
Wetumpka Water Works and Sewer Board

Elmore CountyMulti-Agency Coordination Group

Marbury Water System
Brighthouse Networks
BellSouth
Southern Natural Gas Company
Dixie Pipeline Company

Community Services Section

Includes Mass Care ESF #6, Public Health ESF #8 and Long Term and Community Recovery ESF #14

Branches	Agencies
Mass Care Branch	Elmore County Department of Human Resources ✓ American Red Cross ✓ Elmore County Board of Education Tallassee Board of Education Churches and Schools Facilities for Shelters
Public Health Branch	Elmore County Health Department /ADPH ✓ Elmore County Hospital Tallassee Community Hospital ✓ Elmore County Coroner
Disaster Services Branch	Elmore County VOAD ✓ Central Alabama Aging Consortium Elmore County Extension Office 211 Connect of Alabama Hands on River Region Volunteer and Information Center

Alabama Dept. of Public Health ✓
Alabama Emergency Management Agency ✓

Elmore CountyMulti-Agency Coordination Group

Planning & External Affairs Section Includes Emergency Management ESF #5 and External Affairs ESF #15

Branches	**Agencies**
Planning Branch	Elmore County EMA/HS Office All other Branches may have input into the Planning Branch
External Affairs Branch	Elmore County EMA/HS Office Elmore County Administrator/Public Information Officer All other Branches may have input into the External Affairs Branch

Logistics Section Includes Emergency Management ESF #5 and Logistics Management and Resource Support ESF #7

Agencies

Elmore County EMA/HS Office

All other Branches may have input into the Logistics Branch

Finance/Administration Section

Agencies

Elmore County Administrator

City or Town Clerks

Elmore County EMA/HS Office

Policy Group

Elmore County
Multi Agency Coordination Group
MAC
Community Services Section

Wednesday, November 7, 2012
10:00 AM

	Name	Agency	Telephone #	Email	Agency Email
1	Mary Conway	ADPH (Public Health)	277-8464	Mary Conway@ADPH.State.AL.US	Same
2	Skip Gray	ADPH - Area 8	277-8464	charles.gray@adph.state.al.us	
3	Heather Johnson	Community Hospital	283-3727	hjohnson@chal.org	
4	Kim Trost	Elmore Co EMA/HS OFC	567-6451	ktrost@elmoreco.org	same
5	Judy Wohlbee	Elmore Co. VOAD	312-4210	Jwohlbee2@elmore.rr.com	Same
6	Don Pitcoaall	Elmore Co VOAD	569-3854	dpitcoaall40@juno.com	"
7	Grover Henry	American Red Cross	260-3984	grover.henry@redcross.org	"
8	Niki Davidson	American Red Cross	260-3985	Niki.Davidson@redcross.org	" "
9	Taquilla Lane	American Red Cross	260-3983	Taquilla.Lane@redcross.org	Taquilla.Lane@Redcross.org
10	Michelle Wood	Elmore Co. DHR	514-3240	michelle.wood@dhr.alabama.gov	same
11	Robert Thomas	AEMA	(205)817-0392	robertt@ema.alabama.gov	SAME
12	Elmore Co. EMA Eric Jones	Elmore Co. EMA	567-6451	ejones@elmoreco.org	
13	David B. Brinson	Elmore Co EMA	567-6457	dbrinson@elmoreco.org	
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TASK / RECORD OF: 1 May 13 mtg
Infrastructure, Finance & Admin

Elmore CountyMulti-Agency Coordination Group

Policy Group
Commissioners, Mayors & Sheriff

Operations Section

Includes Public Safety and Security ESF #13, Fire Service ESF #4, Emergency Medical Services ESF #8, Hazardous Materials ESF #10, Search and Rescue ESF #9, and Agriculture and Natural Resources ESF #11

Branches	Agencies
Law Enforcement Branch	Elmore County Sheriff's Department Millbrook Police Department Wetumpka Police Department Tallassee Police Department Coosada Police Department ✓ Eclectic Police Department Poarch Creek Tribal Police
Fire Service Branch	Elmore County Firefighter's Association Buyck Volunteer Fire Department Coosada Volunteer Fire Department Deatsville Volunteer Fire Department Eclectic Volunteer Fire Department Elmore Volunteer Fire Department Emerald Mountain Volunteer Fire Department Friendship Volunteer Fire Department ✓ Holtville/Slapout Volunteer Fire Department Kowaliga Volunteer Fire Department Lightwood Volunteer Fire Department Millbrook Fire and Rescue Prattville Fire Department Real Island Volunteer Fire Department Red Hill Volunteer Fire Department Redland Volunteer Fire Department Santuck Volunteer Fire Department Seman Volunteer Fire Department Tallassee Volunteer Fire Department Titus Volunteer Fire Department Wetumpka Volunteer Fire Department Windermere Volunteer Fire Department
EMS Branch	Haynes Ambulance Millbrook Fire and Rescue Eclectic Volunteer Fire Department ~~Air Evac Lifeteam~~ Deactivated Jan 2014 LifeSaver

Elmore CountyMulti-Agency Coordination Group

Hazardous Materials Branch	Elmore County Haz-Mat Response Team Fire Service Branch
Search & Rescue Branch	Law Enforcement Branch Fire Service Branch Search and Rescue of Elmore County
Animal Control Branch	Elmore County Humane Society Elmore County Sheriff's Department (Animal Contol Officer) Elmore County Extension Office Tallassee Animal Control Officer Millbrook Animal Control Officer Wetumpka Animal Control Officer

Infrastructure Section

Includes Transportation ESF #1, Communications ESF #2, Public Works ESF #3, and Utilities ESF #12

Branches	**Agencies**
Transportation Branch	Elmore County Board of Education Tallassee Board of Education Elmore County EMA/HS Office Public Works Branch
Communications Branch	Elmore County E-911 ✓ Law Enforcement Branch Elmore County EMA/HS Office
Public Works Branch	Elmore County Highway Department ✓ Millbrook Public Works Department Wetumpka Public Works Department Tallassee Public Works Department

Utilities Branch

Alabama Power Company
Central Alabama Electric Co-operative
Central Elmore Water and Sewer Authority
Eclectic Water Works and Sewer
Elmore Water Authority
Five-Star Water Authority
Friendship Water Authority
Holtville Water System ✓
Millbrook Water and Sewer Department
Tri-Community Water System
Tallassee Water Department
Wetumpka Water Works and Sewer Board ✓

Elmore CountyMulti-Agency Coordination Group

Marbury Water System
Brighthouse Networks
BellSouth
Southern Natural Gas Company
Dixie Pipeline Company

Community Services Section

Includes Mass Care ESF #6, Public Health ESF #8 and Long Term and Community Recovery ESF #14

Branches	Agencies
Mass Care Branch	Elmore County Department of Human Resources American Red Cross Elmore County Board of Education Tallassee Board of Education Churches and Schools Facilities for Shelters
Public Health Branch	Elmore County Health Department Elmore County Hospital Tallassee Community Hospital Elmore County Coroner
Disaster Services Branch	Elmore County VOAD Central Alabama Aging Consortium Elmore County Extension Office 211 Connect of Alabama Hands on River Region Volunteer and Information Center

Elmore CountyMulti-Agency Coordination Group

Planning & External Affairs Section Includes Emergency Management ESF #5 and External Affairs ESF #15

Branches	**Agencies**
Planning Branch	Elmore County EMA/HS Office ✓ All other Branches may have input into the Planning Branch
External Affairs Branch	Elmore County EMA/HS Office Elmore County Administrator/Public Information Officer All other Branches may have input into the External Affairs Branch

Logistics Section Includes Emergency Management ESF #5 and Logistics Management and Resource Support ESF #7

Agencies

Elmore County EMA/HS Office

All other Branches may have input into the Logistics Branch

Finance/Administration Section

Agencies

Elmore County Administrator ✓

City or Town Clerks ✓

Elmore County EMA/HS Office ✓

Policy Group

Town of Coosada
City of Tallassee
Town of Deatsville

Town of Elmore
City of Wetumpka

Alabama Emergency management Agency ✓

Multi-Agency Coordination Group - Infrastruction Finance/Admin. Sections
May 1, 2013

Name	Department	Phone #	Email
Bob Cramer	Holtville Water	334 569-2105 334 391-7085 c	holtvillewater @ hotmail.com
Chris Bowar	Wetumpka Water Works	334-567-5230 334-235 1466	cbowar@wwwusb.net
Ronnie Windham	Wetumpka WCUSB	334-567-8404 Office 334-850-0418 Cell	rwindham@wwwusb.net

Multi-Agency Coordination Group - Infrastruction Finance/Admin. Sections
May 1, 2013

Name	Department	Phone #	Email
Robert Baylis	ALEMA	(205)280-2453	robert.baylis@ema.alabama.gov
CRAIG BOLLING	AEMA	205-280-2480	craig.bolling@ema.alabama.gov
Jason Jackson	E-911	334-567-0911	Jason.Jackson@elmore911.org
Steve Dennis	FD	334-799-3294	chief36078@yahoo.com
Kim Trost	EMA/HSOE	567-6451	ktrost@elmoraco.org
Eric Jones	EMA/HS	(334)567-6451	ejones@elmoreco.org

Multi-Agency Coordination Group - Infrastruction Finance/Admin. Sections
May 1, 2013

Name	Department	Phone #	Email
Lynda Feaga	County Commission	512-0600	lfeaga@elmoreco.org
Rhonda Ward	County Commission	567-1372	rward@elmoreco.org
Chief Leon Smith → Jeannie Ward	Town of Coosada	285-3700	coosada@elmore.rr.com
Barbara Garnett	City of Tallassee	283-6571	citycleric@tallassee-al.com

Multi-Agency Coordination Group - Infrastruction Finance/Admin. Sections
May 1, 2013

Name	Department	Phone #	Email
Luke McGinty	Hwy Dept	(334) 567-1162	lmechd@elmore.rr.com

Multi-Agency Coordination Group - Infrastruction Finance/Admin. Sections
May 1, 2013

Name	Department	Phone #	Email
Sandy Bradshaw	Town of Deatsville	285-9881 - 1657-0438	Sandyray101@aol.com
Jo McWhorter	Town of Elmore	514-5988	clerk@townofelmore.com
Janice Whorton	City of Wetumpka	334-567-1306	cityclerk@bellsouth.net

TASK / RECORD OF: 12 Dec 13 mtg
Infrastructure

Elmore CountyMulti-Agency Coordination Group

Policy Group
Commissioners, Mayors & Sheriff

Operations Section

Includes Public Safety and Security ESF #13, Fire Service ESF #4, Emergency Medical Services ESF #8, Hazardous Materials ESF #10, Search and Rescue ESF #9, and Agriculture and Natural Resources ESF #11

Branches	Agencies
Law Enforcement Branch	Elmore County Sheriff's Department Millbrook Police Department Wetumpka Police Department Tallassee Police Department Coosada Police Department Eclectic Police Department Poarch Creek Tribal Police
Fire Service Branch	Elmore County Firefighter's Association Buyck Volunteer Fire Department Coosada Volunteer Fire Department Deatsville Volunteer Fire Department Eclectic Volunteer Fire Department Elmore Volunteer Fire Department Emerald Mountain Volunteer Fire Department Friendship Volunteer Fire Department Holtville/Slapout Volunteer Fire Department Kowaliga Volunteer Fire Department Lightwood Volunteer Fire Department Millbrook Fire and Rescue Prattville Fire Department Real Island Volunteer Fire Department Red Hill Volunteer Fire Department Redland Volunteer Fire Department Santuck Volunteer Fire Department Seman Volunteer Fire Department Tallassee Volunteer Fire Department Titus Volunteer Fire Department Wetumpka Volunteer Fire Department Windermere Volunteer Fire Department
EMS Branch	Haynes Ambulance Millbrook Fire and Rescue Eclectic Volunteer Fire Department ~~Air Evac Lifeteam~~ Deactivated Jan 2014 LifeSaver

Elmore CountyMulti-Agency Coordination Group

Hazardous Materials Branch	Elmore County Haz-Mat Response Team Fire Service Branch
Search & Rescue Branch	Law Enforcement Branch Fire Service Branch Search and Rescue of Elmore County
Animal Control Branch	Elmore County Humane Society Elmore County Sheriff's Department (Animal Contol Officer) Elmore County Extension Office Tallassee Animal Control Officer Millbrook Animal Control Officer Wetumpka Animal Control Officer

Infrastructure Section

Includes Transportation ESF #1, Communications ESF #2, Public Works ESF #3, and Utilities ESF #12

Branches	**Agencies**
Transportation Branch	Elmore County Board of Education Tallassee Board of Education Elmore County EMA/HS Office ✓ Public Works Branch
Communications Branch	Elmore County E-911 Law Enforcement Branch Elmore County EMA/HS Office
Public Works Branch	Elmore County Highway Department Millbrook Public Works Department Wetumpka Public Works Department ✓ Tallassee Public Works Department ✓

Utilities Branch

Alabama Power Company
Central Alabama Electric Co-operative
Central Elmore Water and Sewer Authority ✓
Eclectic Water Works and Sewer
Elmore Water Authority ✓
Five-Star Water Authority
Friendship Water Authority
Holtville Water System
Millbrook Water and Sewer Department
Tri-Community Water System
Tallassee Water Department
Wetumpka Water Works and Sewer Board

Wetumpka Airport / EC Dev - City of Wetumpka ✓

Elmore CountyMulti-Agency Coordination Group

Marbury Water System
Brighthouse Networks
BellSouth
Southern Natural Gas Company
Dixie Pipeline Company

Community Services Section

Includes Mass Care ESF #6, Public Health ESF #8 and Long Term and Community Recovery ESF #14

Branches	Agencies
Mass Care Branch	Elmore County Department of Human Resources American Red Cross Elmore County Board of Education Tallassee Board of Education Churches and Schools Facilities for Shelters
Public Health Branch	Elmore County Health Department Elmore County Hospital Tallassee Community Hospital Elmore County Coroner
Disaster Services Branch	Elmore County VOAD Central Alabama Aging Consortium Elmore County Extension Office 211 Connect of Alabama Hands on River Region Volunteer and Information Center

Elmore CountyMulti-Agency Coordination Group

Planning & External Affairs Section

Includes Emergency Management ESF #5 and External Affairs ESF #15

Branches	**Agencies**
Planning Branch	Elmore County EMA/HS Office All other Branches may have input into the Planning Branch
External Affairs Branch	Elmore County EMA/HS Office Elmore County Administrator/Public Information Officer All other Branches may have input into the External Affairs Branch

Logistics Section

Includes Emergency Management ESF #5 and Logistics Management and Resource Support ESF #7

Agencies

Elmore County EMA/HS Office
All other Branches may have input into the Logistics Branch

Finance/Administration Section

Agencies

Elmore County Administrator
City or Town Clerks
Elmore County EMA/HS Office
Policy Group

Multi-Agency Coordination Group - Infrastruction Section
December 12, 2013

Name	Department	Phone #	Email
TROY WALLACE	CITY OF TALLASSEE PW	283-6571	TWallace COT@YAhoo.com
Jamie Buckhanon	City of Tallassee PW	283-6571	912 Buckboy@gmail.com
Larry Bryson Jr	Public Works	850-1923	lbryson@cityofwetumpka.com
Tex Grier	Cof Wet Public Wks	850-2557	texgrier@yahoo.com
Lynn Weldon	AIRPORT/EC.DEV.	850-2568	lweldon@cityofwetumpka.com

Multi-Agency Coordination Group - Infrastruction Section
December 12, 2013

Name	Department	Phone #	Email
Billy Eddings	Elmore Water SA	334-285-6109	beddings@elmorewater.com
CHAD SHAW	CEWSA	334-567-6814	cshaw@cewsa.com
Tex Grier	Wetumpka City		
Jason Baker	Wetumpka Bldg Dept	334-567-1303	JBaker@cityofwetumpka.com
Micheal Robinson	Wetumpka Bldg Dept	334-567-1303	mRobinson@cityofwetumpka.com
Stacye Carter	Wetumpka Bldg Dept	334-567-1303	SCarter@cityofwetumpka.com
Kim Trost	Elmore Co EMA/HS	334-567-6451	Ktrost@elmoreco.org
Eric Jones	"	"	ejones@elmoreco.org

TASK / RECORD OF: 24 Oct 12 mtgs
0815 - Infrastructure
1430 - Operations

Elmore CountyMulti-Agency Coordination Group

Policy Group
Commissioners, Mayors & Sheriff

Operations Section

Includes Public Safety and Security ESF #13, Fire Service ESF #4, Emergency Medical Services ESF #8, Hazardous Materials ESF #10, Search and Rescue ESF #9, and Agriculture and Natural Resources ESF #11

Branches	Agencies
Law Enforcement Branch	Elmore County Sheriff's Department ✓
	Millbrook Police Department ✓
	Wetumpka Police Department ✓
	Tallassee Police Department ✓
	Coosada Police Department
	Eclectic Police Department ✓
	Poarch Creek Tribal Police
Fire Service Branch	Elmore County Firefighter's Association ✓
	Buyck Volunteer Fire Department
	Coosada Volunteer Fire Department
	Deatsville Volunteer Fire Department
	Eclectic Volunteer Fire Department
	Elmore Volunteer Fire Department
	Emerald Mountain Volunteer Fire Department
	Friendship Volunteer Fire Department
	Holtville/Slapout Volunteer Fire Department
	Kowaliga Volunteer Fire Department
	Lightwood Volunteer Fire Department
	Millbrook Fire and Rescue
	Prattville Fire Department
	Real Island Volunteer Fire Department
	Red Hill Volunteer Fire Department
	Redland Volunteer Fire Department ✓
	Santuck Volunteer Fire Department
	Seman Volunteer Fire Department
	Tallassee Volunteer Fire Department
	Titus Volunteer Fire Department
	Wetumpka Volunteer Fire Department ✓
	Windermere Volunteer Fire Department
EMS Branch	Haynes Ambulance ✓
	Millbrook Fire and Rescue
	Eclectic Volunteer Fire Department
	~~Air Evac Lifeteam~~ Deactivated Jan 2014
	LifeSaver

Elmore CountyMulti-Agency Coordination Group

Hazardous Materials Branch	Elmore County Haz-Mat Response Team ✓ Fire Service Branch
Search & Rescue Branch	Law Enforcement Branch Fire Service Branch Search and Rescue of Elmore County
Animal Control Branch	Elmore County Humane Society Elmore County Sheriff's Department (Animal Contol Officer) Elmore County Extension Office Tallassee Animal Control Officer Millbrook Animal Control Officer Wetumpka Animal Control Officer

Infrastructure Section

Includes Transportation ESF #1, Communications ESF #2, Public Works ESF #3, and Utilities ESF #12

Branches	**Agencies**
Transportation Branch	Elmore County Board of Education Tallassee Board of Education Elmore County EMA/HS Office Public Works Branch
Communications Branch	Elmore County E-911 ✓ Law Enforcement Branch Elmore County EMA/HS Office
Public Works Branch	Elmore County Highway Department ✓ Millbrook Public Works Department Wetumpka Public Works Department ✓ Tallassee Public Works Department

Utilities Branch

Alabama Power Company
Central Alabama Electric Co-operative
Central Elmore Water and Sewer Authority ✓
Eclectic Water Works and Sewer
Elmore Water Authority ✓
Five-Star Water Authority
Friendship Water Authority
Holtville Water System ✓
Millbrook Water and Sewer Department
Tri-Community Water System
Tallassee Water Department ✓
Wetumpka Water Works and Sewer Board ✓

Elmore CountyMulti-Agency Coordination Group

Marbury Water System
Brighthouse Networks
BellSouth
Southern Natural Gas Company
Dixie Pipeline Company

Community Services Section

Includes Mass Care ESF #6, Public Health ESF #8 and Long Term and Community Recovery ESF #14

Branches	Agencies
Mass Care Branch	Elmore County Department of Human Resources American Red Cross Elmore County Board of Education Tallassee Board of Education Churches and Schools Facilities for Shelters
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Disaster Services Branch	Elmore County VOAD Central Alabama Aging Consortium Elmore County Extension Office 211 Connect of Alabama Hands on River Region Volunteer and Information Center

Elmore CountyMulti-Agency Coordination Group

Planning & External Affairs Section Includes Emergency Management ESF #5 and External Affairs ESF #15

Branches	**Agencies**
Planning Branch	Elmore County EMA/HS Office All other Branches may have input into the Planning Branch
External Affairs Branch	Elmore County EMA/HS Office Elmore County Administrator/Public Information Officer All other Branches may have input into the External Affairs Branch

Logistics Section Includes Emergency Management ESF #5 and Logistics Management and Resource Support ESF #7

Agencies

Elmore County EMA/HS Office
All other Branches may have input into the Logistics Branch

Finance/Administration Section

Agencies

Elmore County Administrator
City or Town Clerks
Elmore County EMA/HS Office
Policy Group

Elmore County
Multi Agency Coordination Group
MAC
Operations Section

Wednesday, October 24, 2012
2:30 PM

✓ = Volunteer to help on planning Team

	Name	Agency	Telephone #	Email	Agency Email
1	Ricky Lowery	Elmore County S.O.	514-5802	chief@elmoreso.com	
2	Jeremy H. Amerson	Elmore County Sheriff's Dept.	514-5806	jeremyamerson@yahoo.com	
3	Roger D. Grimes	Haynes Ambulance of Elmore Co	239-1213	DGrimes@haynes-Ambulance.com	KBarnett@haynes-Ambulance.com
4	Chris Miles	Tallassee Police Department	283-6586	tpdnarcotics@yahoo.com	
5	Jimmy Rodgers III	Tallassee Police Department	283-6586	jrodgers@tallassee-al.gov	tpd590@elmore.rr.com
6	TERRY McINNIS	WETUMPKA P.D.	567-1312	WETumpka907@AOL.Com	
7	Ron Wilhoit	Eclectic Police Dept	541-2148	Eclectic Pd607@Yahoo.Com	Same
8	P.K. Johnson	Millbrook Police Dept	255-5003	color32mpd@yahoo.com	pk.johnson@cityofmillbrook-al.gov
9	John Wilson	Elmore County FFA	324-3475	jww600@yahoo.com	Same
10	Bill Drake	Redland VFD / Elmore HazMat	267-4465	wdrake@elmore.rr.com	Redlandvolunteer@bellsouth.net
✓ 11	Romich Brazeman Jr	Wetumpka Fire Dept	391-0908	romichbrazemanjr@gmail.com	
12	Eric Jones	Elmore Co. EMA	567-6451	ejones@elmoreco.org	
13	David B Brunson	Elmore Co EMA	567-6251	dbrunson@elmoreco.org	
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✓ = Volunteers to be on planning team

Elmore County
Multi Agency Coordination Group
MAC
Infrastucture Section

Wednesday, October 24, 2012
8:15 AM

	Name	Agency	Telephone #	Email	Agency Email
1	ROBERT L PRINCE JR (Bobby)	CENTRAL ELMORE WATER	567-6814	rprince@cewsa.com	SAME
2	CHAD SHAW	CEWSA	567-6814	cshaw@cewsa.com	SAME
3	TROY WALLACE	CITY OF TALLACE	283 3448	T WALLACE COT@YAhoo.com	SAME
4	Steve Oswalt	City of Tallassee	283-2347	cot filter plant@elmore.rr.com	SAME
5	JAMES W GARNER	City OF TALLASSEE	991-1012	J GARNER COT @ YAhoo.Com	SAME
6	Billy Eddings	ELMORE WATER + SA	285-6109	beddings@elmorewater.com	SAME
7	Bob Cramer	Holtville Water	569-2105	holtvillewater@hotmail.com	SAME
8	Jean MOE	Elmore Co E911	567-0911	jean.moe@elmore911.org	SAME
9	Kevin Boone	Elmore County Highway Dept.	567-1162	KBECHD@ELMORE.RR.COM	WRBECHD@ELMORE.RR.COM
10	LYNN WELDON	CITY OF WETUMPKA P.W.	567-1329	lweldon@cityofwetumpka.com	publicworks@cityofwetumpka.com
11	Chris M Bowen	Wetumpka Water Work	567-5230	Cbowen@wwwsb.net	SAME
12	Eric Jones	Elmore Co. EMA	567-6451	ejones@elmoreco.org	
13	David M Brunson	Elmore Co EMA	567-6451	dbrunson@elmoreco.org	
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Hazard Mitigation Opportunities:

All Governments (County and municipalities) submitted at least one hazard mitigation project opportunity form. A project opportunity form identifies a hazard mitigation project a community would like to complete. Table 5.1 shows the government project opportunities submitted.

Table 5.1

	Project Opportunities																	
Jurisdiction	Flood Control	Stabilize stream banks/stream improvement projects	Continued participation in the NFIP	Improve Storm water management system	Improve Information Sharing and Communication Capabilities and Systems	Clear debris from streams	Purchase generator for critical facilities	Install Additional hydrants	Emergency Warning System / Community Warning System	Continue to conduct all hazard public education, outreach, and Awareness Activities	Catch basins or ponds to reduce flooding	Retrofit critical facilities for alternate power source	Construction of Community Safe Rooms	Construction of individual Safe Rooms	Weather radio program for citizens	Forest Management Program	Vegetative/Tree Risk Management Plan	Structure Purchase and removal
Elmore County	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	
Municipalities																		
Coosada, Town of	X	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X
Deatsville, Town of				X	X	X	X	X	X	X		X	X	X			X	
Eclectic, Town of				X	X	X	X	X	X	X		X	X	X		X	X	
Elmore, Town of	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Millbrook, City of	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tallassee, City of	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wetumpka, City of	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

JURISDICTION	FACILITY TYPE	ADDRESS	REPLACEMENT COST
Sub Total			$8,650,000
Fire Departments - Others	Essential/Fire	Santuck #1, 7645 Central Plank Rd.	$185,000
	Essential/Fire	Santuck #2, 5354 Georgia Rd.	$163,200
	Essential/Fire	Titus #1, Titus Rd	$210,834
	Essential/Fire	Buyck Station #2, 125 Laurel Creek Rd.	$134,130
	Essential/Fire	Holtville Station #1, 5615 Ceasarville Rd.	$130,000
	Essential/Fire	Seman Station #1, 15915 Central Plank Rd.	$142,800
	Essential/Fire	Seman Station #2, 903 Mt. Hebron Rd.	$85,000
	Essential/Fire	Eclectic Station #1, 140 First St.	$153,000
	Essential/Fire	Eclectic Station #2, 839 Middle Rd	$42,000
	Essential/Fire	Friendship Station #1, 4544 Friendship Rd.	$142,800
	Essential/Fire	Kowaliga Station #1, 1240 Prospect Rd.	$210,000
	Essential/Fire	Kowaliga Station #2, Mt. Hebron Rd.	$130,000
	Essential/Fire	Elmore Station #1, 15 Fire Station Rd.	$118,320
	Essential/Fire	Elmore Station #2, AL Hwy 143.	$64,600
	Essential/Fire	Windermere Station #1	$100,000
	Essential/Fire	Coosada Station #1, 5830 Coosada Rd.	$153,000
	Essential/Fire	Red Hill Station #1, 3558 Red Hill Rd.	$68,510
	Essential/Fire	Red Hill Station #2, Channel Creek Rd.	$71,400
	Essential/Fire	Redland Station #1, 4367 Redland Rd.	$130,560
	Essential/Fire	Redland Station #2, 6941 Redland Rd.	$265,800
	Essential/Fire	Lightwood Station #1, 6250 Lightwood Rd.	$85,000
	Essential/Fire	Real Island Station #1, 1495 Real Island Rd.	$276,706
	Essential/Fire	Emerald Mtn Station #1, 1785 Old Ware Rd.	$197,200
	Essential/Fire	Deatsville Station #1, 6940 AL Hwy 143	$173,400
Sub Total			$3,478,710

ELMORE COUNTY HAZARD MITIGATION PLANNING - 2013

FEMA PSA

"WINGING IT IS NOT A PLAN"

FEMA PSA

"NOT SHARING"

[redacted]

OVERVIEW

- ❑ New Plan, New Direction
- ❑ Current Plan Specs
- ❑ Plan Review Process
- ❑ Action Steps
  - "In Class"
  - "Homework"
- ❑ Summary

NEW PLAN, NEW DIRECTION

Current Plan: Natural Hazard Mitigation Plan

Updated Plan: All-Hazards Mitigation Plan

CURRENT PLAN SPECS:

Title: Elmore County Natural Hazard Mitigation Plan Up-date (Multi-Jurisdictional), Dated: October 2009

Date Of FEMA Approval: 20 May 2010, For Five (5) Years

Date Of Renewal: 20 May 2015

PLAN REVIEW PROCESS:

✓ 2010 Completed First Annual Plan Review: Nov 2010 - Jan 2011

(Letter Of Instruction: Dated 18 Nov 10, W/ Worksheet)

Replies Received: Elmore County Commission, Town Of Coosada, Eclectic Police Dept., Holtville Water System, Millbrook Fire Dept., Tallassee Fire Dept., Tallassee Police Dept., City Of Wetumpka, Wetumpka Water Works

- "Pre-MACG-Structure": Went to all stakeholders involved in the process at that time
- With new MACG, all eligible partners are invited and highly encouraged to participate in review and update process

ACTION STEPS:

- ❑ Steps We'd Like To Accomplish Today, "In-Class"
- ❑ Steps We'd Like You To Accomplish As "Homework"

Due Date: 19 Nov 2013

ACTION STEPS: IN-CLASS

- Conduct Brief Overview Of the Elmore Co EMA/HS Ofc ***Natural Hazard Mitigation Plan Annual Review Worksheet***
- Using the above Worksheet, complete as much of the review "in-class" as possible
- Review Plan Hazards, Mission, Goals, Action Items, Critical Facilities, <u>noting changes as we go!</u>

ACTION STEPS: IN-CLASS

- Conduct Brief Overview Of the Elmore Co EMA/HS Ofc ***Natural Hazard Mitigation Plan Annual Review Worksheet***
- Remember: "New Plan, New Direction" We're moving from:

  Natural Hazards ➡ All-Hazards

  - In other words, review all Sections of the Plan considering All-Hazards: natural, technological/accidental, and human-caused threats/hazards

ACTION STEPS: IN-CLASS

➢ **Review Hazards:**

- **Natural Hazards currently include: fire/wildfire; flood, flash flood, river flooding; heat/drought; high winds; hurricane/tropical storm; lightning; thunderstorm/severe weather; tornado; winter storm**

✓ **Add: Dense Fog, Sinkholes, Space Weather, others????**

✓ **Remember: Natural Hazards ➡ All-Hazards**

✓ **Additions??? Write them on your Worksheet**

ACTION STEPS: IN-CLASS

➢ **Review: Section II: Plan Mission:**

(Ref: Executive Summary, Page iv)

What Is The Plan Mission?

The Mission Of The Elmore County Natural Hazards Mitigation Plan Is To Promote Sound Public Policy Designed To Protect Citizens, Critical Facilities, Infrastructure, Private Property, And The Environment From Natural Hazards. This Can Be Achieved By Increasing Public Awareness, Documenting The Resources For Risk Reduction And Loss-prevention, And Identifying Activities To Guide The County Toward The Building Of A Safer, More Sustainable Community.

ACTION STEPS: IN-CLASS

➢ Review: Section III: Plan Goals:

(Ref: Executive Summary, Page iv)

- **WHAT ARE THE PLAN GOALS?**

The Plan Goals Describe The Overall Direction That Elmore County Agencies, Organizations, And Citizens Can Take To Work Toward Mitigating Risk From Natural Hazards. The Goals Are Stepping-stones Between The Broad Direction Of The Mission Statement And The Specific Recommendations Outlined In The Action Items.

Next Slide: 5 Plan Goals (Pg vi)

ACTION STEPS: IN-CLASS

Review: 5 Plan Goals: (Also Section 5, Page 2., Goals)

- **Goal 1:** Increase Elmore County's Capabilities In Order To Mitigate The Effects Of A Natural Hazard In The County.
- **Goal 2:** Design, Enhance, Or Amend County Policies That Will Work To Limit The Impact A Natural Hazard Has On Elmore County.
- **Goal 3:** Protect The County's Most Valuable Assets And Vulnerable Populations Through Cost Effective And Feasible Mitigation Projects Whenever Financially Possible.
- **Goal 4:** Increase The Public Awareness Of Natural Hazards In Elmore County In Order To Make The Public A Partner In Hazard Mitigation.
- **Goal 5:** Ensure That Future Development In The County Is As "Hazard Proof" As Possible By Contributing To The Sustainability Of The Community.

ACTION STEPS: IN-CLASS

➢ **Review: Section IV: Action Items:**

(Ref: Section 5: Natural Hazards Goals & Action Items, Pg 3 & 4)

✓ **Goals: See Previous Slide**

✓ **Action Items:**

Prevention

- Development of ordinances to protect life and property and to prevent the elimination of natural buffers.
- The establishment of local policies and guidelines that control and limit development within known hazard areas.
- The creation of guidelines that recommend the removal of dead or diseased trees
- Fiscal planning and management controls for the organized acquisition of equipment or infrastructure improvements

ACTION STEPS: IN-CLASS

These activities are designed to keep hazard specific issues from endangering more the lives of more people.

Examples:

- Public awareness of hazard events
- Continued to participate in the NFIP
- Zoning, subdivision regulations and land use planning
- Open space preservation
- Floodplain regulations
- Drainage system maintenance
- Capital improvement planning (CIP)

ACTION STEPS: IN-CLASS

Protect Life

- Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventative measures for existing development in areas vulnerable to natural hazards.
- These activities are designed to modify existing structures to be more durable in the event of a natural hazard or remove them from the hazard.

Example:

- Acquisition of properties located in known hazard areas
- Relocation assistance from these known hazard areas
- Elevation of existing structures
- Retrofitting (i.e. Single wide garage door to a double wide garage door)
- Educating the public more on insurance needs

ACTION STEPS: IN-CLASS

Protect Life cont.

- Encouraging the public to install safe rooms and work with local agencies, community groups and civic organizations to install community safe rooms

ACTION STEPS: IN-CLASS

NATURAL SYSTEMS

- Balance watershed 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.
- This involves protecting natural areas so they can help naturally "process" with natural hazards. For instance keeping wetlands rather than developing them to help with flood control.

Other examples are:

- Floodplain protection

ACTION STEPS: IN-CLASS

NATURAL SYSTEMS

Other examples Cont.

- Improve erosion control programs
- Wetland preservation and restoration
- Improve tree management near utility lines

ACTION STEPS: IN-CLASS

STRUCTURAL PROJECTS

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to natural hazards.
- Structural projects protect an area from a hazard by modifying the natural surroundings to change the progression of a hazard event.

Examples include:

- Installing backup power generators on critical facilities
- Maintenance of retention ponds and installation of new retention ponds if needed
- Continuing to improve storm water management

ACTION STEPS: IN-CLASS

EMERGENCY SERVICES

- Enhance emergency warning systems
- Improve information dissemination and communications (emergency services and public) before, during and after a hazard event
- Improve damage reporting system throughout the county after hazard events
- Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.
- Continue to enhance the capability of the county emergency operations center
- Continuing to strengthen emergency operations of all public safety agencies by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.

ACTION STEPS: IN-CLASS

EMERGENCY SERVICES Cont.

- Continue to promote and enhance the county-wide emergency response system through ensuring operational ability during hazard events.
- Coordinate and integrate natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures.
- Emergency services often fall under the heading of hazard preparedness rather than hazard mitigation but they are closely related. These actions take place immediately preceding a natural hazard event, during the hazard event, or directly after the hazard event.

Examples include:

- Warning systems

ACTION STEPS: IN-CLASS

EMERGENCY SERVICES

Examples cont.

- Improve and enhance damage reporting after hazard events
- Local weather media outlets
- Specialized emergency equipment/vehicles
- Continue to enhance county-wide emergency response system

ACTION STEPS: IN-CLASS

PUBLIC INFORMATION, EDUCATION AND AWARENESS

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.
- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local, countywide, and regional hazard mitigation activities.

ACTION STEPS: IN-CLASS

PUBLIC INFORMATION, EDUCATION AND AWARENESS Cont.

Example:

- Professional speakers/demonstrations
- Hazard map information widely accessible to the public
- Real estate disclosures
- Library resources
- Local websites informing people what to do in the event of a hazard
- Media partnership with local emergency management officials

ACTION STEPS: IN-CLASS

➢ **Review: Section V: Critical Facilities:**

(Ref: Appendix A. Pages 1-13)

✓ See Critical Infrastructure Handout

✓ Note Known Updates, but may need to be completed as "Homework"

➢ **Review: Section VI: Other:**

✓ Please complete as needed, in-class or as "Homework"

ACTION STEPS:

❑ **Steps We'd Like You To Accomplish As "Homework":**

✓ Anything we didn't accomplish "in-class"

Due Date: 19 Nov 2013

❑ **FORMAL ADOPTION IS THE FINAL STEP IN PARTICIPATION**

SUMMARY:

- ❑ New Plan, New Direction
- ❑ Current Plan Specs
- ❑ Plan Review Process
- ❑ Action Steps
  - "In Class"
  - "Homework"

Natural Hazards → All-Hazards Plan

Nov 2010 - 36 months last

ELMORE COUNTY EMERGENCY MANAGEMENT AGENCY & HOMELAND SECURITY OFFICE
Natural Hazard Mitigation Plan Annual Review Worksheet

☐ **SECTION I: GENERAL INFORMATION** **Jurisdiction:** _____

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____
☐ **Review Results:** ☐ **Sections I - VI below have been completed.**
☑ **Yes – The Plan requires updating and details of the change(s) is/are contained below.**
☐ **No – The Plan is current as written and does not require updating at this time.**

1. The Natural Hazard Mitigation Plan includes the following natural hazards as having a potential to impact Elmore County:
☐ Fire/Wildfire ☐ Flood, Flash Flood, River Flooding ☐ Heat/Drought ☐ High Winds
☐ Hurricane/Tropical Storm ☐ Lightning ☐ Thunderstorm/Severe Weather ☐ Tornado ☐ Winter Storm

2. Are there any other natural hazards/significant events that have (or could have) impacted your jurisdiction over the ~~p~~ast 3 years and should now be included in the Plan? ☑ Yes ☐ No If yes, please indentify the type of natural hazard, such as: ☐ Dam Failure ☐ Earthquake ☐ Landslide ☑ Other: _____
Notes/Details: Dense Fog, Sinkholes, Space Weather

☐ **SECTION II: Plan Mission** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Does the Plan, as written, still meet its mission, "...to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards."? (Section: Executive Summary, Page iv) ☐ Yes ☐ No If no, please briefly explain: _____

☐ **SECTION III: Plan Goals** **(See HMP, Section: Executive Summary, Page iv)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Do the **goals** outlined described in the Plan, as written, still describe, "...the overall direction that Elmore County agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards."? (Section: Executive Summary, Page iv) ☐ Yes ☐ No If no, please briefly explain: _____

2. Do you support changes to **Section 5, Page 2., Goals**, as currently outlined in the Plan? ☐ Yes ☐ No

If yes, please complete the following:

☐ Current Goal(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

_____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

_____

☐ Goal # ___ ☐ Amended ☐ Deleted Action to be taken: _____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ New Goal(s), as indicated below, need(s) to be: ☐ Added to the Plan to reflect changes in this jurisdiction:

☐ Goal # ___ ☐ Added Action to be taken: _____

_____

☐ Goal # ___ ☐ Added Action to be taken: _____

_____

☐ Goal # ___ ☐ Added Action to be taken: _____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION IV: Action Items** **(See: Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Do the **action items** described in the Plan, as written, still provide, "...a listing of activities in which public agencies and citizens can be engaged to reduce risk."? Are they still viable action items considering the following criteria: funding options, political support, public support, project legality, preservation of the environment, staff capability, and potential cost/benefit ratio? (Section 5: Natural Hazards Goals and Action Items, Pages 3 & 4) ☐ Yes ☐ No If no, please complete the following:

☐ Current Action Item(s), as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

_____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

_____

☐ Action Item # _____ ☐ Amended ☐ Deleted Action to be taken: _____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION V: Critical Facilities** **(See: Appendix A, Pages 1 - 13)**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

1. Is the Critical Facilities Database, as written, current for your jurisdiction? (Appendix A, Pages 1 -13)

☐ Yes ☐ No If no, please complete the following:

(Note: For each facility, include Jurisdiction, Facility Type, Address, and Replacement Cost)

☐ Current Critical Facility/Facilities, as indicated below, need(s) to be: ☐ Amended ☐ Deleted

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

☐ Facility Name _____

Action to be taken: ☐ Added ☐ Amended ☐ Deleted

_____

_____

(If more space is needed, please use the Continuation Sheets of this Worksheet.)

☐ **SECTION VI: Other**

☐ **Reviewing Authority:** _____ ☐ **Date Review Completed:** _____

☐ There are no "Other" areas of concern at this time.

Please use the space below to identify any other areas you wish to address during this annual review. If more space is needed, please use the following Continuation Sheets, numbering each additional page sequentially. Please itemize and attach all additional documents you wish to include as part of this review process, (i.e., maps, charts, tables, pictures, listings).

TASK / RECORD OF: ID agencies not yet involved in the MACG/HMP Update process; Schedule ASAP!

Elmore CountyMulti-Agency Coordination Group

Policy Group
Commissioners, Mayors & Sheriff

Includes Public Safety and Security ESF #13, Fire Service ESF #4, Emergency Medical Services ESF #8, Hazardous Materials ESF #10, Search and Rescue ESF #9, and Agriculture and Natural Resources ESF #11

Operations Section

Branches	Agencies
Law Enforcement Branch	Elmore County Sheriff's Department ✓
	Millbrook Police Department ✓
	Wetumpka Police Department ✓
	Tallassee Police Department ✓
	Coosada Police Department ✓
	Eclectic Police Department ✓
	Poarch Creek Tribal Police ✓ 20 Feb 13 April Sells
Fire Service Branch	Elmore County Firefighter's Association ✓ John Wilson
Joe Wood / JP Pullen	Buyck Volunteer Fire Department
Rusty Monfee	Coosada Volunteer Fire Department ✓ 13 Feb 14 /
Charles Ellis	Deatsville Volunteer Fire Department
Adam Graham	Eclectic Volunteer Fire Department
James Snider	Elmore Volunteer Fire Department ✓ 21 Feb 14
Eric Parten	Emerald Mountain Volunteer Fire Department
	Friendship Volunteer Fire Department ✓ Steve Dennis
Forrest Gregg	Holtville/Slapout Volunteer Fire Department
Kent Clements	Kowaliga Volunteer Fire Department
Keith Barnes	Lightwood Volunteer Fire Department ✓ 13 Feb 14 / 1300 Gly Woodall
Larry Brown	Millbrook Fire and Rescue ✓ Eric previously visited at Station
Terry Brown	Prattville Fire Department
Lamar Jones	Real Island Volunteer Fire Department
Charles Chamber	Red Hill Volunteer Fire Department
	Redland Volunteer Fire Department ✓ Bill Drake
Tommy Sanford	Santuck Volunteer Fire Department
Howard Shaw	Seman Volunteer Fire Department
	Tallassee Volunteer Fire Department ✓ Travis Jones
Wayne Moore	Titus Volunteer Fire Department
	Wetumpka Volunteer Fire Department ✓ Greg Willis
Rick Borowski	Windermere Volunteer Fire Department ✓ 13 Feb 14
EMS Branch	Haynes Ambulance ✓ Dale Grimes
	Millbrook Fire and Rescue
	Eclectic Volunteer Fire Department
	~~Air Evac Lifeteam~~ Deactivated Jan 2014
	LifeSaver

All

Alabama Emergency Management Agency ✓

Elmore CountyMulti-Agency Coordination Group

Hazardous Materials Branch

Elmore County Haz-Mat Response Team ✓
Fire Service Branch

Search & Rescue Branch

Law Enforcement Branch
Fire Service Branch
Search and Rescue of Elmore County

Animal Control Branch

Elmore County Humane Society
Elmore County Sheriff's Department (Animal Contol Officer)
Elmore County Extension Office
Tallassee Animal Control Officer
Millbrook Animal Control Officer
Wetumpka Animal Control Officer

Infrastructure Section

Includes Transportation ESF #1, Communications ESF #2, Public Works ESF #3, and Utilities ESF #12

Branches	**Agencies**
Transportation Branch	Elmore County Board of Education ⊗
	Tallassee Board of Education ⊗
	Elmore County EMA/HS Office ✓
	Public Works Branch
Communications Branch	Elmore County E-911 ✓
	Law Enforcement Branch
	Elmore County EMA/HS Office
Public Works Branch	Elmore County Highway Department ✓
	Millbrook Public Works Department ⊗
	Wetumpka Public Works Department ✓
	Tallassee Public Works Department ✓

Utilities Branch

Alabama Power Company
Central Alabama Electric Co-operative
Central Elmore Water and Sewer Authority ✓
Eclectic Water Works and Sewer ⊗
Elmore Water Authority ✓
Five-Star Water Authority ⊗
Friendship Water Authority ⊗
Holtville Water System ✓
Millbrook Water and Sewer Department ⊗
Tri-Community Water System ⊗
Tallassee Water Department ✓
Wetumpka Water Works and Sewer Board ✓

Wetumpka Airport / EC Dev - City of Wetumpka ✓

Elmore CountyMulti-Agency Coordination Group

Marbury Water System *
Brighthouse Networks
BellSouth
Southern Natural Gas Company
Dixie Pipeline Company

Community Services Section

Includes Mass Care ESF #6, Public Health ESF #8 and Long Term and Community Recovery ESF #14

Branches	**Agencies**
Mass Care Branch	Elmore County Department of Human Resources ✓ American Red Cross ✓ Elmore County Board of Education Tallassee Board of Education Churches and Schools Facilities for Shelters
Public Health Branch	Elmore County Health Department ✓ "Community" Elmore County Hospital ⊗ Tallassee Community Hospital ✓ Elmore County Coroner
Disaster Services Branch	Elmore County VOAD ✓ Central Alabama Aging Consortium Elmore County Extension Office ⊗ 211 Connect of Alabama Hands on River Region Volunteer and Information Center

Alabama Dept of Public Health (ADPH) ✓
Alabama Dept of Rehabilitative Services ✓

Elmore County Amateur Radio Emergency Services ✓
Elmore County Amateur Radio Society

Elmore CountyMulti-Agency Coordination Group

Planning & External Affairs Section Includes Emergency Management ESF #5 and External Affairs ESF #15

Branches	**Agencies**
Planning Branch	Elmore County EMA/HS Office All other Branches may have input into the Planning Branch
External Affairs Branch	Elmore County EMA/HS Office Elmore County Administrator/Public Information Officer All other Branches may have input into the External Affairs Branch

Logistics Section Includes Emergency Management ESF #5 and Logistics Management and Resource Support ESF #7

Agencies

Elmore County EMA/HS Office

All other Branches may have input into the Logistics Branch

Finance/Administration Section

Agencies

Elmore County Administrator ✓

City or Town Clerks ✓

Elmore County EMA/HS Office

Policy Group

Town of Coosada ✓
Town of Deatsville ✓
Town of Elmore ✓
City of Tallassee ✓
City of Wetumpka ✓

No 10th of month
Memphis - Eclectic

Kim Trost

From: Kim Trost <ktrost@elmoreco.org>
Sent: Friday, December 17, 2010 1:10 PM
To: 'Sandy Bradshaw'
Cc: 'Kim Trost'
Subject: Natural Hazard Mitigation Plan Update

Hi Sandy,

I have been traveling around the county delivering some information packets for Eric on our 1st annual update to our approved Natural Hazard Mitigation Plan and I've missed you. I'm going to pop the information in the mail to you and when you get it, please give Eric or I a call, if you and the Mayor have any questions at all. Also, the letter is dated November 18th with a suspense date of 14 Jan 2011. Needless to say, with all the "pop-ups" and unscheduled incidents/events, we're a little off our targeted timeline. Therefore, please disregard the dates and just return the included Worksheet to us at your earliest convenience. If you are able to return it to us by the end of January, that would be really great. Again, it was our intent to spend a few minutes with each stakeholder to personally cover the contents of the information packet. I'm sorry I didn't have the chance to sit down with you to do that, but I don't want to delay getting this info into your hands any longer.

Thanks so much and Merry Christmas!

Kim

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