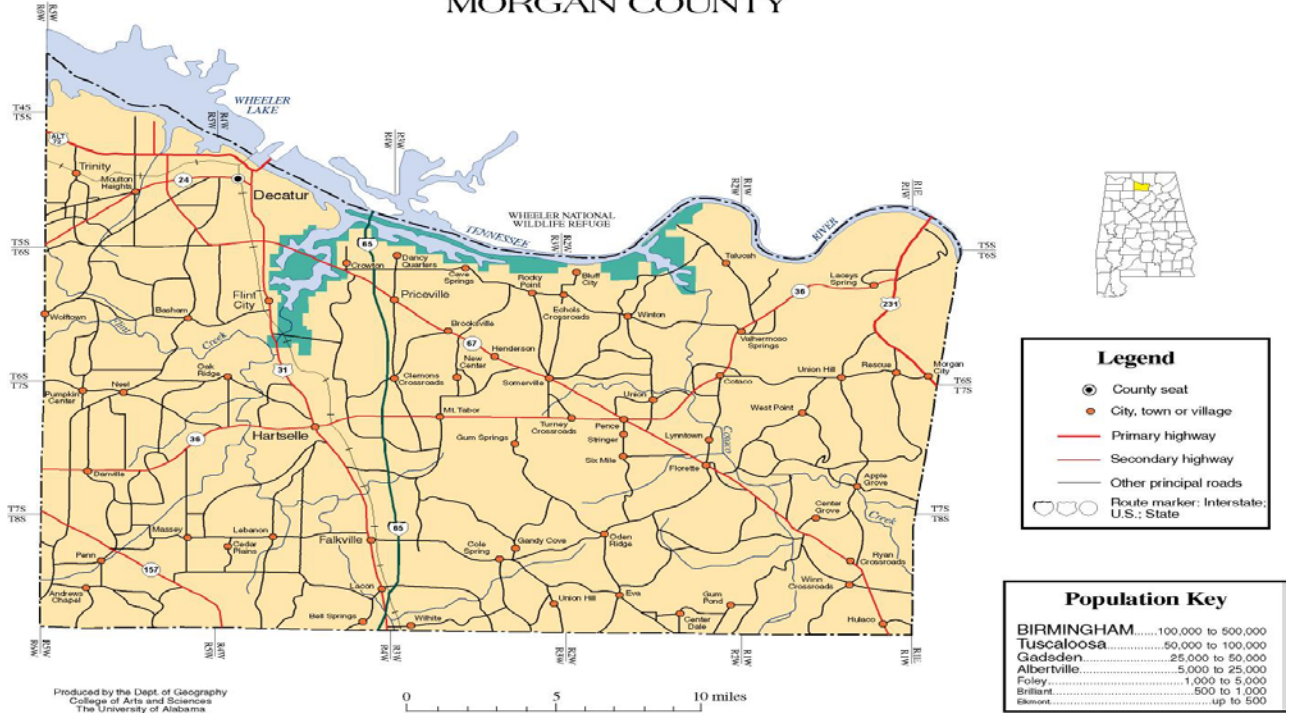


# NATURAL HAZARDS MITIGATION PLAN



## MORGAN COUNTY



## Morgan County, Alabama

July 2010

Prepared under the direction of the:

**Morgan County Hazard Mitigation Planning Committee**

By:



<b>Section 1</b>	<b>Table of Contents</b>	<b>1-1</b>
<b>Section 2</b>	<b>Executive Summary.....</b>	<b>2-1</b>
2.1	Background.....	2-1
2.2	Organization of the Plan.....	2-1
2.3	Highlights of the Plan.....	2-2
2.3.1	Approval and Adoption.....	2-2
2.3.2	The Planning Process.....	2-2
2.3.3	Risk Assessment.....	2-3
2.3.4	Mitigation Strategy.....	2-3
2.3.5	Coordination of Local Planning.....	2-4
2.3.6	Plan Maintenance.....	2-4
<b>Section 3</b>	<b>Plan Approval, Adoption and Assurances .....</b>	<b>3-1</b>
3.1	Interim Final Rule Requirements for the Plan Adoption Process.....	3-1
3.2	Plan Approval and Adoption Process.....	3-2
3.2.1	Background.....	3-2
3.2.2	MCEMA Review and Approval.....	3-2
3.3	Formal Adoption Document(s).....	3-2
3.4	Assurances.....	3-2
<b>Section 4</b>	<b>The Planning Process.....</b>	<b>4-1</b>
4.1	Interim Final Rule Requirements for the Planning Process.....	4-1
4.2	Coordination with Local and State Agencies, and Interested Groups.....	4-2
4.2.1	Agency Coordination during Development of 2010 County Hazard Mitigation Plan.....	4-2
4.2.2	Agency Coordination for 2010 Plan Update.....	4-3
4.3	Integration into Other Ongoing County Planning Efforts.....	4-3
4.3.1	Summary.....	4-3
4.3.2	Ongoing County Planning Efforts and Integration Process.....	4-4
4.3.3	Potential Improvements.....	4-4
4.4	Integration into Other FEMA Mitigation Programs and Initiatives.....	4-5
4.4.1	Summary.....	4-5
4.4.2	List of Ongoing FEMA Mitigation Programs and Initiatives.....	4-5
4.4.3	Integration Process and Potential Improvements.....	4-6
4.5	Description of the Planning Process.....	4-7
4.5.1	How the Plan was Prepared and Updated.....	4-7
4.5.2	Who was involved in the Planning Process.....	4-8
4.5.3	How Other Agencies Participated in the Planning Process.....	4-12
4.5.4	Summary of Review, Analysis and Update of Each Section.....	4-13

<b>Section 5</b>	<b>Risk Assessment .....</b>	<b>5-1</b>
5.1	Interim Final Rule Requirements for Risk Assessments .....	5-2
5.2	Overview of Type and Location of All Natural Hazards That Can Affect the County .....	5-3
5.2.1	Flooding (Includes Hurricanes) .....	5-36
5.2.2	Dam/Levee Failures .....	5-44
5.2.3	High Winds (Hurricanes, Tropical Storms, Tornadoes and Windstorms).....	5-49
5.2.4	Winter Storms/Snow/Ice and Extreme Cold Events .....	5-71
5.2.5	Landslides/Land Subsidence/Sinkholes.....	5-78
5.2.6	Earthquakes.....	5-87
5.2.7	Drought/Extreme Heat .....	5-91
5.2.8	Hail.....	5-97
5.2.9	Wildfire .....	5-106
5.2.10	Lightning.....	5-109
5.3	Methodology for Identifying Natural Hazards for Additional Analysis.....	5-112
5.4	General Discussion of Vulnerability and Risk.....	5-115
5.4.1	Definition of Risk .....	5-115
5.5	Vulnerability Assessment and Loss Estimation Background .....	5-117
5.5.1	General Risk.....	5-122
5.5.2	Flood Risk.....	5-122
5.5.2.1	Summary of Local Risk Assessments.....	5-122
5.5.2.2	Countywide Risk Assessment.....	5-122
5.5.2.3	County-owned Facilities in Flood Hazard Areas .....	5-126
5.5.2.4	Potential Dollar Losses to County Facilities in Flood Hazard Areas .....	5-127
5.5.3	Wind Risk .....	5-127
5.5.3.1	Summary of Local Risk Assessments.....	5-127
5.5.3.2	Countywide Risk Assessment for Wind .....	5-127
5.5.3.3	Potential Dollar Losses to County Facilities in High Wind Hazard Areas.....	5-132
5.5.4	Seismic Risk.....	5-139
5.5.4.1	Summary of Local Risk Assessments.....	5-139
5.5.4.2	Countywide Risk Assessment for Earthquakes .....	5-139
5.5.4.3	Potential Dollar Losses to County Facilities in Seismic Hazard Areas .....	5-140
5.5.5	General Summary and Recommendations .....	5-140
5.6	Jurisdictions Most Threatened and Vulnerable to Damage and Loss.....	5-141
5.6.1	Jurisdictions Most Vulnerable to Damage and Loss from Floods.....	5-145
5.6.2	Jurisdictions Most Vulnerable to Damage and Loss from High Winds .....	5-146
5.6.3	Jurisdictions Most Vulnerable to Damage and Loss from Earthquakes .....	5-146
5.6.4	Jurisdictions Most Vulnerable to Damage and Loss from Three Most Significant Hazards Countywide .....	5-147
5.7	Impacts of Development Trends on Vulnerability.....	5-147
5.7.1	Population Growth Trends and the Impact on Vulnerability.....	5-157
5.7.2	Economic Development and Transportation Improvement Impacts on Vulnerability .....	5-162

<b>Section 6</b>	<b>Mitigation Strategy</b> .....	<b>6-1</b>
6.1	Interim Final Rule Requirements for Mitigation Strategy.....	6-2
6.2	County Mitigation Strategy.....	6-2
6.3	County Hazard Mitigation Goals.....	6-3
6.4	Discussion and Evaluation of County Pre- and Post-Disaster Hazard Management Programs.....	6-5
6.4.1	Discussion and Evaluation of County Pre- and Post-Disaster Hazard Management Capabilities.....	6-6
6.5	Evaluation of County Laws, Regulations, Policies and Programs Related to Hazard Mitigation and Development in Hazard Prone Areas.....	6-6
6.5.1	Evaluation of County Laws Related to Hazard Mitigation and Development in Hazard Prone Areas.....	6-6
6.5.2	Evaluation of County Regulations Related to Hazard Mitigation and Development in Hazard Prone Areas.....	6-9
6.5.3	Evaluation of County Policies Related to Hazard Mitigation and Development in Hazard Prone Areas.....	6-9
6.5.4	Evaluation of County Programs Related to Hazard Mitigation and Development in Hazard Prone Areas.....	6-10
6.6	County Funding Capabilities for Hazard Mitigation Projects.....	6-10
6.7	General Description and Analysis of the Effectiveness of Local Mitigation Policies, Programs and Capabilities.....	6-13
6.8	Identification, Evaluation and Prioritization of Mitigation Actions.....	6-15
6.8.1	Identification and Evaluation of Mitigation Actions.....	6-15
6.8.2	Mitigation Actions.....	6-16
6.9	Identification of Funding Sources.....	6-45
6.9.1	Federal.....	6-45
6.9.2	State and Local Funding.....	6-50
<b>Section 7</b>	<b>Coordinating Local Planning</b> .....	<b>7-1</b>
7.1	Interim Final Rule Requirements for Coordination of Local Mitigation Planning.....	7-1
7.2	Development and Update of Local Mitigation Plan.....	7-1
7.2.1	Development of Local Hazard Mitigation Plan.....	7-2
7.2.2	Update of Local Hazard Mitigation Plans.....	7-3
7.3	Process for Reviewing, Coordinating and Linking the State and Local Plans.....	7-3
7.3.1	Review and Incorporation of Local Plan Information into Initial State Plan.....	7-4
7.3.2	Review and Incorporation of Local Plan Information into the State Plan Update.....	7-4
7.3.3	Future Local Plan Review and Incorporation.....	7-6
7.4	Criteria for Prioritizing Jurisdictions to Receive Funds under Existing Programs.....	7-6
7.4.1	Jurisdictions with Highest Risk.....	7-7
7.4.2	Repetitive Loss Properties.....	7-8
7.4.3	Most Intense Development Pressure.....	7-8



7.4.4	Maximizing Benefits According to Benefit-Cost Review of Local Projects.....	7-9
7.4.5	Prioritization of Communities to Receive Planning Grants.....	7-9
<b>Section 8</b>	<b>Plan Maintenance.....</b>	<b>8-1</b>
8.1	Interim Final Rule Requirements for Plan Maintenance Process .....	8-1
8.2	Method for Monitoring, Evaluating and Updating the Plan .....	8-2
8.2.1	Background .....	8-2
8.2.2	Method for Monitoring the Plan .....	8-2
8.2.3	System for Evaluating the Plan.....	8-2
8.2.4	System for Updating the Plan .....	8-3
8.3	System for Monitoring Mitigation Measures and Project Closeouts.....	8-4
8.3.1	Monitoring Mitigation Measures .....	8-4
8.3.2	Monitoring Project Closeouts .....	8-4
8.4	System for Reviewing Progress on Achieving Goals.....	8-5
8.5	System for Reviewing Progress on Activities and Projects in the Local Mitigation Strategy .....	8-5

**Section 9 List of Appendices**

Appendix A	Disaster Mitigation Act of 2000 (106–390–October 30, 2000)
Appendix B	Interim Final Rule (44 CFR Part 201)
Appendix C	Composition of the Morgan County Hazard Mitigation Planning Committee
Appendix D	Approval and Implementation
Appendix E	Glossary of Acronyms and Terms
Appendix F	Overview of FEMA Mitigation Grant Programs
Appendix G	Local Capabilities
Appendix H	Plan Crosswalk
Appendix I	Meeting Notes
Appendix J	Sign-in Sheets for HMPC Meetings
Appendix K	Record of Changes

**List of Figures**

Figure 5.2-1	Empirical Probability of a Named Storm.....	5-43
Figure 5.2-2	Probability of a Hurricane.....	5-43
Figure 5.2-3	Probability of an Intense Hurricane .....	5-43
Figure 5.2-4	Morgan County Dam Locations.....	5-48
Figure 5.2-5	Morgan County High Hazard Dams .....	5-49
Figure 5.2-6	How Do Tornadoes Form .....	5-62
Figure 5.2-7	Wind Zones in the United States .....	5-64
Figure 5.2-8	Design Wind Speeds (3 second gust).....	5-65
Figure 5.2-9	Extent of Inland Winds for a Category 4 Hurricane moving forward .....	5-69
	At 25 mph.....	5-69



Figure 5.2-10	Extent of Inland Winds for a Category 2 Hurricane Moving Forward At 14 mph .....	5-70
Figure 5.2-11	Probabilistic Maximum Sustained Wind Speeds.....	5-71
Figure 5.2-12	Alabama Winter Storm Return Interval by County .....	5-75
Figure 5.2-13	Water Level Decline .....	5-80
Figure 5.2-14	Active Sinkholes and Land Subsidence in Morgan County .....	5-81
Figure 5.2-15	Landslide Susceptibility in Morgan County .....	5-82
Figure 5.2-16	Landslide Incidences in Morgan County .....	5-83
Figure 5.2-17	Statewide Landslide Incidence and Susceptibility by County .....	5-85
Figure 5.2-18	Karst Areas in Morgan County Most Likely to Experience Sinkholes And Subsidence .....	5-86
Figure 5.2-19	Peak Acceleration (%g) with 2% Probability of Exceedance in 50 Years (Updated).....	5-91
Figure 5.2-20	How Hail is Formed.....	5-97
Figure 5.2-21	Formation of Lightning.....	5-109
Figure 5.5-1	Educational Facilities in Morgan County .....	5-118
Figure 5.5-2	Fire Department Facilities in Morgan County.....	5-119
Figure 5.5-3	Law Enforcement Facilities in Morgan County.....	5-120
Figure 5.5-4	Medical Facilities in Morgan County, AL.....	5-121
Figure 5.5-5	Tornadoes per Square Mile (1950-2006).....	5-129
Figure 5.7-1	Persons per Square Mile by Subsections of the County .....	5-162

## List of Tables

Table 4.5-1	Summary of Morgan County Hazard Mitigation Committee Meetings .....	4-11
Table 5.2-1	Disaster/Emergency Events in Morgan County.....	5-4
Table 5.2-2	Flood Disaster/Emergency Events in Morgan County, AL.....	5-38
Table 5.2-3	Flood Probability Terms .....	5-41
Table 5.2-4	Hurricane/High Winds/Tropical Storm Damage for Morgan County, AL....	5-44
Table 5.2-5	Morgan County Thunderstorm and High Wind Events.....	5-49
Table 5.2-6	Fujita Tornado Scale .....	5-62
Table 5.2-7	Enhanced Fujita Tornado Scale .....	5-63
Table 5.2-8	Morgan County Tornado Events.....	5-65
Table 5.2-9	Winter Storm/Snow and Ice/Extreme Cold Events .....	5-76
Table 5.2-10	Earthquake PGA, Magnitude and Intensity Comparison.....	5-88
Table 5.2-11	Heat Index/Heat Disorders .....	5-94
Table 5.2-12	Drought and Excessive Heat Events for Morgan County .....	5-95
Table 5.2-13	Estimating Hail Size .....	5-98
Table 5.2-14	Hail Disaster/Emergency Events in Morgan County .....	5-99
Table 5.2-15	Wildfires in Morgan County (1995-2006) .....	5-108
Table 5.2-16	Morgan County Lightning Events.....	5-111
Table 5.3-1	Qualitative Rankings of 10 Initial Hazards, based on Probability of Occurrence and Mitigation Potential .....	5-114
Table 5.5-1	Summary of Annual Potential Loss Estimates for Specific Hazards.....	5-122
Table 5.5-2	Summary of Flood Insurance Claims Statistics for Morgan County .....	5-123



Table 5.5-3	Flood Risk to Morgan County Critical Facilities.....	5-126
Table 5.5-4	Values used for Monetary Conversion of Tornado Injuries and Deaths .....	5-128
Table 5.5-5	Summary of Tornado Risk in Morgan County .....	5-130
Table 5.5-6	Morgan County Tornado Damages and Future Risk by Category in Thousands of Dollars through July 2009 .....	5-130
Table 5.5-7	HAZUS Calculation of Dollar Losses .....	5-131
Table 5.5-8	Morgan County’s Critical Facilities’ Values .....	5-133
Table 5.5-9	Decatur’s Critical Facilities’ Values .....	5-134
Table 5.5-10	Hartselle’s Critical Facilities’ Values .....	5-136
Table 5.5-11	Falkville’s Critical Facilities’ Values .....	5-137
Table 5.5-12	Trinity’s Critical Facilities’ Values .....	5-138
Table 5.5-13	Critical Roadways Vulnerable to Flooding and Landslides .....	5-139
Table 5.6-1	Morgan County Vulnerability to Damage and Loss from Hazards .....	5-143
Table 5.6-2	Decatur’s Vulnerability to Damage and Loss from Hazards .....	5-143
Table 5.6-3	Hartselle’s Vulnerability to Damage and Loss from Hazards.....	5-144
Table 5.6-4	Falkville’s Vulnerability to Damage and Loss from Hazards.....	5-144
Table 5.6-5	Trinity’s Vulnerability to Damage and Loss from Hazards.....	5-145
Table 5.6-6	Rank Based on the Number of Repetitive Loss Properties, According to State Flood Insurance Program Records.....	5-145
Table 5.6-7	Direct Physical Losses to Structures and Contents in Morgan County .....	5-146
Table 5.6-8	Potential Tornado Damage for Morgan County .....	5-146
Table 5.7-1	Morgan County’s Population Growth from 2000-2008.....	5-158
Table 5.7-2	Geographical Rank of Morgan County.....	5-158
Table 5.7-3	Morgan County 2000 Population and Future Population Projections .....	5-158
Table 5.7-4	Morgan County Population Vulnerable to Hazards.....	5-159
Table 5.7-5	City of Decatur’s Population Vulnerable to Hazards .....	5-159
Table 5.7-6	City of Hartselle’s Population Vulnerable to Hazards.....	5-160
Table 5.7-7	Town of Falkville’s Population Vulnerable to Hazards .....	5-160
Table 5.7-8	Town of Trinity’s Population Vulnerable to Hazards.....	5-161
Table 6.4-1	CRS Class and Discount .....	6-4
Table 6.4-2	Morgan Co. Communities Participating in the NFIP.....	6-8
Table 6.8-1	Recent Disasters in Morgan Co. (2005 – 2009).....	6-17
Table 6.8-2	Mitigation Measures .....	6-33
Table 6.8-3	City of Decatur Completed/Ongoing Actions.....	6-34
Table 6.8-4	City of Decatur New Actions.....	6-35
Table 6.8-5	City of Hartselle Completed/Ongoing Actions.....	6-35
Table 6.8-6	City of Hartselle New Actions .....	6-36
Table 6.8-7	Town of Falkville Completed/Ongoing Actions.....	6-36
Table 6.8-8	Town of Falkville New Actions.....	6-37
Table 6.8-9	Town of Trinity Completed/Ongoing Actions.....	6-37
Table 6.8-10	Town of Trinity New Actions.....	6-38
Table 6.8-11	Morgan County Completed/Ongoing Actions .....	6-38
Table 6.8-12	Morgan County New Actions .....	6-39
Table 6.8-13	City of Decatur Mitigation Action Program .....	6-40
Table 6.8-14	Town of Hartselle Mitigation Action Program.....	6-41



Table 6.8-15	Town of Falkville Mitigation Action Program .....	6-42
Table 6.8-16	Town of Trinity Mitigation Action Program .....	6-43
Table 6.8-17	Morgan County Mitigation Action Program.....	6-44
Table 7.2-1	Status of Local Hazard Mitigation Plan Revision.....	7-3
Table 7.3-1	Local Hazard Identification and Profiles .....	7-5
Table 7.3-2	Projected Annual Loss Estimates.....	7-5



## Section 2 - Executive Summary

### 2.1 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 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. It is included as **Appendix B**.

Morgan County officially adopted the initial Morgan County Natural Hazard 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.

### 2.2 Organization of the Plan

The Morgan County mitigation plan is organized to parallel the structure provided in the Rule. The plan has nine sections.

Section 1	Table of Contents and Lists
Section 2	Executive Summary
Section 3	Approval and Adoption
Section 4	Planning Process
Section 5	Risk Assessment
Section 6	Mitigation Strategy
Section 7	Coordination of Local Planning
Section 8	Plan Maintenance
Section 9	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 reflects an updated basic structure from the 2005 Plan, as well as a new name of the *Morgan County Multi-Hazard Mitigation Plan* (the Plan). In addition, each section now includes a table summarizing the significant changes made as part of the update to that section.

## 2.3 Highlights of the Plan

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

### 2.3.1 Approval and Adoption

**Section 3** of the Plan describes the Plan approval and adoption process and provides assurances as required by the Rule. It also includes documents related to Plan adoption, including an approval letter from the Director of the Morgan County Emergency Management Agency.

The *Morgan County Multi-Hazard Mitigation Plan* was adopted by the jurisdictions through the authority delegated to the MCEMA and the Morgan County Commission. As noted elsewhere in the Plan (see **Section 4**), the County Hazard Mitigation Planning Committee (HMPC) was provided a full draft copy of the Plan for review, comment and endorsement prior to adoption by the jurisdictions. The MCEMA retains the comments and changes.

The Plan was approved by the Director of the Morgan County Emergency Management Agency, through authority delegated by the Morgan County Commission.

Upon completion, this Plan update will be approved and adopted through the same mechanism as the 2005 Plan.

### 2.3.2 The Planning Process

**Section 4** of the Plan 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.

As the process of developing the 2005 Plan began, the Morgan County Commission appointed the Hazard Mitigation Planning Committee to participate in the process and reiterated the importance of the plan for the county. The Morgan County Commission delegated responsibility for overseeing development of the plan to the MCEMA. The MCEMA, in coordination with the Committee, put together the HMPC that served as the core group responsible for all decisions about planning process and content. The HMPC met three times (March 12, 2010; May 7, 2010; and a third meeting will be held following FEMA approval of the plan pending adoption) during development of the plan to consider and approve/amend aspects of Plan. A list of the HMPC members and other agencies involved in the planning process is provided in **Appendix C**.

MCEMA developed a strategy for updating each section of the plan under a very constricted schedule. This strategy was discussed by the HMPC at its first meeting. MCEMA led the update of all sections of the plan. Subject matter experts on the HMPC were solicited for specific

information regarding hazards, risks, capabilities and strategies. HMPC members were also asked to review mitigation strategies from the 2005 Plan for which they were responsible and asked to provide new actions that they may pursue in the future. Certain HMPC 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.

### **2.3.3 Risk Assessment**

**Section 5** includes a detailed description of the process that was used to identify, assess and prioritize Morgan County's natural hazard risks. The initial part of **Section 5.2** provides hazard profiles for 13 natural 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 these 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 reevaluated 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 an improved understanding of its risks. These hazards were then evaluated based on newly acquired data and risk assessments were performed on the most threatening hazards to incorporate current data. Jurisdictions were then ranked based on their vulnerability and risk.

### **2.3.4 Mitigation Strategy**

**Section 6** is a description of the county's mitigation strategy, goals, actions and capabilities. The county's hazard mitigation strategy is straightforward.

Reduce risks through actions and policies that limit the effects of natural hazards on the physical assets and citizens of the county.

In support of this general strategy, the HMPC and MCEMA developed four goals for hazard mitigation in 2005.

1. To reduce the potential loss of life, property, and repetitive damage from the effects of natural hazards.
2. To achieve safe, fiscally sound and sustainable communities through thoughtful long-range planning in both natural and man-made environments.
3. To establish a program that facilitates orderly recovery and redevelopment, and minimizes economic disruption following a disaster.
4. To optimize the effective use of all available resources by establishing public/private partnership and encouraging intergovernmental coordination and cooperation.

The HMPC reviewed the county hazard mitigation goals developed as part of the 2005 Plan in light of recent disasters that have impacted the county and determined that these goals remained relatively unchanged, but for the 2010 Plan the wording has been revised to better communicate their intent as noted in **Section 6, 6.3**. These goals are discussed in detail in **Section 6**, and are briefly reviewed below.

1. Establish a comprehensive countywide hazard mitigation system.
2. Reduce Morgan County's risk from natural hazards.
3. Reduce vulnerability of new and future development.
4. Reduce Morgan County's vulnerability to natural hazards.
5. Foster public support and acceptance of hazard mitigation.

However, because so much has been learned from recent disaster and mitigation activities, the committee was able to identify a number of new actions that have been incorporated into this update.

### **2.3.5 Coordination of Local Planning**

**Section 7** describes how the county provides assistance and guidance to local jurisdictions for developing their hazard mitigation plans, how information from the state and local plans are linked and integrated, and how the county prioritizes funding opportunities for local jurisdictions. As noted in numerous places throughout this document, the local hazard mitigation plans had the same deadline as the initial State Plan (November 1, 2004), so nearly all of them were being developed during the same time period. Because of this, AEMA and the HMPC had only very limited opportunities to incorporate important parts of the local plans into the 2004 state document. However, AEMA and members of the State Hazard Mitigation Team interacts closely with the MCEMA during this plan revision.

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.

### **2.3.6 Plan Maintenance**

**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 AEMA and the FEMA for re-approval every five years. In addition to meeting this requirement, the county, under the direction of MCEMA, will review the plan annually, based on criteria that are described in **Section 8.2**. The criteria are:

1. Changes in risk
2. Changes in laws, policies, or regulations at the state and/or local level

3. Changes in county agencies or their procedures
4. Significant changes in funding sources or capabilities
5. Progress on mitigation actions or new mitigation actions that the county is considering
6. Changes in the composition of the HMPC
7. Major changes to the state multi-jurisdictional hazard mitigation plan

In addition, the MCEMA may initiate the review process under the following conditions:

1. After a major disaster declaration
2. At the request of the County Commission or the State EMA
3. When significant new risks or vulnerabilities are identified

**Section 8.2** describes the process that MCEMA will use to initiate and complete the periodic reviews and updates. It is expected that the HMPC will be re-convened periodically to consider any draft updates to the plan that are identified and developed by MCEMA. 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 measure progress toward achieving the goals that are described in **Section 6**.

### Section 3 - Plan Approval, Adoption and Assurances

This section of the Plan addresses requirements of Interim 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

- 3.1 Interim Final Rule Requirements for the Plan Adoption Process
- 3.2 Plan Approval and Adoption Process
- 3.3 Formal Adoption Document(s)
- 3.4 Assurances

#### What has been updated?

- 3.1  Plan added “Interim Final Rule Requirements for the Plan Adoption Process.”
- 3.2  Plan added “Plan Approval and Adoption Process.”
- 3.3  Plan added “Formal Adoption Documents.” Formal adoption documents will be provided after AEMA and FEMA’s review and conditional approval of the plan.
- 3.4  Plan added “Assurances.” The required assurances will be included as part of the formal adoption documents.

#### 3.1 Interim Final Rule Requirements for the Plan Adoption Process

The 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 county’s jurisdictions prior to submittal to the AEMA and the 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).

## **3.2 Plan Approval and Adoption Process**

### **3.2.1 Background**

The HMPC approved this plan in 2004-2005 and has been involved with the Plan Update process. Meeting notes document the presentation materials and discussions. Notes are provided in **Appendix I**.

Currently, the HMPC is in the process of reviewing each Plan section update and providing comments and feedback as appropriate for incorporation into the Plan. After comments are incorporated, the committee will be provided with a detailed briefing on all proposed changes and additions to the Plan. Each member of the HMPC will have a second opportunity to review and approve the document prior to submission to the AEMA.

### **3.2.2 MCEMA Review and Approval**

After all the comments are compiled and incorporated, the Director of MCEMA will review the document for approval and formal adoption on behalf of the participating jurisdictions, as was the case in 2005.

## **3.3 Formal Adoption Document(s)**

By agreement between the MCEMA and the AEMA, 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.

## **3.4 Assurances**

The assurances required by the Rule, Section 201.6 and the MCEMA letter of approval from FEMA, is included in **Appendix D** of this plan.

## **Section 4 – The Planning Process**

This section of the plan addresses requirements of Interim 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 Interim 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

### **Section 4 - What has been updated?**

4.1 Plan added “Interim Final Rule Requirements for the Planning Process.”

4.2 Plan changed from “Part III. Planning Process – Hazard Mitigation Planning Committee” to “Coordination with Local and State Agencies, and Interested Groups.” This section provides a summary of the agency coordination utilized during initial plan development.

It also provides a discussion of how other entities participated in the Plan update process.

4.3 Plan changed from “Part III. The Planning Process – Public Involvement” to “Integration into other Ongoing County Planning Efforts.”

All mitigation related planning activities throughout the county were reviewed and evaluated.

The section was revised to reflect current mitigation planning activities throughout the county.

4.4 Plan changed from “Part III. The Planning Process – Interagency and intergovernmental coordination” to “Integration into other Local Mitigation Programs and Initiatives.” This section was revised to reflect all recent and ongoing mitigation initiatives and grant programs.

The section was updated to reflect current information and activities.

4.5 Plan changed from “Part III. The Planning Process – Participating jurisdiction and Integration with existing plans” to “Description of Planning Process.” This section was updated to reflect both the initial Plan development process in 2005 and the Plan update process in 2010.

This section also includes a summary of how each section of the Plan was revised as part of the update process.

### **4.1 Interim Final Rule Requirements for the Planning Process**

The Interim Final Rule (IFR) 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 IFR 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 and State Agencies, and Interested Groups**

As shown by the list of members in **Section 4.3.1** below, the county's HMPC is representative of those organizations and agencies in Morgan County area concerned with natural hazards. The HMPC worked to engage the public for participation and support to identify the natural 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 the 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 hazard profiles, vulnerabilities assessment, potential losses, land use and development trends and mapping data.

### **4.2.1 Agency Coordination during Development of 2010 County Hazard Mitigation Plan**

Most agency coordination was achieved by assembling the county's Hazard Mitigation Planning Committee (HMPC) (also referred to as the HMPC throughout this plan). Activities of these entities are more thoroughly discussed in **Section 4.5**. Beyond the activities of the HMPC, the following summarizes efforts to involve other agencies in the planning process.

The MCEMA coordinated with the local agencies in the county to gather information that could be incorporated into the Plan. MCEMA provided the local HMPC representatives with a questionnaire to determine local capabilities, hazards, risks, and mitigation goals and actions. All county jurisdictions were contacted and many responded. The information obtained was the starting point for revising the risk assessment and mitigation strategy of the 2010 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. MCEMA 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 questionnaire requesting information on agency background, critical facility hazard and risk assessment data, and potential mitigation actions. HAZUS 2007 along with ArcGIS 9 software were utilized in the estimation of potential losses from disasters, as well as for data and maps.

The AEMA was closely involved with the revision of the Plan in 2010. AEMA also provided detailed technical assistance by interpreting the Rule's planning requirements and assisting the MCEMA in integrating these requirements into the final product.

#### **4.2.2 Agency Coordination for 2010 Plan Update**

The initial Plan called for the HMPC to reconvene on an annual basis to review the plan. The MCEMA Director met with the HMPC members throughout the years and discussed any mitigation projects that were ongoing, completed, or should be included in the revised Plan of 2010. The 2010 Plan Revision is a more official review plan that includes documentation of attendance at HMPC Meetings.

During the planning process, three public meetings were held. The first meeting was held on March 12, 2010 at 9 a.m. in the Morgan County EMA EOC located at 302 Lee Street in Decatur. This meeting was to address the public input into the plan revision. The second meeting was held on May 7, 2010 at 9 a.m. in the Morgan County EMA EOC located at 302 Lee Street in Decatur. This meeting was to address the draft plan revision. The last meeting was held on ----- at ---- ?m. in the Morgan County EMA EOC located at 302 Lee Street in Decatur. The date of the last meeting is dependent upon the plan being approved pending adoption. This meeting was to provide an overview of the Morgan County Multi-Hazard Mitigation Plan revision and to discuss the county commission's and local participating jurisdictions' adoption by resolution of the revised plan. Adoption resolutions are located in **Appendix D**.

All public meeting announcements were published in the Decatur Daily, and posted at the Morgan County Courthouse. Both Eddie Hicks, Director of the Morgan County EMA, and Lee Helms, Owner of Lee Helms Associates, L. L. C. were present as facilitators of the meetings.

One of the purposes of the HMPC is to ensure coordination among various levels of government and a countywide planning effort. Activities and involvement of the HMPC are detailed in **Section 4.5**.

### **4.3 Integration into Other Ongoing County Planning Efforts**

The following existing plans were reviewed and incorporated in the development of the Morgan County Multi Hazard Mitigation Plan:

- Morgan County Emergency Operations Plan

This plan is administered through the Emergency Management Agency.

#### **4.3.1 Summary**

County level planning efforts related to hazard mitigation planning are primarily the responsibility of the MCEMA. This agency is responsible for the administrative and planning functions for hazard mitigation planning, the National Flood Insurance Program (NFIP) 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.

#### **4.3.2 Ongoing County Planning Efforts and Integration Process**

In developing the 2005 County Hazard Mitigation Plan, the MCEMA recruited assistance from the North Alabama Regional Council of Governments (NARCOG) for Morgan County. The NARCOG had an agreement in place with MCEMA to develop a local hazard mitigation plan. In 2010, the MCEMA received assistance from an Alabama consultant, Lee Helms Associates, (LHA) L. L. C. and an agreement was put into place to revise/update the original Plan. Details about the local hazard mitigation plan development and update process are included in **Section 7.2**. With a thorough knowledge of hazard mitigation planning, the consultant works with the local agencies to integrate hazard mitigation planning into local and regional comprehensive planning initiatives. MCEMA and LHA are continuing this process.

The MCHMPC is composed of representatives from government, private non-profit, and private organizations and others who also make up the Local Emergency Planning Committee (LEPC) that develops and maintains the Emergency Operations Plan (EOP) for Morgan County. These planning committees work together to integrate all planning efforts including land use, natural and man-made disaster response plans, regional planning commission projects, disaster recovery projects, etc. The EOP references the Hazard Mitigation Plan as well as other plans related to all potential threats. This Hazard Mitigation Plan update has been integrated with all of the above organizations in the planning process through meetings, discussions, and references in the plans.

The State/County Floodplain Manager offers 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 countywide 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**

Morgan County has many opportunities to strengthen or improve the integration of its existing countywide 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 countywide 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**

MCEMA administers and oversees federal mitigation grant programs for Morgan 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. MCEMA 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 (see table in **Appendix G** for an overview of all FEMA grant programs and initiatives):

- 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 identified and reviewed the laws, regulations, policies and programs pertaining to mitigation and AEMA/FEMA sponsored programs and supporting regulations.

#### FEMA Grant Programs

The Morgan County EMA administers MCEMA/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 Morgan County Commission. The MCEMA can serve as the grantee of AEMA/FEMA grant awards and oversee 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 countywide 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 Morgan 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 MCEMA will continue its countywide flood map modernization program for the county, 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 Local 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 2010 Morgan County Hazard Mitigation 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 IFR.

- Established the HMPC (see **Appendix C** for full membership).
- Encouraged representatives from all local agencies to attend HMPC meetings.
- Directed all county agencies to participate in the development of the plan by providing services as directed by the HMPC.
- 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 to assist in the prioritizing of hazard and pre-disaster mitigation grant program project applications.
- Directed the HMPC to meet when called by the MCEMA and remain in place until the five-year update to the plan has been approved by the AEMA/FEMA.
- Directed the MCEMA to prepare the County Hazard Mitigation Plan.

In developing the initial risk assessment, the HMPC initially considered 13 hazards countywide based on primary research. Through a rating system (explained in detail in **Section 5**), the HMPC reduced the list to the most significant hazards that create risks for the county. For each of these hazards, the detailed risk assessments were performed that included calculations of future expected damages expressed in dollars. From the results of the risk assessment, the HMPC developed a mitigation strategy composed of actions identified by the MCEMA, HMPC agencies, and the existing local plan. The plan was approved by the HMPC, adopted by the County Commission and county jurisdictions, and approved by FEMA.

As mentioned in **Section 4.2**, the initial plan called for the HMPC to reassemble on an annual basis to review and evaluate the plan in the following areas:

1. Changes in risk

2. Changes in laws, policies, or regulations at the local and state level
3. Changes in local agencies or their procedures that may affect mitigation programs or administration of funds
4. Changes in funding sources or capabilities
5. Changes in composition of the HMPC
6. Progress on mitigation actions and new mitigation actions being considered
7. Major changes to local hazard mitigation plan

Unfortunately, the annual HMPC meetings did not take place.

The MCEMA began working on the plan update and hired a consultant to facilitate the plan update process in 2010. A kickoff meeting was held on March 12, 2010 between MCEMA, the HMPC, and the consultant team to determine an initial strategy for updating the plan. The first step of the process was to perform an analysis of the 2005 Plan. The consultant reviewed each section comparing it to the AEMA's revised plan as well as made site visits upon request.

The HMPC was reassembled on May 7, 2010. Results of the analysis were presented to the HMPC as well as the strategy for completing the county plan update. The HMPC concurred with the strategy. The review and update process for each section is detailed in **Section 4.5.4**. An initial draft of the completed portion of the plan was submitted to the MCEMA and the AEMA/FEMA for review during July 2010. The AEMA had 45 days to review the draft plan. The MCEMA received all comments and then incorporated them into the plan, where appropriate. A summary of comments is available in **Appendix H**. The plan was resubmitted on ----- for final review and approval by AEMA and FEMA. The final adoption meeting was held on ----- during the Morgan County Commission Meeting.

#### **4.5.2 Who was Involved in the Planning Process**

The Morgan County Hazard Mitigation Planning Committee was developed and is comprised of representatives from all participating jurisdictions and other members as noted in **Appendix C**. This committee facilitated development and revision of this plan.

The Morgan County Hazard Mitigation Committee's members serve for the entire five-year planning cycle of the Natural Hazards Mitigation Plan. The Hazard Mitigation Committee mission statement is as follows:

*To develop and oversee a comprehensive natural hazard 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

Morgan County EMA Director, Eddie Hicks, devised a list of requirements and guidelines that must be adhered to by each committee 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 Morgan 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 Morgan County EMA through personal visits, phone calls, correspondence, email or fax
- Timely submission of information necessary for the draft plan
- Full cooperation among the members of each municipality with the Morgan County EMA and the consultant

During the planning process the committee held two meetings. Documentation of these meetings in the form of sign-in sheets, meeting agendas and meeting minutes are contained in **Appendices I and J**. In the event a committee member was unable to attend a meeting, he or she was contacted by the MCEMA or the consultant by phone call, personal visit, email, fax or other correspondence. The committee was made aware of the results of the missed meeting and required to provide whatever pertinent information needed at the meeting. In this manner, participation by all jurisdictions was insured. The board's tasks were facilitated by various worksheets provided by the consultant that assisted in producing the plan.

### **Public Involvement**

During the planning process two public meetings were held, one in March of 2010 and one in May of 2010. 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 on March 12, 2010 at 9 a.m. The meeting was published in the local newspaper, and posted at the Morgan County Courthouse. Local agencies as well as surrounding counties' representatives were in attendance at the meeting. No private citizens attended.

The second public meeting was held on May 7, 2010 at 9 a.m. Local agencies as well as surrounding counties' representatives were in attendance at the meeting. No private citizens attended.

Additionally, a third public meeting was held on ----- . The date of the last meeting is dependent upon the plan being approved pending adoption. The third public meeting was published in the local newspaper, and posted at the Morgan County Courthouse. The purposes of this meeting were to provide an overview of the *Morgan County Multi-Hazard Mitigation Plan* and discuss the procedures for the county commission and participating local jurisdictions adopt the plan by resolution. The ***Morgan County Multi-Hazard Mitigation Plan*** was adopted by the Morgan County Commission during the meeting.

The questionnaire that was made available at each public meeting was also placed at the Morgan County EMA Office. A copy of the public questionnaire and any copies that were filled out can be found on





file at the MCEMA. Also, a copy of each public meeting announcement and the sign in sheets from each meeting can be found in the **Appendix J**.

### **Interagency & Intergovernmental Coordination**

Various meetings and phone calls took place; and e-mails were sent to the following agencies requesting their input and cooperation. These agencies helped provide information in regards to the hazard profiles, vulnerabilities assessment, potential losses, land use and development trends and mapping data.

#### Federal Agencies:

- > Federal Emergency Management Agency HAZUS 2009
- > National Weather Service
- > United States Geological Survey - Alabama District
- > United States Army Corps of Engineers
- > United States Department of Agriculture
- > Tennessee Valley Authority

#### State Agencies:

- > Alabama Emergency Management Agency
- > Geological Survey of Alabama
- > Alabama Forestry Commission
- > ADECA

#### Local Agencies:

- > Morgan County EMA

#### Regional Agencies:

- > North Alabama Regional Council of Governments

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 Morgan County have participated in the planning process and have committed to adoption of the final plan by formal resolution. These jurisdictions include Decatur, Hartselle, Falkville, Trinity, and Morgan County, and are all continuing participating jurisdictions in the Morgan County Hazard Mitigation Plan. The Towns of Priceville, Eva, and Somerville participated in this plan revision but if they apply for HMGP funds, Morgan County will be the applicant for them and they are not listed as participating jurisdictions in the update.

The table below offers a brief summary of meetings held. Complete attendance lists of these meetings are provided in **Appendix I**. Meetings 1, 2, and 3 were held as part of the plan update process.



**Table 4.5-1 Summary of Morgan County Hazard Mitigation Committee Meetings**

<b>Place/Date</b>	<b>Subject(s)</b>	<b># in Attendance</b>
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<b>EMA EOC/ March 12, 2010</b>	<b>Initial meeting of consultant and MCHMPC members</b>	<b>29</b>
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1. Introduce key participants in the planning process
2. Provide a context for the project and background information
3. Discuss the project work program and schedule
4. Explain tasks

<b>EMA EOC/ May 7, 2010</b>	<b>Mid-term meeting of consultant and MCHMPC members</b>	<b>11</b>
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1. Update progress on tasks to date
2. Review action items from last meeting
3. Discussion about remainder of project

<b>EMA EOC/ -----</b>	<b>Final adoption meeting</b>	<b>?</b>
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1. Adopt the final revision of the Morgan County Hazard Mitigation Plan
2. Authorize the signatures of the County Commission Chairman and the EMA Director on all pertinent documents relating to the adoption of the Morgan County Hazard Mitigation Plan

**Other Local Agencies, Interested Groups, Including Private Non-Profits and Non-Governmental Organizations**

Early in the planning process the HMPC and the MCEMA 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 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 meetings and participate in the plan update process.

The HMPC participated throughout development of the plan by providing representatives at the HMPC meetings, maintaining contact with the MCEMA and its consultant as the local mitigation plan was being updated, and interacting with the MCEMA and its consultant to provide information about the contents of the local plan. The HMPC assisted in the plan update process by facilitating coordination with local governments to obtain information regarding their local capabilities. Representatives from the HMPC also attended HMPC meetings and coordinated with the MCEMA in developing the discussion of local plan updates. The MCEMA provided assistance and support throughout development of this plan.

### **Consultant Assistance in Developing the Plan**

In addition to the groups discussed above, the MCEMA secured the services of a professional consultant to facilitate the planning process and develop some technical materials. LHA, the consultant, assisted the MCEMA and the HMPC in a variety of ways:

- Development of an appropriate planning process
- Technical support in performing the risk and vulnerability assessments
- Development of written materials for meetings
- Presentations at HMPC meetings
- Facilitation of HMPC meetings, i.e. ensuring that discussions and products from meetings addressed plan elements
- Assembling information for inclusion in the plan
- Assisting with logistical functions to ensure that HMPC members were kept informed of progress and provided appropriate materials

For the plan update, the MCEMA secured the services of a consultant team which performed a variety of tasks similar to those performed for the 2005 Plan.

### **4.5.3 How Other Agencies Participated in the Planning Process**

During development of the initial plan, all HMPC member agencies and those with points of contact identified in the HMPC and Committee Members 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 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 **Appendix I**.

As discussed in **Section 5** of this plan (Risk Assessment), local agencies with critical facilities were provided questionnaires intended to identify vulnerabilities and risks at their facilities and to describe any plans or actions in place or under consideration to reduce the risks. These contacts constitute key elements in the planning process because they provide a wide range of local agencies the opportunity to describe their risks and propose mitigation actions to address them.

A range of agencies was also identified in the creation of the MCHMPC. These agencies were invited to all planning meetings and were encouraged to provide input to all aspects of the plan. The MCEMA was established as the main point of contact for this purpose, and telephone numbers and email addresses were provided on communications with the consultant. Records of all communications (including addressees and subject matter) were carefully maintained throughout update of the plan. A list of all those in attendance is included in **Appendices I and J**.

#### **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.

**Section 1 – “Table of Contents” added as a section.** The overall structure of the Plan was updated, most section titles were altered and some sections were added.

**Section 2 – “Executive Summary” added as a section.** The overall structure of the Plan was updated, most section titles were altered and some sections were added.

**Section 3 – “Plan Approval, Adoption, and Assurances” replaced “I. The Hazard Mitigation Plan.”** These changes were made to reflect the plan review, approval, and adoption processes that were undertaken for the 2010 update.

**Section 4 – “The Planning Process” Changed from “III. Planning Process.”** Generally speaking, this section now summarizes the information from the planning process of the 2005 Plan with new information added regarding the plan updates process. A comprehensive analysis was conducted on each section of the plan and a strategy for updating the plan. New countywide planning efforts were identified and added to the discussion in **Section 4.3**. In addition, the countywide planning efforts discussed in the 2005 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 2005 Plan section 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 2005, 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 – “Risk Assessment” changed from “II. General Characteristics.”** At the start of the planning process, the list of identified hazards was reviewed by the MCEMA to determine if any changes should be made based on new information. A better understanding of hurricane impacts gained from its experiences with Hurricanes Ivan, Dennis, and Katrina led them to splitting hurricanes into two separate hazards, wind and flooding. The storm surge and inland flooding caused by hurricanes was included in the discussions of flooding while the high winds caused by hurricanes was grouped into the discussion of high winds associated with tornadoes. Man-made hazards and hazardous materials incidents are not included in the plan revision. Each of the profiles of the remaining hazards 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 MCEMA and the HMPC 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 2005; 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 2005 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” was added in 2010 update.** During the Spring of 2010, the HMPC reaffirmed the county’s mitigation strategy that was identified in the 2005 Plan. HMPC members each completed a survey that requested input on the hazard mitigation goals and actions identified in the 2005 Plan. These were reviewed and it was determined that the goals were still applicable relevant to the update. In addition, each was asked to provide new actions that the agency was interested in pursuing and including in the plan update. These were incorporated into the updated section on mitigation actions (**Section 6.8**). A review of mitigation activities from 2005 to 2010 was conducted and summarized in this section. The assessments of county capabilities and funding sources (**Section 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 – “Coordination of Local Planning” was added in 2010 update.** The Hazard Mitigation Committee or MCHMPC is representative of those organizations and agencies in Morgan County concerned with natural hazards. The HMPC worked to engage the public for participation and support identify the natural hazards that pose a threat to their communities,

provide information about the past hazardous events, identify the assets and potential losses in their communities and identify the past and future mitigation measures throughout the county. Public meetings were conducted.

**Section 8 – “Plan Maintenance” was 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 2005 Plan adoption.

**Section 9 – Appendices A – K: Added in 2010 update.** Appendices A – CFR; B – IFR CFR 201; C – Committee Composition; D – Plan Approval; E – Glossary and Terms; F –FEMA Mitigation Grant Programs; G – Local Capabilities; I – Meeting Notes; and J – Sign-In Sheets are added as sources of additional information and documentation of planning process. Appendix H – Crosswalk was added as a source of Plan approval documentation, as well as review comments. Appendix K – Record of Changes was added as reference and documentation of changes to the Plan.

## Section 5 - Risk Assessment

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

### Contents of this Section

- 5.1 Interim Final Rule Requirements for Risk Assessments
- 5.2 Overview of Type and Location of All Natural Hazards that can affect the 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

### Section 5 - What has been updated?

5.1 Plan added “Interim Final Rule Requirements for Risk Assessments.” IFR language pertaining to plan updates was added.

5.2 Plan added “Overview of Type and Location of All Natural Hazard that can affect the County.”

Divided hurricanes into two separate hazards, floods (includes storm surge) and high wind (includes hurricane winds and tornadoes)

Incorporated new hazard information and recent hazard events.

5.3 Plan added “Methodology for Identifying Natural Hazards for Additional Analysis.” The list of hazards evaluated for further analysis was revised to reflect the list identified and profiled in the updated Section 5.2.

Earthquakes received a high rating based on new data and a better understanding of the county’s risk to them

5.4 Plan added “General Discussion of Vulnerability and Risk.”

5.5 Plan added “Vulnerability Assessment and Loss Estimation.”

A discussion of general countywide risk to natural hazards was added which includes information from local loss estimates.

The countywide risk assessment for flood was revised to reflect new, if any, NFIP Claims and Repetitive Loss data.

The countywide risk assessment for wind was restructured to reflect the combination of tornado and hurricane winds into a single hazard; the team used one method to assess vulnerability to tornadoes and one methodology to assess vulnerability to hurricane winds.

The tornado risk assessment focuses on updated NCDC records.

The hurricane risk assessment focuses on wind damages as predicted by HAZUS.

The earthquake risk assessment focuses on damages as predicted by HAZUS.

5.6 Plan added “Jurisdictions Most Threatened and Vulnerable to Damage and Loss.” This section was added based on new risk data and analysis results.

5.7 Plan added “Impacts of Development Trends on Vulnerability.” This section was added to summarize the impacts of population growth, economic development, and transportation improvements on jurisdictions’ vulnerability.

## **5.1 Interim Final Rule Requirements for Risk Assessments**

The Interim Final Rule (IFR) 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 IFR Subsection 201.6 (5) (d) (3) states: “*A local jurisdiction must review and revise its plan to reflect changes in development...*”



## 5.2 Overview of Type and Location of All Natural Hazards That Can Affect the County

In the initial phase of the planning process, the HMPC (Hazard Mitigation Planning Committee) considered 13 natural hazards and the risks they create for the citizens of Morgan County. These hazards were initially selected for inclusion in the plan by the MCEMA, and the list was later reviewed and approved by the HMPC in its general meeting on March 12, 2010 in Decatur, Alabama.

The hazards initially considered were:

- |                                 |                 |
|---------------------------------|-----------------|
| 1. Severe Thunderstorm          | 8. Lightning    |
| 2. Tornado                      | 9. Earthquakes  |
| 3. Flooding                     | 10. Hurricane   |
| 4. Severe Winter Storm-Snow/Ice | 11. Land Slides |
| 5. Hail                         | 12. Sinkholes   |
| 6. Extreme Cold                 | 13. Dam Failure |
| 7. Drought/Extreme Heat         |                 |

This list was approved by both the HMPC and the MCEMA in 2005.

During the 2010 Plan update process, it was determined that floods are associated with hurricanes both by rainfall and by storm surge; high winds are associated with hurricanes, tornadoes, and windstorms; winter storms are associated with extreme cold events; and drought is associated with extreme heat events. It was also determined that landslides, sinkholes, and land subsidence have much in common. Therefore, these hazards have been combined. It was determined that hazardous materials and manmade hazards would not be considered a part of the scope of this update and they were removed from the plan. The hazards profiled in this section are:

- |                                                                  |                                |
|------------------------------------------------------------------|--------------------------------|
| 1. Floods (Storm surge, riverine, flash floods, hurricane, etc.) | 5. Earthquakes                 |
| 2. High Winds (tornadoes, hurricanes, and windstorms)            | 6. Drought/Extreme Heat Events |
| 3. Winter Storms/Snow and Ice/Extreme Cold Events                | 7. Hail                        |
| 4. Landslides/Sinkholes/Land Subsidence                          | 8. Wildfires                   |
|                                                                  | 9. Lightning                   |
|                                                                  | 10. Dam failure                |

**The HMPC approved this updated hazard list at its March 12, 2010 meeting.** The initial hazard identification cataloged potential hazards countywide and determined which have the most chance of significantly affecting the county and its citizens. The hazards include both ones that have occurred in the past as well as those that may occur in the future. A variety of sources were used in the investigation. These 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 & Atmospheric Administration (NOAA)
- State of Alabama Geological Survey
- Federal Emergency Management Agency (FEMA)
- FEMA HAZUS 2007/2009
- ArcGIS 9

These sources were all revisited during the plan update process. An important source for identifying hazards that can affect the county is the NCDC Storm Events. Morgan County is mostly affected by wildfire, followed by drought/extreme heat and high wind events.

**Table 5.2-1 Disaster/Emergency Events in Morgan County**

542 event(s) were reported in Morgan County, Alabama between 01/01/1950 and 02/28/2010 (High wind limited to speed greater than 0 knots).

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">MORGAN</a>	03/22/1952	1500	Tornado	F4	4	50	25K	0
2 <a href="#">MORGAN</a>	03/25/1955	1610	Hail	0.75 in.	0	0	0	0
3 <a href="#">MORGAN</a>	04/24/1955	0545	Tornado	F4	5	20	2.5M	0
4 <a href="#">MORGAN</a>	02/17/1956	2200	Tstm Wind	0 kts.	0	0	0	0
5 <a href="#">MORGAN</a>	04/08/1957	1015	Tornado	F3	2	90	0K	0
6 <a href="#">MORGAN</a>	06/21/1957	1800	Hail	2.00 in.	0	0	0	0
7 <a href="#">MORGAN</a>	11/18/1957	1700	Tornado	F1	0	0	25K	0
8 <a href="#">MORGAN</a>	11/24/1957	1300	Hail	1.75 in.	0	0	0	0
9 <a href="#">MORGAN</a>	04/05/1958	2000	Tornado	F1	0	0	3K	0
10 <a href="#">MORGAN</a>	05/25/1958	1600	Tornado	F2	0	1	25K	0
11 <a href="#">MORGAN</a>	08/09/1960	1700	Tstm Wind	0 kts.	0	0	0	0

12	<a href="#">MORGAN</a>	03/11/1963	1430	Tstm Wind	0 kts.	0	0	0	0
13	<a href="#">MORGAN</a>	03/19/1963	1900	Tstm Wind	0 kts.	0	0	0	0
14	<a href="#">MORGAN</a>	02/05/1964	1300	Tstm Wind	0 kts.	0	0	0	0
15	<a href="#">MORGAN</a>	04/23/1964	1525	Tstm Wind	0 kts.	0	0	0	0
16	<a href="#">MORGAN</a>	04/23/1964	1530	Tstm Wind	0 kts.	0	0	0	0
17	<a href="#">MORGAN</a>	06/23/1964	1300	Tstm Wind	0 kts.	0	0	0	0
18	<a href="#">MORGAN</a>	11/21/1965	1645	Hail	1.75 in.	0	0	0	0
19	<a href="#">MORGAN</a>	11/21/1965	1750	Hail	1.75 in.	0	0	0	0
20	<a href="#">MORGAN</a>	11/10/1966	0820	Tstm Wind	0 kts.	0	0	0	0
21	<a href="#">MORGAN</a>	04/26/1967	1145	Tstm Wind	0 kts.	0	0	0	0
22	<a href="#">MORGAN</a>	05/07/1967	0130	Tstm Wind	0 kts.	0	0	0	0
23	<a href="#">MORGAN</a>	05/07/1967	0140	Tstm Wind	0 kts.	0	0	0	0
24	<a href="#">MORGAN</a>	05/12/1967	1740	Tstm Wind	0 kts.	0	0	0	0
25	<a href="#">MORGAN</a>	06/28/1967	1730	Tstm Wind	0 kts.	0	0	0	0
26	<a href="#">MORGAN</a>	12/18/1967	0325	Tornado	F2	2	0	2.5M	0
27	<a href="#">MORGAN</a>	12/18/1967	0330	Tstm Wind	0 kts.	0	0	0	0
28	<a href="#">MORGAN</a>	03/11/1968	2215	Tstm Wind	0 kts.	0	0	0	0
29	<a href="#">MORGAN</a>	12/27/1968	2245	Hail	1.75 in.	0	0	0	0
30	<a href="#">MORGAN</a>	08/01/1970	1845	Tornado	F1	0	0	25K	0
31	<a href="#">MORGAN</a>	04/25/1973	1634	Tstm Wind	0	0	0	0	0

				kts.					
32	<a href="#">MORGAN</a>	11/27/1973	1845	Tornado	F2	0	3	250K	0
33	<a href="#">MORGAN</a>	03/20/1974	2200	Tstm Wind	0 kts.	0	0	0	0
34	<a href="#">MORGAN</a>	04/03/1974	1745	Tornado	F5	0	56	0K	0
35	<a href="#">MORGAN</a>	04/03/1974	2100	Tornado	F5	0	0	0K	0
36	<a href="#">MORGAN</a>	04/03/1974	2124	Tornado	F3	0	0	2.5M	0
37	<a href="#">MORGAN</a>	05/02/1974	1310	Hail	1.75 in.	0	0	0	0
38	<a href="#">MORGAN</a>	05/09/1974	2244	Hail	1.75 in.	0	0	0	0
39	<a href="#">MORGAN</a>	03/24/1975	0100	Tstm Wind	0 kts.	0	0	0	0
40	<a href="#">MORGAN</a>	03/24/1975	0330	Tstm Wind	0 kts.	0	0	0	0
41	<a href="#">MORGAN</a>	09/09/1975	2130	Tstm Wind	0 kts.	0	0	0	0
42	<a href="#">MORGAN</a>	04/23/1977	1455	Hail	0.75 in.	0	0	0	0
43	<a href="#">MORGAN</a>	06/13/1977	1730	Tstm Wind	0 kts.	0	0	0	0
44	<a href="#">MORGAN</a>	07/15/1977	1630	Tstm Wind	0 kts.	0	0	0	0
45	<a href="#">MORGAN</a>	05/12/1978	2315	Tornado	F1	0	11	250K	0
46	<a href="#">MORGAN</a>	07/17/1980	1505	Hail	1.75 in.	0	0	0	0
47	<a href="#">MORGAN</a>	02/10/1981	1015	Tstm Wind	0 kts.	0	0	0	0
48	<a href="#">MORGAN</a>	05/18/1981	1740	Tstm Wind	0 kts.	0	0	0	0
49	<a href="#">MORGAN</a>	07/17/1981	1430	Tstm Wind	0 kts.	0	0	0	0
50	<a href="#">MORGAN</a>	03/17/1982	1240	Hail	1.50 in.	0	0	0	0
51	<a href="#">MORGAN</a>	03/25/1982	1300	Tstm Wind	0 kts.	0	0	0	0

52	<a href="#">MORGAN</a>	03/25/1982	1310	Hail	0.75 in.	0	0	0	0
53	<a href="#">MORGAN</a>	05/19/1983	0235	Tornado	F2	0	0	25K	0
54	<a href="#">MORGAN</a>	05/19/1983	0300	Tstm Wind	0 kts.	0	0	0	0
55	<a href="#">MORGAN</a>	06/14/1983	1740	Hail	1.75 in.	0	0	0	0
56	<a href="#">MORGAN</a>	08/22/1983	1630	Hail	1.00 in.	0	0	0	0
57	<a href="#">MORGAN</a>	11/23/1983	1200	Tstm Wind	0 kts.	0	0	0	0
58	<a href="#">MORGAN</a>	11/23/1983	1200	Tstm Wind	0 kts.	0	0	0	0
59	<a href="#">MORGAN</a>	03/28/1984	0044	Hail	1.00 in.	0	0	0	0
60	<a href="#">MORGAN</a>	05/03/1984	0100	Tstm Wind	0 kts.	0	0	0	0
61	<a href="#">MORGAN</a>	05/07/1984	1440	Tstm Wind	0 kts.	0	0	0	0
62	<a href="#">MORGAN</a>	05/07/1984	1646	Hail	1.75 in.	0	0	0	0
63	<a href="#">MORGAN</a>	05/07/1984	1652	Hail	3.00 in.	0	0	0	0
64	<a href="#">MORGAN</a>	05/07/1984	1940	Hail	0.75 in.	0	0	0	0
65	<a href="#">MORGAN</a>	05/07/1984	1940	Tstm Wind	0 kts.	0	0	0	0
66	<a href="#">MORGAN</a>	06/14/1984	1520	Tstm Wind	0 kts.	0	0	0	0
67	<a href="#">MORGAN</a>	06/21/1984	1120	Tstm Wind	0 kts.	0	0	0	0
68	<a href="#">MORGAN</a>	07/07/1984	1045	Tstm Wind	0 kts.	0	0	0	0
69	<a href="#">MORGAN</a>	11/10/1984	1420	Tstm Wind	0 kts.	0	0	0	0
70	<a href="#">MORGAN</a>	11/10/1984	1422	Tornado	F1	0	0	25K	0
71	<a href="#">MORGAN</a>	04/05/1985	1555	Tstm Wind	0	0	0	0	0

				kts.				
72 <a href="#">MORGAN</a>	06/07/1985	1620	Tstm Wind	0 kts.	0	0	0	0
73 <a href="#">MORGAN</a>	06/17/1985	1505	Tstm Wind	0 kts.	0	0	0	0
74 <a href="#">MORGAN</a>	07/10/1985	2030	Hail	0.75 in.	0	0	0	0
75 <a href="#">MORGAN</a>	08/16/1985	1140	Tornado	F3	0	2	2.5M	0
76 <a href="#">MORGAN</a>	08/16/1985	1351	Tornado	F3	0	0	2.5M	0
77 <a href="#">MORGAN</a>	02/06/1986	1308	Hail	1.75 in.	0	0	0	0
78 <a href="#">MORGAN</a>	02/17/1986	2042	Tstm Wind	0 kts.	0	0	0	0
79 <a href="#">MORGAN</a>	08/07/1986	1815	Tstm Wind	0 kts.	0	0	0	0
80 <a href="#">MORGAN</a>	08/07/1986	1830	Tstm Wind	0 kts.	0	0	0	0
81 <a href="#">MORGAN</a>	08/16/1986	1430	Tstm Wind	0 kts.	0	0	0	0
82 <a href="#">MORGAN</a>	08/27/1986	1300	Tstm Wind	0 kts.	0	0	0	0
83 <a href="#">MORGAN</a>	09/21/1986	1345	Hail	1.75 in.	0	0	0	0
84 <a href="#">MORGAN</a>	09/26/1986	1310	Hail	1.75 in.	0	0	0	0
85 <a href="#">MORGAN</a>	03/29/1987	1852	Hail	1.75 in.	0	0	0	0
86 <a href="#">MORGAN</a>	04/14/1987	1734	Hail	0.75 in.	0	0	0	0
87 <a href="#">MORGAN</a>	01/19/1988	1500	Tstm Wind	52 kts.	0	0	0	0
88 <a href="#">MORGAN</a>	04/02/1988	0930	Tstm Wind	0 kts.	0	0	0	0
89 <a href="#">MORGAN</a>	06/02/1988	1515	Tstm Wind	0 kts.	0	0	0	0
90 <a href="#">MORGAN</a>	07/14/1988	2100	Tstm Wind	0 kts.	0	0	0	0

91	<a href="#">MORGAN</a>	07/16/1988	1445	Tstm Wind	0 kts.	0	0	0	0
92	<a href="#">MORGAN</a>	02/20/1989	2315	Tstm Wind	0 kts.	0	0	0	0
93	<a href="#">MORGAN</a>	03/30/1989	2348	Hail	1.00 in.	0	0	0	0
94	<a href="#">MORGAN</a>	04/04/1989	0320	Hail	0.75 in.	0	0	0	0
95	<a href="#">MORGAN</a>	04/04/1989	0340	Tstm Wind	0 kts.	0	0	0	0
96	<a href="#">MORGAN</a>	06/14/1989	1120	Tstm Wind	0 kts.	0	0	0	0
97	<a href="#">MORGAN</a>	11/15/1989	1600	Hail	1.75 in.	0	0	0	0
98	<a href="#">MORGAN</a>	11/15/1989	1615	Tstm Wind	0 kts.	0	0	0	0
99	<a href="#">MORGAN</a>	05/10/1990	0115	Tstm Wind	0 kts.	0	1	0	0
100	<a href="#">MORGAN</a>	06/09/1990	1630	Tstm Wind	0 kts.	0	0	0	0
101	<a href="#">MORGAN</a>	07/22/1990	1615	Tstm Wind	0 kts.	0	0	0	0
102	<a href="#">MORGAN</a>	08/21/1990	1300	Tstm Wind	0 kts.	0	0	0	0
103	<a href="#">MORGAN</a>	08/29/1990	1958	Hail	0.75 in.	0	0	0	0
104	<a href="#">MORGAN</a>	10/04/1990	0605	Tstm Wind	0 kts.	0	0	0	0
105	<a href="#">MORGAN</a>	12/18/1990	1020	Tstm Wind	0 kts.	0	0	0	0
106	<a href="#">MORGAN</a>	03/27/1991	1930	Tstm Wind	0 kts.	0	0	0	0
107	<a href="#">MORGAN</a>	04/09/1991	1316	Hail	0.75 in.	0	0	0	0
108	<a href="#">MORGAN</a>	04/09/1991	1740	Hail	0.75 in.	0	0	0	0
109		05/10/1991	0010	Tstm Wind	0	0	1	0	0

<a href="#">MORGAN</a>				kts.				
110 <a href="#">MORGAN</a>	07/09/1991	0041	Tstm Wind	0 kts.	0	0	0	0
111 <a href="#">MORGAN</a>	03/10/1992	0145	Tstm Wind	0 kts.	0	0	0	0
112 <a href="#">MORGAN</a>	04/20/1992	1126	Tstm Wind	0 kts.	0	0	0	0
113 <a href="#">MORGAN</a>	04/20/1992	1135	Tstm Wind	0 kts.	0	0	0	0
114 <a href="#">MORGAN</a>	04/20/1992	1144	Tstm Wind	0 kts.	0	0	0	0
115 <a href="#">MORGAN</a>	05/29/1992	1620	Tstm Wind	0 kts.	0	0	0	0
116 <a href="#">MORGAN</a>	06/18/1992	1545	Tstm Wind	0 kts.	0	0	0	0
117 <a href="#">MORGAN</a>	07/05/1992	1220	Tstm Wind	0 kts.	0	0	0	0
118 <a href="#">MORGAN</a>	08/27/1992	1145	Tstm Wind	0 kts.	0	0	0	0
119 <a href="#">MORGAN</a>	08/27/1992	1248	Tstm Wind	0 kts.	0	0	0	0
120 <a href="#">MORGAN</a>	09/03/1992	1420	Tstm Wind	0 kts.	0	0	0	0
121 <a href="#">MORGAN</a>	11/22/1992	0620	Tornado	F0	0	0	250K	0
122 <a href="#">ALZ001&gt;018</a>	03/12/1993	2200	Winter Storm	N/A	4	0	5.0B	0
123 <a href="#">MORGAN</a>	05/03/1993	1646	Hail	0.75 in.	0	0	0	0
124 <a href="#">MORGAN</a>	05/03/1993	1710	Hail	0.75 in.	0	0	0	0
125 <a href="#">MORGAN</a>	08/20/1993	1745	Thunderstorm Winds	0 kts.	0	0	0	0
126 <a href="#">MORGAN</a>	11/17/1993	0745	Thunderstorm Winds	0 kts.	0	0	0	0
127 <a href="#">ALZ001&gt;007</a>	02/09/1994	2200	Ice Storm/flash	N/A	0	2	0	0



			Flood					
128 <a href="#">Priceville</a>	05/15/1994	1235	Hail	0.75 in.	0	0	0	0
129 <a href="#">Somerville</a>	05/15/1994	1803	Thunderstorm Winds	0 kts.	0	0	50K	0
130 <a href="#">Oden Ridge &amp; Eva</a>	05/15/1994	2007	Thunderstorm Winds	0 kts.	0	0	5K	0
131 <a href="#">Decatur</a>	06/07/1994	1713	Lightning	N/A	0	0	1K	0
132 <a href="#">Decatur</a>	06/09/1994	0840	Lightning	N/A	0	0	5K	0
133 <a href="#">Falkville</a>	06/15/1994	1555	Thunderstorm Winds	0 kts.	0	0	50K	0
134 <a href="#">Decatur</a>	06/17/1994	1758	Lightning	N/A	0	0	5K	0
135 <a href="#">Decatur</a>	06/17/1994	1810	Lightning	N/A	0	0	50K	0
136 <a href="#">Decatur</a>	06/17/1994	1815	Lightning	N/A	0	0	1K	0
137 <a href="#">MORGAN</a>	06/25/1994	1400	Thunderstorm Winds	50 kts.	0	0	50K	0
138 <a href="#">Harknotselle</a>	06/25/1994	1420	Hail	0.75 in.	0	0	5K	0
139 <a href="#">Decatur</a>	06/29/1994	0000	Lightning	N/A	0	0	1K	0
140 <a href="#">Hartselle</a>	11/27/1994	2223	Hail	0.75 in.	0	0	0	0
141 <a href="#">W Falkville</a>	01/27/1995	2200	Lightning	N/A	0	0	5K	0
142 <a href="#">ALZ001&gt;011 - 014 - 016&gt;018 - 020</a>	02/06/1995	2100	Snow/ice	N/A	0	0	0	0
143 <a href="#">North Alabama</a>	02/11/1995	1300	Snow/ice	N/A	0	0	0	0
144 <a href="#">Lacon</a>	02/15/1995	1630	Lightning	N/A	0	0	50K	0
145 <a href="#">MORGAN</a>	03/07/1995	1700	Thunderstorm Winds	0 kts.	0	0	30K	0
146 <a href="#">Lacey's Springs</a>	03/07/1995	1710	Tornado	F0	0	0	50K	0
147 <a href="#">Hulaco</a>	03/20/1995	2105	Thunderstorm	0	0	0	2K	0

			Winds	kts.				
148 <a href="#">Decatur</a>	04/19/1995	1400	Thunderstorm Winds	0 kts.	0	0	0	0
149 <a href="#">Hartselle</a>	05/14/1995	0845	Hail	0.75 in.	0	0	0	0
150 <a href="#">Massey</a>	06/06/1995	1847	Thunderstorm Winds	0 kts.	0	0	15K	0
151 <a href="#">Decatur</a>	06/24/1995	0000	Lightning	N/A	0	0	65K	0
152 <a href="#">Danville</a>	07/03/1995	1615	Lightning	N/A	0	0	20K	0
153 <a href="#">Danville</a>	07/03/1995	1615	Thunderstorm Winds	0 kts.	0	0	5K	0
154 <a href="#">Hartselle</a>	07/03/1995	1630	Thunderstorm Winds	0 kts.	0	0	5K	0
155 <a href="#">Oak Ridge</a>	07/03/1995	1630	Thunderstorm Wind	0 kts.	0	0	45K	0
156 <a href="#">Hartselle</a>	07/15/1995	1600	Thunderstorm Winds	0 kts.	0	0	4K	0
157 <a href="#">MORGAN</a>	07/21/1995	1725	Thunderstorm Winds	0 kts.	0	0	15K	0
158 <a href="#">Trinity</a>	07/24/1995	1434	Hail	0.75 in.	0	0	0	0
159 <a href="#">Danville</a>	07/24/1995	1437	Hail	0.50 in.	0	0	0	0
160 <a href="#">Decatur</a>	07/24/1995	1443	Hail	1.75 in.	0	0	0	0
161 <a href="#">Decatur</a>	07/24/1995	1500	Thunderstorm Winds	0 kts.	0	0	0	0
162 <a href="#">Decatur</a>	07/26/1995	1442	Funnel Cloud	N/A	0	0	0	0
163 <a href="#">Hartselle</a>	07/26/1995	1508	Thunderstorm Winds	0 kts.	0	0	5K	0
164 <a href="#">Hartselle</a>	08/08/1995	1434	Thunderstorm Winds	0 kts.	0	0	1K	0
165 <a href="#">Danville</a>	08/08/1995	1436	Thunderstorm Winds	0 kts.	0	0	2K	0
166 <a href="#">ALZ001&gt;050</a>	10/04/1995	1200	Hurricane Opal/high Winds	N/A	2	0	0.1B	10.0M

167 <a href="#">ALZ001&gt;050</a>	12/10/1995	0000	Record Cold	N/A	0	0	0	0
168 <a href="#">ALZ001&gt;038</a>	01/06/1996	08:00 PM	Winter Storm	N/A	0	0	380K	38K
169 <a href="#">ALZ001&gt;018 - 020 - 022</a>	01/18/1996	06:00 PM	High Wind	40 kts.	0	0	400K	0
170 <a href="#">ALZ001&gt;027 - 030&gt;032 - 034</a>	02/01/1996	03:00 PM	Winter Storm	N/A	0	0	595K	0
171 <a href="#">ALZ001&gt;050</a>	02/03/1996	06:00 PM	Extreme Cold	N/A	0	0	0	0
172 <a href="#">ALZ003&gt;015</a>	02/16/1996	02:00 AM	Winter Storm	N/A	0	0	195K	0
173 <a href="#">ALZ001&gt;050</a>	02/23/1996	08:00 AM	Excessive Heat	N/A	0	0	0	0
174 <a href="#">Decatur</a>	03/05/1996	09:00 PM	Lightning	N/A	0	1	2K	0
175 <a href="#">Decatur</a>	03/06/1996	03:00 AM	Flash Flood	N/A	0	0	0	0
176 <a href="#">ALZ001&gt;050</a>	03/07/1996	08:00 AM	Extreme Cold	N/A	0	0	0	52.0M
177 <a href="#">Decatur</a>	04/20/1996	07:30 AM	Tstm Wind	50 kts.	0	0	28K	4K
178 <a href="#">Hartselle</a>	04/23/1996	12:30 AM	Tstm Wind	50 kts.	0	0	25K	2K
179 <a href="#">Decatur</a>	04/29/1996	02:00 PM	Tstm Wind	52 kts.	0	0	10K	2K
180 <a href="#">Hartselle</a>	05/27/1996	04:00 PM	Tstm Wind	52 kts.	0	0	25K	2K
181 <a href="#">Priceville</a>	05/27/1996	07:45 PM	Tstm Wind	50 kts.	0	0	10K	2K
182 <a href="#">Decatur</a>	05/28/1996	01:00 AM	Tstm Wind	50 kts.	0	0	10K	0K
183 <a href="#">Decatur</a>	07/02/1996	01:00 PM	Tstm Wind	65 kts.	0	0	30K	0K
184 <a href="#">Hartselle</a>	07/14/1996	06:44	Tstm Wind	50	0	0	15K	2K

		PM		kts.				
185 <a href="#">Lacey Spring</a>	07/14/1996	07:03 PM	Tstm Wind	50 kts.	0	0	12K	0K
186 <a href="#">Priceville</a>	08/24/1996	12:50 PM	Tstm Wind	50 kts.	0	0	20K	2K
187 <a href="#">Falkville</a>	09/16/1996	07:00 AM	Tstm Wind	50 kts.	0	0	5K	1K
188 <a href="#">Decatur</a>	11/07/1996	03:15 PM	Tstm Wind	50 kts.	0	0	5K	0K
189 <a href="#">Decatur</a>	01/04/1997	11:30 PM	Tstm Wind	50 kts.	0	0	15K	3K
190 <a href="#">ALZ001&gt;010</a>	01/10/1997	10:00 AM	Winter Storm	N/A	0	0	64K	0K
191 <a href="#">Hartselle</a>	01/24/1997	03:45 PM	Hail	0.75 in.	0	0	5K	0K
192 <a href="#">Falkville</a>	01/24/1997	04:05 PM	Hail	1.00 in.	0	0	7K	2K
193 <a href="#">Trinity</a>	01/24/1997	04:45 PM	Hail	1.00 in.	0	0	7K	1K
194 <a href="#">Decatur</a>	01/24/1997	04:58 PM	Hail	0.75 in.	0	0	5K	0K
195 <a href="#">Hartselle</a>	01/24/1997	05:08 PM	Hail	0.75 in.	0	0	5K	0K
196 <a href="#">Hartselle</a>	01/24/1997	06:53 PM	Hail	0.75 in.	0	0	5K	0K
197 <a href="#">Eva</a>	01/24/1997	07:14 PM	Hail	0.75 in.	0	0	5K	0K
198 <a href="#">Decatur</a>	02/21/1997	07:10 AM	Lightning	N/A	0	0	4K	0K
199 <a href="#">Decatur</a>	02/21/1997	07:10 AM	Tstm Wind	50 kts.	0	0	4K	0K
200 <a href="#">Trinity</a>	03/05/1997	01:40 PM	Tstm Wind	50 kts.	0	0	4K	0K
201 <a href="#">Falkville</a>	03/05/1997	02:21 PM	Tstm Wind	50 kts.	0	0	4K	0K
202 <a href="#">Decatur</a>	05/02/1997	05:00 PM	Tstm Wind	50 kts.	0	0	6K	0K

203 <a href="#">Countywide</a>	06/01/1997	12:00 AM	Heavy Rain	N/A	0	0	0K	50K
204 <a href="#">Eva</a>	06/16/1997	03:23 PM	Tstm Wind	50 kts.	0	0	5K	0K
205 <a href="#">Somerville</a>	06/16/1997	03:28 PM	Tstm Wind	50 kts.	0	0	0	0
206 <a href="#">Decatur</a>	07/08/1997	02:00 PM	Flash Flood	N/A	0	0	18K	0K
207 <a href="#">Decatur</a>	07/08/1997	02:32 PM	Lightning	N/A	0	0	8K	0K
208 <a href="#">Somerville</a>	07/28/1997	02:28 PM	Tstm Wind	0 kts.	0	0	4K	0K
209 <a href="#">Decatur</a>	10/25/1997	06:57 PM	Hail	0.75 in.	0	0	2K	0K
210 <a href="#">Decatur</a>	10/25/1997	06:57 PM	Tstm Wind	0 kts.	0	0	1K	0K
211 <a href="#">Hartselle</a>	10/25/1997	09:30 PM	Lightning	N/A	0	0	90K	0K
212 <a href="#">Falkville</a>	10/26/1997	02:20 AM	Lightning	N/A	0	0	250K	0K
213 <a href="#">ALZ001&gt;010 - 016 - 018&gt;021 - 028&gt;029 - 037&gt;038 - 047</a>	12/29/1997	01:00 AM	Winter Storm	N/A	0	0	0K	0K
214 <a href="#">Countywide</a>	01/07/1998	09:30 AM	Flash Flood	N/A	0	0	25K	5K
215 <a href="#">ALZ006&gt;010 - 018&gt;021</a>	02/04/1998	01:30 AM	Winter Storm	N/A	0	0	27K	0K
216 <a href="#">Hartselle</a>	04/03/1998	04:37 PM	Tstm Wind	50 kts.	0	0	2K	0K
217 <a href="#">Hulaco</a>	04/08/1998	06:35 PM	Hail	1.00 in.	0	0	2K	3K
218 <a href="#">Decatur</a>	04/08/1998	08:20 PM	Hail	1.00 in.	0	0	2K	2K

219 <a href="#">Decatur</a>	04/08/1998	08:20 PM	Tstm Wind	55 kts.	0	0	20K	10K
220 <a href="#">Decatur</a>	04/08/1998	08:22 PM	Hail	0.75 in.	0	0	0K	0K
221 <a href="#">Decatur</a>	04/08/1998	08:45 PM	Tstm Wind	50 kts.	0	0	10K	5K
222 <a href="#">Falkville</a>	05/06/1998	02:35 PM	Hail	0.75 in.	0	0	0K	0K
223 <a href="#">Hartselle</a>	05/07/1998	07:55 PM	Hail	0.88 in.	0	0	0K	0K
224 <a href="#">Countywide</a>	06/05/1998	04:25 AM	Tstm Wind	60 kts.	0	0	65K	12K
225 <a href="#">Hartselle</a>	06/19/1998	09:37 AM	Tstm Wind	50 kts.	0	0	5K	0K
226 <a href="#">ALZ001&gt;008 - 011&gt;017</a>	12/23/1998	02:00 AM	Ice Storm	N/A	1	0	14.4M	0K
227 <a href="#">ALZ001&gt;010 - 016&gt;018 - 020 - 026</a>	01/06/1999	12:00 PM	Winter Storm	N/A	0	0	0K	0K
228 <a href="#">Falkville</a>	01/18/1999	12:53 AM	Hail	1.00 in.	0	0	0K	0K
229 <a href="#">Falkville</a>	01/22/1999	04:43 PM	Tornado	F0	0	0	0K	0K
230 <a href="#">Decatur</a>	04/04/1999	12:05 AM	Tstm Wind	50 kts.	0	0	3K	0K
231 <a href="#">Countywide</a>	05/05/1999	11:00 PM	Flash Flood	N/A	0	0	0K	0K
232 <a href="#">Priceville</a>	05/13/1999	10:47 AM	Hail	0.75 in.	0	0	0K	0K
233 <a href="#">Priceville</a>	05/13/1999	11:11 AM	Hail	2.50 in.	0	0	0K	0K
234 <a href="#">Hartselle</a>	06/05/1999	02:04 AM	Tstm Wind	50 kts.	0	0	5K	0K
235 <a href="#">Decatur</a>	07/01/1999	12:30 PM	Lightning	N/A	0	1	10K	0K
236 <a href="#">Hartselle</a>	07/24/1999	05:30	Tstm Wind	50	0	0	0K	0K

		PM		kts.				
237 <a href="#">ALZ001&gt;005</a> <a href="#">- 007 -</a> <a href="#">011&gt;015 -</a> <a href="#">022&gt;023 -</a> <a href="#">030&gt;034</a>	11/02/1999	05:00 AM	High Wind	45 kts.	0	0	55K	0K
238 <a href="#">ALZ001&gt;007</a> <a href="#">- 009&gt;017</a>	12/21/1999	04:00 AM	Ice Storm	N/A	0	0	0K	0K
239 <a href="#">Laceys</a> <a href="#">Spg.</a>	01/03/2000	10:30 PM	Tstm Wind	50 kts.	0	0	25K	0K
240 <a href="#">Countywide</a>	01/03/2000	11:30 PM	Tstm Wind	50 kts.	0	0	5K	0K
241 <a href="#">ALZ005 -</a> <a href="#">007 -</a> <a href="#">014&gt;017 -</a> <a href="#">024&gt;027 -</a> <a href="#">033&gt;037 -</a> <a href="#">041 - 043</a>	01/28/2000	12:00 AM	Winter Storm	N/A	0	0	227K	0K
242 <a href="#">Countywide</a>	02/13/2000	07:14 PM	Tstm Wind	65 kts.	0	0	60K	0K
243 <a href="#">Hartselle</a>	02/13/2000	07:39 PM	Tstm Wind	60 kts.	0	0	40K	0K
244 <a href="#">Countywide</a>	03/19/2000	02:30 PM	Flash Flood	N/A	0	0	8K	0K
245 <a href="#">Danville</a>	04/03/2000	11:00 AM	Tstm Wind	65 kts.	0	0	5K	0K
246 <a href="#">Priceville</a>	04/03/2000	11:25 AM	Tstm Wind	65 kts.	0	0	20K	0K
247 <a href="#">Massey</a>	04/20/2000	07:22 PM	Tstm Wind	55 kts.	0	0	3K	0K
248 <a href="#">Falkville</a>	04/27/2000	06:25 PM	Hail	0.88 in.	0	0	0K	0K
249 <a href="#">Decatur</a>	07/12/2000	04:17 PM	Tstm Wind	55 kts.	0	0	3K	0K
250 <a href="#">Countywide</a>	07/20/2000	03:50 PM	Tstm Wind	60 kts.	0	0	30K	0K
251 <a href="#">Priceville</a>	08/10/2000	04:35	Tstm Wind	50	0	0	3K	0K

		PM		kts.				
252 <a href="#">Laceys Spg</a>	08/10/2000	04:37 PM	Hail	0.75 in.	0	0	0K	0K
253 <a href="#">Decatur</a>	09/24/2000	08:10 PM	Tstm Wind	50 kts.	0	0	2K	0K
254 <a href="#">ALZ006&gt;010 - 016&gt;019 - 023&gt;025 - 027</a>	11/24/2000	03:00 PM	High Wind	50 kts.	0	0	26K	0K
255 <a href="#">Somerville</a>	12/16/2000	04:15 PM	Hail	0.75 in.	0	0	0K	0K
256 <a href="#">Countywide</a>	02/16/2001	03:10 PM	Tstm Wind	55 kts.	0	0	6K	0K
257 <a href="#">ALZ006&gt;010 - 016&gt;018 - 024&gt;027</a>	03/20/2001	12:00 AM	Heavy Snow	N/A	0	0	0K	0K
258 <a href="#">Countywide</a>	04/04/2001	11:30 AM	Flash Flood	N/A	0	0	12K	0K
259 <a href="#">Decatur</a>	06/04/2001	05:05 PM	Tstm Wind	50 kts.	0	0	4K	0K
260 <a href="#">Hartselle</a>	06/26/2001	02:55 PM	Tstm Wind	50 kts.	0	0	2K	0K
261 <a href="#">Laceys Spg</a>	06/26/2001	03:05 PM	Hail	1.00 in.	0	0	0K	0K
262 <a href="#">Countywide</a>	07/05/2001	01:00 PM	Flash Flood	N/A	0	0	3K	0K
263 <a href="#">Countywide</a>	07/05/2001	12:40 PM	Tstm Wind	55 kts.	0	0	4K	0K
264 <a href="#">Countywide</a>	07/10/2001	03:25 PM	Tstm Wind	50 kts.	0	0	2K	0K
265 <a href="#">Countywide</a>	08/10/2001	07:30 AM	Flash Flood	N/A	0	0	50K	0K
266 <a href="#">Decatur</a>	10/24/2001	08:45 PM	Tstm Wind	50 kts.	0	0	3K	0K
267 <a href="#">Trinity</a>	11/24/2001	12:13 PM	Tornado	F2	0	0	250K	0K



268 <a href="#">Trinity</a>	11/29/2001	04:25 PM	Tstm Wind	50 kts.	0	0	2K	0K
269 <a href="#">ALZ001&gt;007 - 009&gt;011 - 014 - 016 - 018&gt;021</a>	02/05/2002	11:30 PM	Winter Storm	N/A	0	0	30K	0K
270 <a href="#">Trinity</a>	03/29/2002	09:35 PM	Hail	0.88 in.	0	0	0K	0K
271 <a href="#">Neel</a>	03/29/2002	10:20 PM	Hail	2.00 in.	0	0	2K	0K
272 <a href="#">Eva</a>	03/29/2002	10:50 PM	Funnel Cloud	N/A	0	0	0K	0K
273 <a href="#">Decatur</a>	05/03/2002	03:15 AM	Tstm Wind	50 kts.	0	0	2K	0K
274 <a href="#">Decatur</a>	06/30/2002	04:00 PM	Hail	0.75 in.	0	0	0K	0K
275 <a href="#">Decatur</a>	06/30/2002	04:00 PM	Lightning	N/A	0	0	20K	0K
276 <a href="#">Lacon</a>	08/02/2002	09:37 PM	Hail	1.75 in.	0	0	2K	0K
277 <a href="#">Eva</a>	08/18/2002	02:47 PM	Hail	0.75 in.	0	0	0K	0K
278 <a href="#">Union Hill</a>	08/20/2002	02:40 PM	Tstm Wind	50 kts.	0	0	10K	0K
279 <a href="#">Eva</a>	08/20/2002	02:50 PM	Tstm Wind	50 kts.	0	0	4K	0K
280 <a href="#">Decatur</a>	09/20/2002	07:00 PM	Lightning	N/A	0	0	15K	0K
281 <a href="#">Decatur</a>	02/22/2003	01:48 AM	Flash Flood	N/A	0	0	0	0
282 <a href="#">Decatur</a>	02/22/2003	06:05 AM	Flash Flood	N/A	0	0	0	0
283 <a href="#">Decatur</a>	02/22/2003	09:46 AM	Flash Flood	N/A	0	0	0	0
284 <a href="#">ALZ007 - 009</a>	03/19/2003	05:00 AM	High Wind	60 kts.	0	0	0	0
285 <a href="#">Hartselle</a>	05/02/2003	03:21	Hail	0.88	0	0	0	0

		PM		in.				
286 <a href="#">Falkville</a>	05/02/2003	03:33 PM	Hail	1.75 in.	0	0	0	0
287 <a href="#">Hartselle</a>	05/02/2003	03:40 PM	Hail	1.00 in.	0	0	0	0
288 <a href="#">Falkville</a>	05/05/2003	04:15 AM	Hail	0.88 in.	0	0	0	0
289 <a href="#">Decatur</a>	05/05/2003	11:12 AM	Hail	0.88 in.	0	0	0	0
290 <a href="#">Decatur</a>	05/06/2003	10:00 PM	Tstm Wind	60 kts.	0	0	0	0
291 <a href="#">Hartselle</a>	05/06/2003	10:00 PM	Tstm Wind	50 kts.	0	0	0	0
292 <a href="#">Decatur</a>	05/17/2003	10:24 AM	Tstm Wind	50 kts.	0	0	0	0
293 <a href="#">Trinity</a>	06/11/2003	02:00 PM	Hail	0.75 in.	0	0	0	0
294 <a href="#">Decatur</a>	06/11/2003	02:10 PM	Tstm Wind	50 kts.	0	0	0	0
295 <a href="#">Priceville</a>	06/11/2003	02:15 PM	Tstm Wind	50 kts.	0	0	0	0
296 <a href="#">Falkville</a>	07/21/2003	02:45 PM	Tstm Wind	60 kts.	0	0	0	0
297 <a href="#">Decatur</a>	08/22/2003	10:00 PM	Tstm Wind	50 kts.	0	0	0	0
298 <a href="#">Falkville</a>	11/18/2003	01:03 PM	Tstm Wind	60 kts.	0	0	0	0
299 <a href="#">Falkville</a>	11/18/2003	01:23 PM	Tstm Wind	60 kts.	0	0	10K	0
300 <a href="#">Somerville</a>	11/18/2003	12:15 PM	Tstm Wind	60 kts.	0	0	0	0
301 <a href="#">Decatur</a>	03/05/2004	10:33 PM	Flash Flood	N/A	0	0	0	0
302 <a href="#">Decatur</a>	05/30/2004	11:50 PM	Tstm Wind	60 kts.	0	0	0	0
303 <a href="#">Decatur</a>	06/22/2004	04:20 PM	Tstm Wind	50 kts.	0	0	0	0

304	<a href="#">Decatur</a>	07/07/2004	03:20 PM	Tstm Wind	52 kts.	0	0	0	0
305	<a href="#">Massey</a>	07/07/2004	03:30 PM	Tstm Wind	50 kts.	0	0	0	0
306	<a href="#">Hartselle</a>	07/12/2004	02:43 PM	Hail	0.75 in.	0	0	0	0
307	<a href="#">Hartselle</a>	07/12/2004	02:43 PM	Tstm Wind	50 kts.	0	0	0	0
308	<a href="#">Hartselle</a>	07/13/2004	02:43 PM	Tstm Wind	50 kts.	0	0	0	0
309	<a href="#">Decatur</a>	07/14/2004	03:50 PM	Tstm Wind	50 kts.	0	0	0	0
310	<a href="#">Hulaco</a>	07/14/2004	06:20 PM	Tstm Wind	50 kts.	0	0	0	0
311	<a href="#">Decatur</a>	08/11/2004	05:12 PM	Flash Flood	N/A	0	0	0	0
312	<a href="#">Countywide</a>	09/16/2004	04:00 PM	Flash Flood	N/A	0	0	0	0
313	<a href="#">ALZ001&gt;010-016</a>	09/16/2004	04:55 AM	High Wind	50 kts.	0	3	2.5M	0
314	<a href="#">Decatur</a>	11/24/2004	12:12 AM	Flash Flood	N/A	0	0	0	0
315	<a href="#">Trinity</a>	11/24/2004	12:30 AM	Flash Flood	N/A	0	0	0	0
316	<a href="#">Decatur</a>	12/06/2004	04:00 PM	Flash Flood	N/A	0	0	0	0
317	<a href="#">Countywide</a>	12/09/2004	07:00 AM	Flash Flood	N/A	0	0	0	0
318	<a href="#">Trinity</a>	02/21/2005	05:15 PM	Hail	1.00 in.	0	0	0	0
319	<a href="#">Decatur</a>	02/21/2005	05:30 PM	Hail	0.75 in.	0	0	0	0
320	<a href="#">Hartselle</a>	02/21/2005	06:10 PM	Hail	0.75 in.	0	0	0	0
321	<a href="#">Laceys Spg</a>	02/21/2005	06:35 PM	Hail	0.75 in.	0	0	0	0

322 <a href="#">Decatur</a>	04/30/2005	01:17 AM	Tstm Wind	50 kts.	0	0	0	0
323 <a href="#">Eva</a>	05/20/2005	12:18 PM	Tstm Wind	50 kts.	0	0	0	0
324 <a href="#">Somerville</a>	06/06/2005	12:50 PM	Tstm Wind	50 kts.	0	0	0	0
325 <a href="#">Decatur</a>	06/20/2005	05:20 PM	Hail	0.75 in.	0	0	0	0
326 <a href="#">Basham</a>	07/01/2005	04:20 PM	Tstm Wind	50 kts.	0	0	10K	0
327 <a href="#">Decatur</a>	07/01/2005	10:55 AM	Tstm Wind	50 kts.	0	0	0	0
328 <a href="#">ALZ001 - 001&gt;003 - 005&gt;010 - 016</a>	07/10/2005	06:00 PM	Tropical Storm	N/A	0	0	0	0
329 <a href="#">Decatur</a>	07/21/2005	02:50 PM	Tstm Wind	50 kts.	0	0	0	0
330 <a href="#">Decatur</a>	08/06/2005	03:08 AM	Tstm Wind	50 kts.	0	0	0	0
331 <a href="#">Decatur</a>	08/13/2005	02:40 PM	Hail	0.88 in.	0	0	0	0
332 <a href="#">ALZ001&gt;010 - 016</a>	08/29/2005	08:00 PM	Tropical Storm	N/A	0	0	0	0
333 <a href="#">Eva</a>	11/28/2005	02:23 PM	Tstm Wind	60 kts.	0	0	0	0
334 <a href="#">Trinity</a>	12/04/2005	01:12 AM	Tstm Wind	70 kts.	0	0	15K	0
335 <a href="#">Decatur</a>	12/04/2005	01:15 AM	Tstm Wind	60 kts.	0	0	0	0
336 <a href="#">Falkville</a>	12/04/2005	01:35 AM	Tstm Wind	60 kts.	0	0	0	0
337 <a href="#">Laceys Spg</a>	12/04/2005	01:35 AM	Tstm Wind	60 kts.	0	0	0	0
338 <a href="#">Eva</a>	03/09/2006	04:50 PM	Tstm Wind	80 kts.	0	0	5K	0
339 <a href="#">Decatur</a>	03/09/2006	05:10	Tstm Wind	70	0	0	1K	0

		PM		kts.				
340 <a href="#">Somerville</a>	03/09/2006	05:10 PM	Hail	1.75 in.	0	0	0	0
341 <a href="#">Hartselle</a>	04/03/2006	02:15 AM	Hail	0.75 in.	0	0	0	0
342 <a href="#">Trinity</a>	04/07/2006	09:09 PM	Hail	1.75 in.	0	0	0	0
343 <a href="#">Hartselle</a>	04/07/2006	09:10 PM	Hail	0.88 in.	0	0	0	0
344 <a href="#">Decatur</a>	04/07/2006	09:13 PM	Hail	1.75 in.	0	0	0	0
345 <a href="#">Decatur</a>	04/07/2006	09:15 PM	Hail	2.00 in.	0	0	20K	0
346 <a href="#">Decatur</a>	04/07/2006	09:16 PM	Tornado	F0	0	0	1K	0
347 <a href="#">Priceville</a>	04/07/2006	09:24 PM	Hail	1.75 in.	0	0	0	0
348 <a href="#">Danville</a>	04/07/2006	09:41 PM	Tornado	F1	0	0	80K	0
349 <a href="#">Danville</a>	04/07/2006	09:45 PM	Hail	1.75 in.	0	0	25K	0
350 <a href="#">Hartselle</a>	04/07/2006	09:53 PM	Hail	2.50 in.	0	0	40K	0
351 <a href="#">Laceys Spg</a>	04/07/2006	10:00 PM	Hail	1.75 in.	0	0	40K	0
352 <a href="#">Somerville</a>	04/07/2006	10:01 PM	Hail	1.75 in.	0	0	15K	0
353 <a href="#">Morgan City</a>	04/07/2006	10:19 PM	Hail	0.88 in.	0	0	0	0
354 <a href="#">Hulaco</a>	04/19/2006	01:35 PM	Hail	1.25 in.	0	0	0	0
355 <a href="#">Hartselle</a>	04/19/2006	11:01 PM	Hail	0.88 in.	0	0	0	0
356 <a href="#">Hartselle</a>	04/19/2006	11:24 PM	Hail	0.88 in.	0	0	0	0
357 <a href="#">Hartselle</a>	04/19/2006	11:24 PM	Hail	0.88 in.	0	0	0	0

358 <a href="#">Falkville</a>	04/20/2006	05:35 PM	Hail	1.75 in.	0	0	0	0
359 <a href="#">Morgan City</a>	04/20/2006	05:50 PM	Hail	0.88 in.	0	0	0	0
360 <a href="#">Somerville</a>	04/20/2006	05:55 PM	Hail	1.00 in.	0	0	0	0
361 <a href="#">Falkville</a>	04/21/2006	05:13 AM	Hail	0.88 in.	0	0	0	0
362 <a href="#">Somerville</a>	04/21/2006	05:23 AM	Hail	0.75 in.	0	0	0	0
363 <a href="#">Basham</a>	06/02/2006	03:00 PM	Lightning	N/A	0	0	200K	0
364 <a href="#">Decatur</a>	06/04/2006	03:25 PM	Tstm Wind	50 kts.	0	0	0	0
365 <a href="#">Priceville</a>	06/16/2006	01:40 PM	Dust Devil	N/A	0	0	0	0
366 <a href="#">Countywide</a>	07/19/2006	01:40 PM	Tstm Wind	50 kts.	0	0	0	0
367 <a href="#">Lacon</a>	07/19/2006	02:00 PM	Hail	0.75 in.	0	0	0	0
368 <a href="#">Decatur</a>	07/22/2006	07:30 AM	Lightning	N/A	0	0	0	0
369 <a href="#">Eva</a>	07/29/2006	12:50 PM	Tstm Wind	50 kts.	0	0	0	0
370 <a href="#">Decatur</a>	08/10/2006	12:59 PM	Tstm Wind	50 kts.	0	0	0	0
371 <a href="#">Hartselle</a>	08/20/2006	03:05 PM	Tstm Wind	50 kts.	0	0	5K	0
372 <a href="#">ALZ005&gt;007-009</a>	03/13/2007	00:00 AM	Drought	N/A	0	0	0K	0K
373 <a href="#">ALZ001&gt;010-016</a>	04/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
374 <a href="#">ALZ001&gt;007-016</a>	04/07/2007	03:00 AM	Frost/freeze	N/A	0	0	0K	0K
375	04/08/2007	00:00	Frost/freeze	N/A	0	0	0K	0K

<a href="#">ALZ001&gt;007-016</a>		AM						
376 <a href="#">ALZ001&gt;010-016</a>	05/01/2007	00:00 AM	Drought	N/A	0	0	OK	OK
377 <a href="#">ALZ001&gt;010-016</a>	06/01/2007	00:00 AM	Drought	N/A	0	0	OK	OK
378 <a href="#">Decatur</a>	06/08/2007	15:10 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
379 <a href="#">Somerville</a>	06/15/2007	18:13 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
380 <a href="#">Trinity</a>	06/19/2007	12:00 PM	Tornado	F0	0	0	OK	OK
381 <a href="#">Trinity</a>	06/24/2007	15:00 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
382 <a href="#">Eva</a>	06/28/2007	15:27 PM	Hail	0.88 in.	0	0	OK	OK
383 <a href="#">ALZ001&gt;010-016</a>	07/01/2007	00:00 AM	Drought	N/A	0	0	OK	OK
384 <a href="#">Decatur</a>	07/01/2007	12:38 PM	Thunderstorm Wind	55 kts.	0	0	OK	OK
385 <a href="#">Hulaco</a>	07/01/2007	13:20 PM	Thunderstorm Wind	56 kts.	0	0	OK	OK
386 <a href="#">Trinity</a>	07/06/2007	13:55 PM	Flash Flood	N/A	0	0	OK	OK
387 <a href="#">Decatur</a>	07/20/2007	09:06 AM	Thunderstorm Wind	50 kts.	0	0	OK	OK
388 <a href="#">Echols Xrds</a>	07/25/2007	17:45 PM	Thunderstorm Wind	50 kts.	0	0	OK	OK
389 <a href="#">ALZ001&gt;010-016</a>	08/01/2007	00:00 AM	Drought	N/A	0	0	OK	OK
390 <a href="#">ALZ001&gt;010-016</a>	08/01/2007	00:00 AM	Heat	N/A	0	0	OK	OK
391 <a href="#">ALZ007</a>	08/09/2007	00:00	Heat	N/A	1	0	OK	OK

		AM						
392 <a href="#">ALZ007</a>	08/13/2007	00:00 AM	Heat	N/A	1	0	0K	0K
393 <a href="#">Basham</a>	08/17/2007	15:02 PM	Thunderstorm Wind	50 kts.	0	0	0K	0K
394 <a href="#">ALZ001&gt;010 - 016</a>	09/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
395 <a href="#">ALZ001&gt;010 - 016</a>	10/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
396 <a href="#">ALZ001&gt;010 - 016</a>	11/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
397 <a href="#">ALZ001&gt;010 - 016</a>	12/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
398 <a href="#">ALZ001&gt;010 - 016</a>	01/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
399 <a href="#">ALZ006&gt;008 - 016</a>	01/29/2008	20:00 PM	High Wind	43 kts.	0	0	10K	0K
400 <a href="#">ALZ001&gt;010 - 016</a>	02/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
401 <a href="#">Pumpkin Center</a>	02/06/2008	03:20 AM	Tornado	F2	0	0	0K	0K
402 <a href="#">Hartselle</a>	02/26/2008	01:55 AM	Thunderstorm Wind	50 kts.	0	0	5K	0K
403 <a href="#">ALZ001&gt;010 - 016</a>	03/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
404 <a href="#">ALZ001&gt;010 - 016</a>	04/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
405 <a href="#">Center Grove</a>	04/11/2008	13:06 PM	Tornado	F0	0	0	0K	0K
406	04/15/2008	03:00	Frost/freeze	N/A	0	0	0K	0K



<a href="#">ALZ001&gt;010 - 016</a>		AM						
407 <a href="#">ALZ001&gt;010 - 016</a>	04/16/2008	03:00 AM	Frost/freeze	N/A	0	0	0K	0K
408 <a href="#">ALZ001 - 004&gt;010 - 016</a>	05/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
409 <a href="#">Oak Ridge</a>	05/08/2008	13:15 PM	Tornado	F0	0	0	10K	0K
410 <a href="#">Leesdale</a>	05/10/2008	23:35 PM	Thunderstorm Wind	52 kts.	0	0	3K	0K
411 <a href="#">Somerville</a>	05/10/2008	23:42 PM	Thunderstorm Wind	52 kts.	0	0	5K	0K
412 <a href="#">Cole Spgs</a>	05/10/2008	23:56 PM	Thunderstorm Wind	52 kts.	0	0	3K	0K
413 <a href="#">ALZ004 - 006&gt;010 - 016</a>	06/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
414 <a href="#">Danville</a>	06/01/2008	15:10 PM	Hail	0.88 in.	0	0	0K	0K
415 <a href="#">Oakworth</a>	06/13/2008	18:00 PM	Flash Flood	N/A	0	0	0K	0K
416 <a href="#">ALZ004&gt;010 - 016</a>	07/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
417 <a href="#">Furney Xrds</a>	07/22/2008	12:38 PM	Thunderstorm Wind	65 kts.	0	0	6K	0K
418 <a href="#">Hartselle</a>	07/22/2008	12:50 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
419 <a href="#">Decatur</a>	07/22/2008	13:35 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
420 <a href="#">Trinity</a>	07/22/2008	13:38 PM	Hail	0.75 in.	0	0	0K	0K
421 <a href="#">Mt Tabor</a>	07/31/2008	14:20 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
422 <a href="#">Oden Ridge</a>	07/31/2008	14:42 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K

423 <a href="#">ALZ004&gt;007 - 009&gt;010 - 016</a>	08/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
424 <a href="#">Huntsville Laceys Sp</a>	08/07/2008	10:57 AM	Thunderstorm Wind	52 kts.	0	0	1K	0K
425 <a href="#">Moulton Hgts</a>	12/09/2008	23:15 PM	Flash Flood	N/A	0	0	50K	0K
426 <a href="#">Huntsville Laceys Sp</a>	12/20/2008	18:30 PM	Thunderstorm Wind	56 kts.	0	0	4K	0K
427 <a href="#">Huntsville Laceys Sp</a>	01/06/2009	09:18 AM	Flood	N/A	0	0	100K	0K
428 <a href="#">Center Grove</a>	01/06/2009	20:26 PM	Flash Flood	N/A	0	0	0K	0K
429 <a href="#">ALZ007</a>	01/16/2009	03:00 AM	Cold/wind Chill	N/A	0	0	0K	0K
430 <a href="#">ALZ004 - 007</a>	02/11/2009	11:50 AM	High Wind	52 kts.	0	0	15K	0K
431 <a href="#">Center Grove</a>	02/27/2009	16:15 PM	Flash Flood	N/A	0	0	0K	0K
432 <a href="#">ALZ007</a>	03/01/2009	06:52 AM	Winter Weather	N/A	0	0	0K	0K
433 <a href="#">Center Grove</a>	03/26/2009	05:00 AM	Flash Flood	N/A	0	0	0K	0K
434 <a href="#">Danville</a>	03/26/2009	05:00 AM	Flash Flood	N/A	0	0	0K	0K
435 <a href="#">Falkville</a>	03/26/2009	05:00 AM	Flash Flood	N/A	0	0	0K	0K
436 <a href="#">ALZ007</a>	03/28/2009	05:30 AM	Strong Wind	39 kts.	0	0	10K	0K
437 <a href="#">Austinville</a>	04/02/2009	15:39 PM	Thunderstorm Wind	56 kts.	0	0	6K	0K
438 <a href="#">Moulton Hgts</a>	04/02/2009	15:55 PM	Flash Flood	N/A	0	0	0K	0K
439 <a href="#">Furney</a>	04/02/2009	15:56	Thunderstorm	52	0	0	10K	0K

<a href="#">Xrds</a>		PM	Wind	kts.				
440 <a href="#">Huntsville Laceys Sp</a>	04/02/2009	16:26 PM	Tornado	F1	0	0	66K	0K
441 <a href="#">Brooksville</a>	04/02/2009	18:47 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
442 <a href="#">Somerville</a>	04/02/2009	18:50 PM	Thunderstorm Wind	56 kts.	0	0	16K	0K
443 <a href="#">ALZ007</a>	04/02/2009	19:57 PM	Strong Wind	39 kts.	0	0	7K	0K
444 <a href="#">Basham</a>	04/10/2009	13:00 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
445 <a href="#">Cedar Lake</a>	04/10/2009	13:00 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
446 <a href="#">Crowtown</a>	04/10/2009	13:01 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
447 <a href="#">Fairview</a>	04/10/2009	13:01 PM	Thunderstorm Wind	56 kts.	0	0	15K	0K
448 <a href="#">Brooksville</a>	04/10/2009	13:02 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
449 <a href="#">Decatur</a>	04/10/2009	13:02 PM	Thunderstorm Wind	52 kts.	0	0	4K	0K
450 <a href="#">Decatur</a>	04/10/2009	13:02 PM	Thunderstorm Wind	52 kts.	0	0	6K	0K
451 <a href="#">Center Dale</a>	04/10/2009	13:05 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
452 <a href="#">Moulton Hgts</a>	04/10/2009	13:09 PM	Hail	2.75 in.	0	0	0K	0K
453 <a href="#">Oakworth</a>	04/10/2009	13:10 PM	Hail	1.00 in.	0	0	0K	0K
454 <a href="#">Fairview</a>	04/10/2009	13:12 PM	Hail	1.00 in.	0	0	0K	0K
455 <a href="#">Decatur</a>	04/10/2009	13:13 PM	Hail	4.25 in.	0	0	0K	0K
456 <a href="#">Griffin Addition</a>	04/10/2009	13:49 PM	Flash Flood	N/A	0	0	0K	0K
457 <a href="#">Penn</a>	04/10/2009	13:50	Thunderstorm	52	0	0	6K	0K

		PM	Wind	kts.				
458 <a href="#">Massey</a>	04/10/2009	13:54 PM	Hail	1.75 in.	0	0	0K	0K
459 <a href="#">Morgan City</a>	04/10/2009	13:57 PM	Hail	2.75 in.	0	0	0K	0K
460 <a href="#">Wilhites</a>	04/10/2009	14:07 PM	Hail	1.75 in.	0	0	0K	0K
461 <a href="#">Leesdale</a>	04/10/2009	14:21 PM	Hail	0.75 in.	0	0	0K	0K
462 <a href="#">ALZ007</a>	04/12/2009	22:30 PM	Strong Wind	48 kts.	0	0	100K	0K
463 <a href="#">Pumpkin Center</a>	04/19/2009	17:43 PM	Tornado	F0	0	0	25K	0K
464 <a href="#">Oak Ridge</a>	04/19/2009	17:52 PM	Hail	1.75 in.	0	0	0K	0K
465 <a href="#">Brooksville</a>	04/19/2009	17:58 PM	Tornado	F0	1	0	20K	0K
466 <a href="#">Brooksville</a>	04/19/2009	17:59 PM	Thunderstorm Wind	56 kts.	1	0	41K	0K
467 <a href="#">Somerville</a>	04/19/2009	18:19 PM	Funnel Cloud	N/A	0	0	0K	0K
468 <a href="#">Huntsville Laceys Sp</a>	04/19/2009	18:36 PM	Funnel Cloud	N/A	0	0	0K	0K
469 <a href="#">Falkville</a>	05/01/2009	12:45 PM	Lightning	N/A	0	0	25K	0K
470 <a href="#">Decatur</a>	05/01/2009	18:20 PM	Flash Flood	N/A	0	0	0K	0K
471 <a href="#">Trinity</a>	05/01/2009	18:49 PM	Hail	1.25 in.	0	0	0K	0K
472 <a href="#">Trinity</a>	05/01/2009	18:53 PM	Hail	0.88 in.	0	0	0K	0K
473 <a href="#">Morgan City</a>	05/01/2009	19:58 PM	Thunderstorm Wind	50 kts.	0	0	1K	0K
474 <a href="#">Danville</a>	05/01/2009	20:00 PM	Flash Flood	N/A	0	0	0K	0K
475 <a href="#">Falkville</a>	05/01/2009	20:35	Flash Flood	N/A	0	0	0K	0K

		PM						
476 <a href="#">Flint City</a>	05/01/2009	20:35 PM	Flash Flood	N/A	0	0	0K	0K
477 <a href="#">ALZ007</a>	05/01/2009	20:40 PM	Strong Wind	43 kts.	0	0	2K	0K
478 <a href="#">Center Dale</a>	05/01/2009	20:55 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
479 <a href="#">Oden Ridge</a>	05/02/2009	20:37 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
480 <a href="#">Decatur</a>	05/03/2009	13:40 PM	Flash Flood	N/A	0	0	0K	0K
481 <a href="#">Morgan City</a>	05/03/2009	14:33 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
482 <a href="#">Oak Ridge</a>	05/06/2009	04:31 AM	Thunderstorm Wind	56 kts.	0	0	6K	0K
483 <a href="#">Flint City</a>	05/06/2009	06:04 AM	Flash Flood	N/A	0	0	0K	0K
484 <a href="#">Pumpkin Center</a>	05/06/2009	07:27 AM	Tornado	F1	0	0	50K	0K
485 <a href="#">Oakworth</a>	05/06/2009	07:34 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
486 <a href="#">Oakworth</a>	05/06/2009	07:39 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
487 <a href="#">Oakworth</a>	05/06/2009	07:42 AM	Tornado	F0	0	0	50K	0K
488 <a href="#">Lacon</a>	05/06/2009	07:43 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
489 <a href="#">Oden Ridge</a>	05/06/2009	07:43 AM	Thunderstorm Wind	52 kts.	0	0	6K	0K
490 <a href="#">Lacon</a>	05/06/2009	07:48 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
491 <a href="#">Center Grove</a>	05/06/2009	07:57 AM	Thunderstorm Wind	50 kts.	0	0	2K	0K
492 <a href="#">Hartselle</a>	05/13/2009	07:00 AM	Lightning	N/A	0	0	2.0M	0K
493 <a href="#">Danville</a>	05/13/2009	09:00 AM	Flash Flood	N/A	0	0	0K	0K

494 <a href="#">Oakworth</a>	05/13/2009	09:00 AM	Flash Flood	N/A	0	0	0K	0K
495 <a href="#">Huntsville Laceys Sp</a>	05/15/2009	18:44 PM	Hail	1.75 in.	0	0	0K	0K
496 <a href="#">West Pt</a>	05/15/2009	19:15 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
497 <a href="#">Moulton Hgts</a>	05/27/2009	17:05 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
498 <a href="#">Decatur</a>	05/27/2009	17:15 PM	Flash Flood	N/A	0	0	0K	0K
499 <a href="#">Trinity</a>	06/10/2009	17:23 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
500 <a href="#">Pumpkin Center</a>	06/14/2009	09:48 AM	Thunderstorm Wind	52 kts.	0	0	10K	0K
501 <a href="#">Trinity</a>	06/15/2009	18:25 PM	Hail	3.50 in.	0	0	0K	0K
502 <a href="#">Trinity</a>	06/15/2009	18:26 PM	Hail	3.75 in.	0	0	0K	0K
503 <a href="#">Trinity</a>	06/15/2009	18:29 PM	Hail	1.25 in.	0	0	0K	0K
504 <a href="#">Griffin Addition</a>	06/15/2009	18:30 PM	Thunderstorm Wind	83 kts.	0	0	500K	0K
505 <a href="#">Moulton Hgts</a>	06/15/2009	18:31 PM	Hail	1.00 in.	0	0	0K	0K
506 <a href="#">Moulton Hgts</a>	06/15/2009	18:31 PM	Hail	2.75 in.	0	0	0K	0K
507 <a href="#">Decatur</a>	06/15/2009	18:33 PM	Hail	1.00 in.	0	0	0K	0K
508 <a href="#">Griffin Addition</a>	06/15/2009	18:34 PM	Hail	0.88 in.	0	0	0K	0K
509 <a href="#">Griffin Addition</a>	06/15/2009	18:34 PM	Hail	1.00 in.	0	0	0K	0K
510 <a href="#">Decatur</a>	06/15/2009	18:35 PM	Hail	1.75 in.	0	0	0K	0K
511 <a href="#">Oakworth</a>	06/15/2009	18:35 PM	Hail	2.75 in.	0	0	10K	0K

512 <a href="#">Oakworth</a>	06/15/2009	18:36 PM	Hail	1.75 in.	0	0	0K	0K
513 <a href="#">Hartselle</a>	06/15/2009	18:47 PM	Hail	1.00 in.	0	0	0K	0K
514 <a href="#">Somerville</a>	06/15/2009	18:50 PM	Hail	1.75 in.	0	0	0K	0K
515 <a href="#">Decatur</a>	06/15/2009	19:00 PM	Flash Flood	N/A	0	0	0K	0K
516 <a href="#">Hartselle</a>	06/15/2009	19:30 PM	Flash Flood	N/A	0	0	0K	0K
517 <a href="#">ALZ004&gt;007-016</a>	06/28/2009	10:00 AM	Excessive Heat	N/A	0	0	0K	0K
518 <a href="#">Morgan City</a>	06/28/2009	15:55 PM	Thunderstorm Wind	50 kts.	0	0	8K	0K
519 <a href="#">Union Hill</a>	06/28/2009	15:55 PM	Thunderstorm Wind	50 kts.	0	0	10K	0K
520 <a href="#">Griffin Addition</a>	07/05/2009	02:25 AM	Thunderstorm Wind	50 kts.	0	0	2K	0K
521 <a href="#">Basham</a>	07/12/2009	13:37 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
522 <a href="#">Pumpkin Center</a>	07/12/2009	13:39 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
523 <a href="#">Oakworth</a>	07/12/2009	13:48 PM	Thunderstorm Wind	50 kts.	0	0	5K	0K
524 <a href="#">Cole Spgs</a>	07/30/2009	17:50 PM	Thunderstorm Wind	56 kts.	0	0	30K	0K
525 <a href="#">Griffin Addition</a>	08/01/2009	16:45 PM	Flash Flood	N/A	0	0	0K	0K
526 <a href="#">Moulton Hgts</a>	08/01/2009	16:45 PM	Flash Flood	N/A	0	0	0K	0K
527 <a href="#">Pumpkin Center</a>	10/09/2009	14:50 PM	Thunderstorm Wind	52 kts.	0	0	5K	0K
528 <a href="#">Pumpkin Center</a>	10/09/2009	14:53 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
529 <a href="#">Pumpkin Center</a>	10/09/2009	14:53 PM	Thunderstorm Wind	52 kts.	0	0	7K	0K

530 <a href="#">Pumpkin Center</a>	10/09/2009	14:53 PM	Thunderstorm Wind	52 kts.	0	0	10K	0K
531 <a href="#">Hartselle</a>	10/09/2009	15:02 PM	Thunderstorm Wind	52 kts.	0	0	4K	0K
532 <a href="#">Leesdale</a>	10/09/2009	15:03 PM	Thunderstorm Wind	52 kts.	0	0	3K	0K
533 <a href="#">ALZ001&gt;007 - 009&gt;010 - 016</a>	10/19/2009	02:00 AM	Frost/freeze	N/A	0	0	0K	0K
534 <a href="#">ALZ007 - 016</a>	12/04/2009	23:00 PM	Winter Weather	N/A	0	0	0K	0K
535 <a href="#">Trinity</a>	12/08/2009	20:00 PM	Flash Flood	N/A	0	0	500K	0K
536 <a href="#">Oak Ridge</a>	12/09/2009	22:30 PM	Flood	N/A	0	0	1.0M	0K
537 <a href="#">ALZ005&gt;007</a>	12/24/2009	13:00 PM	High Wind	35 kts.	0	0	20K	0K
538 <a href="#">ALZ006 - 007</a>	01/07/2010	06:30 AM	Winter Weather	N/A	0	0	0K	0K
539 <a href="#">ALZ005&gt;007</a>	01/29/2010	08:30 AM	Winter Storm	N/A	0	0	0K	0K
540 <a href="#">ALZ005&gt;007</a>	01/29/2010	08:30 AM	Winter Weather	N/A	0	0	0K	0K
541 <a href="#">ALZ007 - 016</a>	02/12/2010	07:00 AM	Winter Weather	N/A	0	0	0K	0K
542 <a href="#">ALZ007</a>	02/15/2010	15:00 PM	Winter Weather	N/A	0	0	0K	0K
TOTALS:					24	242	5.140B	62.148M

Source: NCDC/NOAA Storm Events

The following subsections include the results of the hazard identification and profiling process.

**Section 5.5** provides detailed risk assessments for the most significant hazards in the county, as identified through a process described in **Section 5.3**. The process used to identify these most significant hazards was reviewed and endorsed by the HMPC during its March 12, 2010 meeting.

**Section 5.3** includes qualitative probability and mitigation potential ratings for all hazards addressed in this section. This qualitative rating is included at the end of each hazard profiled



discussed in this section as a way to address the issue of probability without undertaking detailed studies for all the hazards.

### **Hazard Profiles and Previous Occurrences**

The hazards were examined methodically based on the following three aspects, with each aspect considered in detail for the hazards profiled:

**General Description, Nature, and Extent of the Hazard:** This topic provides basic information about the hazard to explain its nature and distinguish it from other hazards. It also provides a basis for leaders to understand the subsequent vulnerability assessment and loss estimates. The information for this section is drawn mainly from MCEMA, AEMA, FEMA, and other agencies. For the plan update, these sections were revised to give a general description of the hazard as it occurs in Morgan County, Alabama.

The extent of the hazard provides the range of magnitude or severity that could be experienced by the county if such an event occurred. The hazard is classified using terms of major, minor, and minimum based on the probability of future damage estimates providing information on the range of magnitude or severity the county can anticipate from potential hazard events. A Major ranking requires continuous action and participations from the entire community and has a 100% or greater chance of an annual occurrence. A Minor ranking involves fewer people, effort, and area of the community and has a 50% - 99% chance of an annual occurrence. A Minimum ranking involves a small number of people and plans for a specific action and has a 49% or less chance of an annual occurrence.

**History of the Hazard:** This section provides background information about previous occurrences. The focus is on disasters and other events that have occurred in the county. The information in this section is drawn mainly from the database of historical hazard events in the county. In addition to querying the NCDC database and other standard hazard information sources, the plan update includes information on historical hazards that was collected from the representatives on the HMPC. The plan update includes discussions of the hazard events that have taken place since the initial plan adoption.

**Probability of the Hazard:** This section discusses the probability (frequency) of the various hazards. The information in this section is drawn from a combination of sources, expertise, and the NCDC Storm Event Database for Alabama. Where possible, the probability is discussed in terms of a commonly accepted design event, i.e., the 100-year flood. For the plan update, the probability of each hazard was reviewed and revised in cases where better information was available.

The probability (%) that an identified hazard will occur on an annual basis was determined using the following formula:

*Number of historical or reported events in a time period divided by the number of years the incidents occurred within = Probability of Future Annual Event Occurrences*

Example: 13 Extreme Temperature events experienced divided by a 6 year period; 13 divided 6 = >100%

A similar formula was used to determine an estimate of the expected damages from each event:

*Total amount of damages (in dollars) for each historical or reported event divided by the number of damage causing events within the time period = Estimate of expected future damages*

Example: \$172,000 total reported hail damage from 1960-2003 with 21 of those being reported as damage causing;  $\$172,000/21=\$8,190$

### **5.2.1 Flooding (includes Hurricanes)**

#### **Nature of the Hazard in Morgan County, Alabama**

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. 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. Nationwide, hundreds of floods occur each year, making them one of the most common hazards in the U.S. (FEMA, 1997). There are a number of categories of floods in the U.S., including the following:

- Riverine flooding, including overflow from a river channel, flash floods, alluvial fan floods, ice-jam floods and dam break floods
- Local drainage or high groundwater levels
- Fluctuating lake levels
- Coastal flooding, including storm surges
- Debris flows
- Subsidence

While there is no sharp distinction between riverine floods, flash floods, alluvial fan floods, ice jam 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 and ice jams 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 overbank 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 roadway acting as temporary drainage channels or changes to natural drainage channels from fill, grading, and structures.

Ice jam floods are primarily a function of the weather and are most likely to occur where the channel slope naturally decreases, culverts freeze solid, reservoir headwaters, natural channel constructions (e.g., bends and bridges), and along shallows.

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 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.

### **Nature and Extent of the Hazard in Morgan County, Alabama**

Flooding caused by rainfall occurs to some extent almost every year in almost every part of Morgan County. Flooding occurs most frequently between November and April, with a peak from February through April. Flooding that affects Morgan County occurs in areas where development has encroached into flood-prone areas, areas that have inadequate drainage systems, and in denuded areas and within narrow, steep hills and valleys. Flood hazard areas in the county are located on the floodplain of all rivers, streams, lakes, and wetlands. Urban development in Morgan County and its municipalities has been occurring at a rapid pace for the last decade. As land is converted from fields or woodlands to roads and urban development, it loses its ability to absorb rainfall.

Morgan County's area has 2.81% of water, making up 17 square miles. Flash flooding can potentially affect every jurisdiction in Morgan County. Residential and commercial developments within flood plain areas have contributed to the increased losses from flooding situations. Urban portions of the county have become increasingly vulnerable to urban flooding. The population growth increases the potential for more development, which extends the amount of impermeable surfaces; therefore, urban flooding risks are increased.

Riverine flooding can potentially create minor to moderate property damage and a slight risk of casualties throughout areas of the county adjacent to rivers and creeks. Flash flooding has the

potential to result in extensive property damage and casualties in the county. Riverine and flash flooding can also affect accessibility for emergency services.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a flood event is minor to major.

**Table 5.2-2 Flood Disaster/Emergency Events in Morgan County, Alabama**

45 Flood Event(s) were reported in Morgan County, Alabama between 01/01/1950 and 02/28/2010.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

**Alabama**

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">ALZ001&gt;007</a>	02/09/1994	2200	Ice Storm/flash Flood	N/A	0	2	0	0
2 <a href="#">Decatur</a>	03/06/1996	03:00 AM	Flash Flood	N/A	0	0	0	0
3 <a href="#">Decatur</a>	07/08/1997	02:00 PM	Flash Flood	N/A	0	0	18K	0K
4 <a href="#">Countywide</a>	01/07/1998	09:30 AM	Flash Flood	N/A	0	0	25K	5K
5 <a href="#">Countywide</a>	05/05/1999	11:00 PM	Flash Flood	N/A	0	0	0K	0K
6 <a href="#">Countywide</a>	03/19/2000	02:30 PM	Flash Flood	N/A	0	0	8K	0K
7 <a href="#">Countywide</a>	04/04/2001	11:30 AM	Flash Flood	N/A	0	0	12K	0K
8 <a href="#">Countywide</a>	07/05/2001	01:00 PM	Flash Flood	N/A	0	0	3K	0K
9 <a href="#">Countywide</a>	08/10/2001	07:30 AM	Flash Flood	N/A	0	0	50K	0K
10 <a href="#">Decatur</a>	02/22/2003	01:48 AM	Flash Flood	N/A	0	0	0	0
11 <a href="#">Decatur</a>	02/22/2003	06:05 AM	Flash Flood	N/A	0	0	0	0

12	<a href="#">Decatur</a>	02/22/2003	09:46 AM	Flash Flood	N/A	0	0	0	0
13	<a href="#">Decatur</a>	03/05/2004	10:33 PM	Flash Flood	N/A	0	0	0	0
14	<a href="#">Decatur</a>	08/11/2004	05:12 PM	Flash Flood	N/A	0	0	0	0
15	<a href="#">Countywide</a>	09/16/2004	04:00 PM	Flash Flood	N/A	0	0	0	0
16	<a href="#">Decatur</a>	11/24/2004	12:12 AM	Flash Flood	N/A	0	0	0	0
17	<a href="#">Trinity</a>	11/24/2004	12:30 AM	Flash Flood	N/A	0	0	0	0
18	<a href="#">Decatur</a>	12/06/2004	04:00 PM	Flash Flood	N/A	0	0	0	0
19	<a href="#">Countywide</a>	12/09/2004	07:00 AM	Flash Flood	N/A	0	0	0	0
20	<a href="#">Trinity</a>	07/06/2007	13:55 PM	Flash Flood	N/A	0	0	0K	0K
21	<a href="#">Oakworth</a>	06/13/2008	18:00 PM	Flash Flood	N/A	0	0	0K	0K
22	<a href="#">Moulton Hgts</a>	12/09/2008	23:15 PM	Flash Flood	N/A	0	0	50K	0K
23	<a href="#">Huntsville Laceys Sp</a>	01/06/2009	09:18 AM	Flood	N/A	0	0	100K	0K
24	<a href="#">Center Grove</a>	01/06/2009	20:26 PM	Flash Flood	N/A	0	0	0K	0K
25	<a href="#">Center Grove</a>	02/27/2009	16:15 PM	Flash Flood	N/A	0	0	0K	0K
26	<a href="#">Center Grove</a>	03/26/2009	05:00 AM	Flash Flood	N/A	0	0	0K	0K
27	<a href="#">Danville</a>	03/26/2009	05:00 AM	Flash Flood	N/A	0	0	0K	0K
28	<a href="#">Falkville</a>	03/26/2009	05:00 AM	Flash Flood	N/A	0	0	0K	0K
29	<a href="#">Moulton Hgts</a>	04/02/2009	15:55 PM	Flash Flood	N/A	0	0	0K	0K
30	<a href="#">Griffin Addition</a>	04/10/2009	13:49	Flash Flood	N/A	0	0	0K	0K

		PM						
31 <a href="#">Decatur</a>	05/01/2009	18:20 PM	Flash Flood	N/A	0	0	0K	0K
32 <a href="#">Danville</a>	05/01/2009	20:00 PM	Flash Flood	N/A	0	0	0K	0K
33 <a href="#">Falkville</a>	05/01/2009	20:35 PM	Flash Flood	N/A	0	0	0K	0K
34 <a href="#">Flint City</a>	05/01/2009	20:35 PM	Flash Flood	N/A	0	0	0K	0K
35 <a href="#">Decatur</a>	05/03/2009	13:40 PM	Flash Flood	N/A	0	0	0K	0K
36 <a href="#">Flint City</a>	05/06/2009	06:04 AM	Flash Flood	N/A	0	0	0K	0K
37 <a href="#">Danville</a>	05/13/2009	09:00 AM	Flash Flood	N/A	0	0	0K	0K
38 <a href="#">Oakworth</a>	05/13/2009	09:00 AM	Flash Flood	N/A	0	0	0K	0K
39 <a href="#">Decatur</a>	05/27/2009	17:15 PM	Flash Flood	N/A	0	0	0K	0K
40 <a href="#">Decatur</a>	06/15/2009	19:00 PM	Flash Flood	N/A	0	0	0K	0K
41 <a href="#">Hartselle</a>	06/15/2009	19:30 PM	Flash Flood	N/A	0	0	0K	0K
42 <a href="#">Griffin Addition</a>	08/01/2009	16:45 PM	Flash Flood	N/A	0	0	0K	0K
43 <a href="#">Moulton Hgts</a>	08/01/2009	16:45 PM	Flash Flood	N/A	0	0	0K	0K
44 <a href="#">Trinity</a>	12/08/2009	20:00 PM	Flash Flood	N/A	0	0	500K	0K
45 <a href="#">Oak Ridge</a>	12/09/2009	22:30 PM	Flood	N/A	0	0	1.0M	0K
TOTALS:					0	2	1.766M	5K

Source: NCDC/NOAA Storm Events

### Non-Hurricane Related Flood History in Morgan County, Alabama

According to the National Climatic Data Center, there were ten significant flooding events in Morgan County during the period from July 8, 1997 to December 9, 2009 resulting in \$1.766



million of property damage and \$5,000 of crop damage. A flash flood as a result of an ice storm on February 9, 1994 resulted in two injuries but no property or crop damages.

**Probability of Flooding in Morgan County, 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. It is also often referred to as the “100-year flood” since its probability of occurrence suggests it should only occur once every 100 years. This expression is, however, merely a simple and general way to express the statistical likelihood of a flood; actual recurrence periods are variable from place to place. Smaller floods occur more often than larger (deeper and more widespread) floods. Thus, a “10-year” flood has a greater likelihood of occurring than a “100-year” flood. **Table 5.2-3** shows a range of flood recurrence intervals and their probabilities of occurrence.

Morgan County experienced 45 flood events in a 15 year period resulting in a greater than 100% probability that a flood event will occur on an annual basis. The total amount of damages for the 45 flood events was \$1,771,000 with 10 flood events causing damage resulting in an estimated \$177,100 of expected annual damages from future events.

**Table 5.2-3**

**Flood Probability Terms**

<b>Flood Recurrence Intervals</b>	<b>Percent Chance of Occurrence Annually</b>
10-Year	10.0%
50-Year	2.0%
100-Year	1.0%
500-Year	0.2%

*Source: FEMA, August 2001*

**Flood (Riverine and Flash)** – Morgan County has experienced some flood and flash flood damages in the past as reported to the National Weather Service. Forty-three flash floods and two floods occurred in Morgan County between 1950 and 2009, resulting in two injuries in February of 1994.

**Hurricane/Tropical Storm Related Flood History in Morgan County, Alabama**

In October 1995 Hurricane Opal rushed across the panhandle of Florida and into Alabama, resulting in a presidential disaster declaration for Morgan County on October 4, 1995. Heavy rains, accompanying Opal caused inland flooding. The State of Alabama experienced two deaths, 0.1 billion dollars of property damage and 10 million dollars of crop damage which included Morgan County, AL as a result of Hurricane Opal. Damage also decreased as you went north in the state. Damage varied with many trees, signs, and power lines downed. At the worst, 2.6 million people in Alabama were without electricity, some for over a week. The center of the



storm entered the state near the Covington/Escambia County line on the Florida border. It moved north-northeast with the center moving just west of the city of Montgomery, near the City of Talladega, and near Fort Payne before exiting the state near the northeast tip. Primary damage came from strong wind which toppled trees and power lines and damaged signs. Mobile homes were damaged both by falling trees and by strong wind. Heavy rain also caused creeks and streams to swell to bankfull and beyond, however, there were very few reports of water flooding buildings. Water damage occurred to structures in many locations where wind or falling trees damaged roofs.

Hurricane Ivan made landfall on September 16, 2004 near Gulf Shores in Baldwin County as a strong Category 3 hurricane. As Ivan moved ashore during the morning hours of September 16, the winds caused major damage to trees along and east of the track of the storm. Tropical storm force winds were felt across the entire county causing trees to break and damage homes and vehicles. While some structural wind damage would have been expected, most of the major structural damage that occurred over inland areas would not have been as substantial if it had not been for fallen trees. No injuries or property and crop damage occurred in Morgan County. The entire county was declared a Federal Disaster Area and received only Individual Assistance from the federal government.

Hurricane Dennis made landfall on July 10, 2005 at the Santa Rosa Sound in Florida, approximately 25 miles from the Florida-Alabama state line. The remnants of tropical storm Dennis moved northward from the Gulf Coast and into the Tennessee Valley during the evening of July 10th. Gusty winds in excess of tropical storm force resulted in some minor tree damage across north Alabama along with several power outages. The winds and rain diminished during the early morning hours of July 11th.

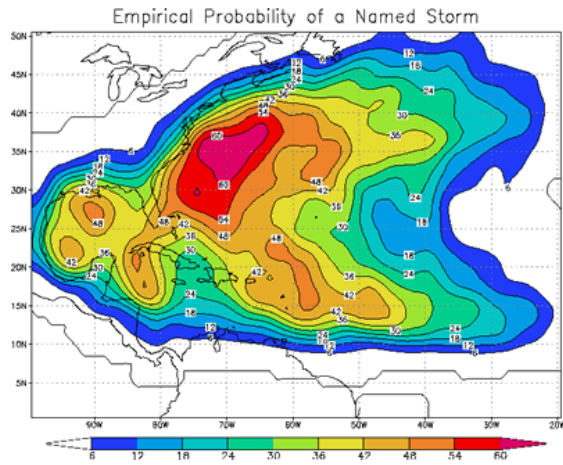
Hurricane Katrina made landfall along the Louisiana-Mississippi border on August 29, 2005, approximately 80 miles east of the Mississippi-Alabama border. Katrina was still a strong tropical storm as the center passed just west of North Alabama during the evening hours of August 29th. Most of North Alabama experienced tropical storm force wind gusts for several hours with a few wind gusts as high as 60 mph being reported. While structural damage was very limited, a few homes did receive minor roof damage due to the loss of a few shingles. Numerous trees and power lines were blown down across the entire area and thousands of people lost power. Katrina moved relatively quickly to the north and thus rainfall was limited. Rainfall amounts were around four to five inches near the Alabama/Mississippi line but tapered off significantly farther to the east with locations near the Alabama/Georgia line only seeing a half inch or less.

### **General Description of the Hazard**

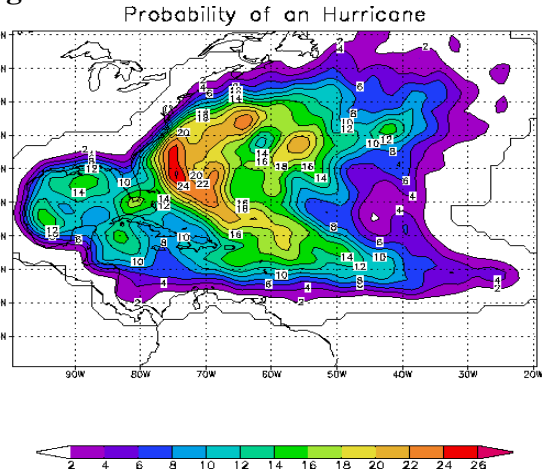
Studies of Hurricanes Hugo, Andrew, and Opal offer evidence that inland counties, including Morgan, can receive significant hurricane damage. Hurricanes often spawn tornadoes and cause flooding from intense rain. In this respect, hurricanes pose a threat to the entire county, with a low to medium effect on Morgan County, AL.



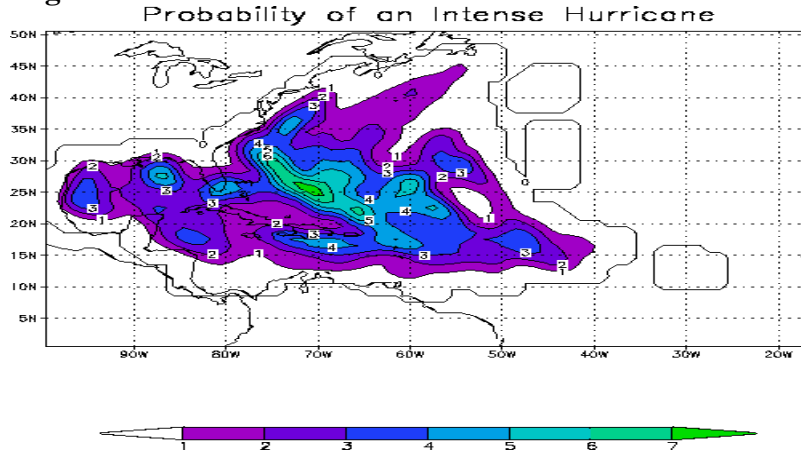
**Figure 5.2-1**



**Figure 5.2-2**



**Figure 5.2-3**



From 1944 – 1999, the Atlantic Oceanographic and Meteorological Laboratory performed analyses and counted hits when a hurricane or storm was within 100 miles of an area during the June to November hurricane season. Morgan County’s approximate likelihood of being affected by these events is shown in **Figure 5.2-1**. The same methodology was used to perform an analysis for the chance that a hurricane will directly affect an area within 60 miles and 30 miles. Morgan County’s risk zones are shown in **Figures 5.2-2** and **5.2-3**. This information indicates Morgan County to be at risk from a named storm and a hurricane; however, Morgan County is not at risk for an intense hurricane.

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 hurricane pile water in the 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.

**Table 5.2-4 Hurricane/High Winds/Tropical Storm Damage for Morgan County, AL**

4 Hurricane and Tropical Storm Event(s) were reported in Morgan County, Alabama between 01/01/1950 and 02/28/2010.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">ALZ001&gt;050</a>	10/04/1995	1200	Hurricane Opal/High Winds	N/A	2	0	0.1B	10.0M
2 Countywide	09/16/2004	3:30 pm	Hurricane Ivan	50 kts.	0	3	2.5M	0
3 <a href="#">ALZ001 - 001&gt;003 - 005&gt;010 - 016</a>	07/10/2005	06:00 PM	Tropical Storm	N/A	0	0	0	0
4 <a href="#">ALZ001&gt;010 - 016</a>	08/29/2005	08:00 PM	Tropical Storm	N/A	0	0	0	0
<b>TOTALS:</b>					2	3	100.000M	10.000M

Source: NCDC/NOAA Storm Events

### 5.2.2 Dam/Levee Failures

#### General Description of the Hazard

A dam is barriers constructed across a watercourse in order to store, control, or divert water. Dams are usually constructed of earth, rock, concrete, or mine tailings. 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. 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 wall 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 erosions due to embankment or foundation leakage or piping
- Improper maintenance
- Improper design
- Negligent operation
- Failure of upstream dams
- Landslides into reservoirs
- High winds
- Earthquakes

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. According to HAZUS-MH 2009, Morgan County has 2 High Density Polyethylene (HPDE - Earth) Dams. Both of these dams are considered High Hazard Dams. In the event of a flood or significant earthquake in Morgan County, the possibility for an emergency situation could exist at these dams. The MCEMA is prepared to coordinate efforts if an event arises.

Dam failures are potentially the worst flood events. A dam failure is usually the result of neglect, poor design, or structural damage caused by a major event such as an earthquake.

**Hazard Profile.** Historical records of dam/levee failures for Morgan County are not available.

**Community Impact.** When a dam fails, a large quantity of water is suddenly released downstream, destroying anything in its path. The area impacted by the water emitted by dam failure would encounter the same risks as those in a flood zone during periods of flooding. The area directly affected by the water released during a dam failure is not county wide.

**Location and Extents.** **Figure 5.2-20** depicts the locations of dams in Morgan County. According to the HAZUS 2009 database, there are 2 identified dams in Morgan County, no major dams of which have been categorized as having a high hazard classification (according to the National Oceanographic and Atmospheric Administration as shown in **Figure 5.2-21**). This classification is assigned to a dam depending upon the urban development directly downstream of the dam and whether or not failure would result in serious economic loss. The classification is not an indication of the quality of the dams' construction.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a dam failure event is equal to that of a flood event which is minor to major.

**Probability of Future Occurrences.** The risks associated with dam/levee failures are the same as those risks associated with flooding.

Morgan County experienced 45 flood events in a 15 year period resulting in a greater than 100% probability that a flood event will occur on an annual basis. The total amount of damages for the 45 flood events was \$1,771,000 with 10 flood events causing damage resulting in an estimated \$177,100 of expected annual damages from future events.

### **Dam Failure History in Morgan County, Alabama**

There have been no significant dam or levee failures reported in Morgan County.

### **Probability of Dam Failure in Alabama**

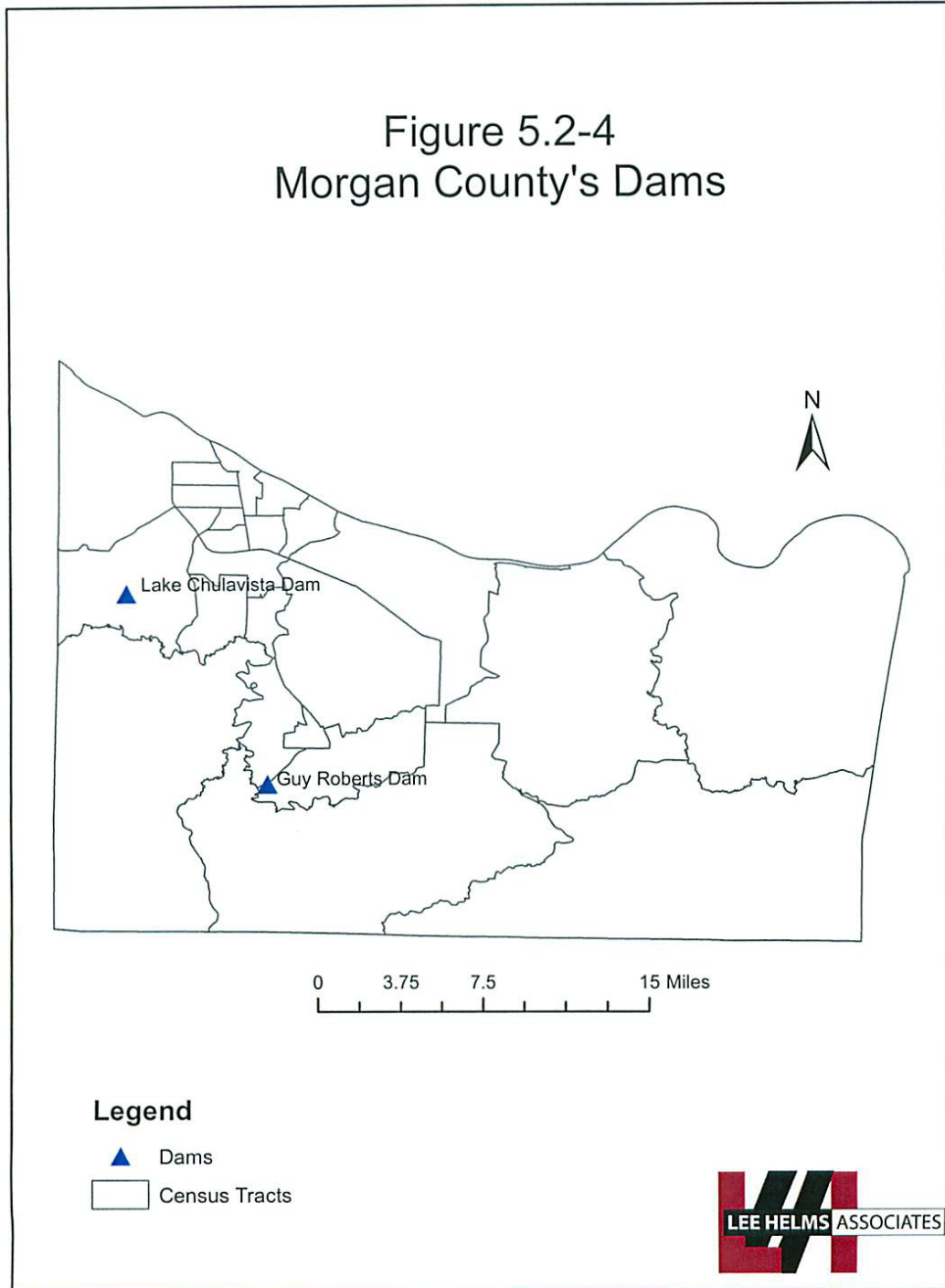
The generally accepted safety standard for the design of dams is the Inflow Design Flood (IDF) which is "... the flood flow above which the incremental increase in water surface elevation downstream due to failure of a dam or other water retaining structure is no longer considered to present an unacceptable 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 U.S. Army Corps of Engineers, 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, including Morgan County, 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 Affairs. 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 down to the local NFIP Coordinator. This legislation and ADECA's efforts are further discussed in **Section 4.3**.

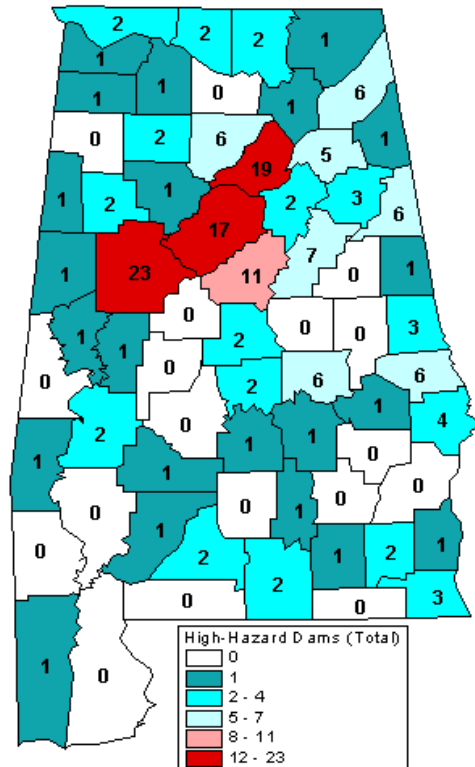
Once established, the program will provide an up-to-date inventory of dams in Morgan County. A full inventory of dams will help to benefit public safety and emergency response operations in the event of a natural or other disaster. It will also provide for the inspection and permitting (certification) 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 countywide basis because of the lack of information available. The qualitative probability is rated low in **Section 5.3** 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 5.2-4  
Morgan County's Dams



Source: HAZUS 2009



**Figure 5.2-5**

**Morgan County – 0 High Hazard Dams**

*Source: National Oceanographic and Atmospheric Administration, 1997*

**5.2.3 High Winds (Tornadoes, Hurricanes, and Windstorms)**

**Thunderstorm/Windstorm Related High Wind History in Morgan County, AL**

**Table 5.2-5 Morgan County Thunderstorm and High Wind Events**

241 THUNDERSTORM AND HIGH WIND event(s) were reported in Morgan County, Alabama between 01/01/1950 and 02/28/2010.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">MORGAN</a>	02/17/1956	2200	Tstm Wind	0 kts.	0	0	0	0
2 <a href="#">MORGAN</a>	08/09/1960	1700	Tstm Wind	0 kts.	0	0	0	0
3 <a href="#">MORGAN</a>	03/11/1963	1430	Tstm Wind	0 kts.	0	0	0	0

4	<a href="#">MORGAN</a>	03/19/1963	1900	Tstm Wind	0 kts.	0	0	0	0
5	<a href="#">MORGAN</a>	02/05/1964	1300	Tstm Wind	0 kts.	0	0	0	0
6	<a href="#">MORGAN</a>	04/23/1964	1525	Tstm Wind	0 kts.	0	0	0	0
7	<a href="#">MORGAN</a>	04/23/1964	1530	Tstm Wind	0 kts.	0	0	0	0
8	<a href="#">MORGAN</a>	06/23/1964	1300	Tstm Wind	0 kts.	0	0	0	0
9	<a href="#">MORGAN</a>	11/10/1966	0820	Tstm Wind	0 kts.	0	0	0	0
10	<a href="#">MORGAN</a>	04/26/1967	1145	Tstm Wind	0 kts.	0	0	0	0
11	<a href="#">MORGAN</a>	05/07/1967	0130	Tstm Wind	0 kts.	0	0	0	0
12	<a href="#">MORGAN</a>	05/07/1967	0140	Tstm Wind	0 kts.	0	0	0	0
13	<a href="#">MORGAN</a>	05/12/1967	1740	Tstm Wind	0 kts.	0	0	0	0
14	<a href="#">MORGAN</a>	06/28/1967	1730	Tstm Wind	0 kts.	0	0	0	0
15	<a href="#">MORGAN</a>	12/18/1967	0330	Tstm Wind	0 kts.	0	0	0	0
16	<a href="#">MORGAN</a>	03/11/1968	2215	Tstm Wind	0 kts.	0	0	0	0
17	<a href="#">MORGAN</a>	04/25/1973	1634	Tstm Wind	0 kts.	0	0	0	0
18	<a href="#">MORGAN</a>	03/20/1974	2200	Tstm Wind	0 kts.	0	0	0	0
19	<a href="#">MORGAN</a>	03/24/1975	0100	Tstm Wind	0 kts.	0	0	0	0
20	<a href="#">MORGAN</a>	03/24/1975	0330	Tstm Wind	0 kts.	0	0	0	0
21	<a href="#">MORGAN</a>	09/09/1975	2130	Tstm Wind	0 kts.	0	0	0	0
22	<a href="#">MORGAN</a>	06/13/1977	1730	Tstm Wind	0 kts.	0	0	0	0
23	<a href="#">MORGAN</a>	07/15/1977	1630	Tstm Wind	0 kts.	0	0	0	0
24	<a href="#">MORGAN</a>	02/10/1981	1015	Tstm Wind	0 kts.	0	0	0	0
25	<a href="#">MORGAN</a>	05/18/1981	1740	Tstm Wind	0 kts.	0	0	0	0
26	<a href="#">MORGAN</a>	07/17/1981	1430	Tstm Wind	0 kts.	0	0	0	0
27	<a href="#">MORGAN</a>	03/25/1982	1300	Tstm Wind	0 kts.	0	0	0	0
28	<a href="#">MORGAN</a>	05/19/1983	0300	Tstm Wind	0 kts.	0	0	0	0
29	<a href="#">MORGAN</a>	11/23/1983	1200	Tstm Wind	0 kts.	0	0	0	0
30	<a href="#">MORGAN</a>	11/23/1983	1200	Tstm Wind	0 kts.	0	0	0	0
31	<a href="#">MORGAN</a>	05/03/1984	0100	Tstm Wind	0 kts.	0	0	0	0
32	<a href="#">MORGAN</a>	05/07/1984	1440	Tstm Wind	0 kts.	0	0	0	0
33	<a href="#">MORGAN</a>	05/07/1984	1940	Tstm Wind	0 kts.	0	0	0	0
34	<a href="#">MORGAN</a>	06/14/1984	1520	Tstm Wind	0 kts.	0	0	0	0



35	<a href="#">MORGAN</a>	06/21/1984	1120	Tstm Wind	0 kts.	0	0	0	0
36	<a href="#">MORGAN</a>	07/07/1984	1045	Tstm Wind	0 kts.	0	0	0	0
37	<a href="#">MORGAN</a>	11/10/1984	1420	Tstm Wind	0 kts.	0	0	0	0
38	<a href="#">MORGAN</a>	04/05/1985	1555	Tstm Wind	0 kts.	0	0	0	0
39	<a href="#">MORGAN</a>	06/07/1985	1620	Tstm Wind	0 kts.	0	0	0	0
40	<a href="#">MORGAN</a>	06/17/1985	1505	Tstm Wind	0 kts.	0	0	0	0
41	<a href="#">MORGAN</a>	02/17/1986	2042	Tstm Wind	0 kts.	0	0	0	0
42	<a href="#">MORGAN</a>	08/07/1986	1815	Tstm Wind	0 kts.	0	0	0	0
43	<a href="#">MORGAN</a>	08/07/1986	1830	Tstm Wind	0 kts.	0	0	0	0
44	<a href="#">MORGAN</a>	08/16/1986	1430	Tstm Wind	0 kts.	0	0	0	0
45	<a href="#">MORGAN</a>	08/27/1986	1300	Tstm Wind	0 kts.	0	0	0	0
46	<a href="#">MORGAN</a>	01/19/1988	1500	Tstm Wind	52 kts.	0	0	0	0
47	<a href="#">MORGAN</a>	04/02/1988	0930	Tstm Wind	0 kts.	0	0	0	0
48	<a href="#">MORGAN</a>	06/02/1988	1515	Tstm Wind	0 kts.	0	0	0	0
49	<a href="#">MORGAN</a>	07/14/1988	2100	Tstm Wind	0 kts.	0	0	0	0
50	<a href="#">MORGAN</a>	07/16/1988	1445	Tstm Wind	0 kts.	0	0	0	0
51	<a href="#">MORGAN</a>	02/20/1989	2315	Tstm Wind	0 kts.	0	0	0	0
52	<a href="#">MORGAN</a>	04/04/1989	0340	Tstm Wind	0 kts.	0	0	0	0
53	<a href="#">MORGAN</a>	06/14/1989	1120	Tstm Wind	0 kts.	0	0	0	0
54	<a href="#">MORGAN</a>	11/15/1989	1615	Tstm Wind	0 kts.	0	0	0	0
55	<a href="#">MORGAN</a>	05/10/1990	0115	Tstm Wind	0 kts.	0	1	0	0
56	<a href="#">MORGAN</a>	06/09/1990	1630	Tstm Wind	0 kts.	0	0	0	0
57	<a href="#">MORGAN</a>	07/22/1990	1615	Tstm Wind	0 kts.	0	0	0	0
58	<a href="#">MORGAN</a>	08/21/1990	1300	Tstm Wind	0 kts.	0	0	0	0
59	<a href="#">MORGAN</a>	10/04/1990	0605	Tstm Wind	0 kts.	0	0	0	0
60	<a href="#">MORGAN</a>	12/18/1990	1020	Tstm Wind	0 kts.	0	0	0	0
61	<a href="#">MORGAN</a>	03/27/1991	1930	Tstm Wind	0 kts.	0	0	0	0
62	<a href="#">MORGAN</a>	05/10/1991	0010	Tstm Wind	0 kts.	0	1	0	0
63	<a href="#">MORGAN</a>	07/09/1991	0041	Tstm Wind	0 kts.	0	0	0	0
64	<a href="#">MORGAN</a>	03/10/1992	0145	Tstm Wind	0 kts.	0	0	0	0

65	<a href="#">MORGAN</a>	04/20/1992	1126	Tstm Wind	0 kts.	0	0	0	0
66	<a href="#">MORGAN</a>	04/20/1992	1135	Tstm Wind	0 kts.	0	0	0	0
67	<a href="#">MORGAN</a>	04/20/1992	1144	Tstm Wind	0 kts.	0	0	0	0
68	<a href="#">MORGAN</a>	05/29/1992	1620	Tstm Wind	0 kts.	0	0	0	0
69	<a href="#">MORGAN</a>	06/18/1992	1545	Tstm Wind	0 kts.	0	0	0	0
70	<a href="#">MORGAN</a>	07/05/1992	1220	Tstm Wind	0 kts.	0	0	0	0
71	<a href="#">MORGAN</a>	08/27/1992	1145	Tstm Wind	0 kts.	0	0	0	0
72	<a href="#">MORGAN</a>	08/27/1992	1248	Tstm Wind	0 kts.	0	0	0	0
73	<a href="#">MORGAN</a>	09/03/1992	1420	Tstm Wind	0 kts.	0	0	0	0
74	<a href="#">MORGAN</a>	08/20/1993	1745	Thunderstorm Winds	0 kts.	0	0	0	0
75	<a href="#">MORGAN</a>	11/17/1993	0745	Thunderstorm Winds	0 kts.	0	0	0	0
76	<a href="#">Somerville</a>	05/15/1994	1803	Thunderstorm Winds	0 kts.	0	0	50K	0
77	<a href="#">Oden Ridge &amp; Eva</a>	05/15/1994	2007	Thunderstorm Winds	0 kts.	0	0	5K	0
78	<a href="#">Falkville</a>	06/15/1994	1555	Thunderstorm Winds	0 kts.	0	0	50K	0
79	<a href="#">MORGAN</a>	06/25/1994	1400	Thunderstorm Winds	50 kts.	0	0	50K	0
80	<a href="#">MORGAN</a>	03/07/1995	1700	Thunderstorm Winds	0 kts.	0	0	30K	0
81	<a href="#">Hulaco</a>	03/20/1995	2105	Thunderstorm Winds	0 kts.	0	0	2K	0
82	<a href="#">Decatur</a>	04/19/1995	1400	Thunderstorm Winds	0 kts.	0	0	0	0
83	<a href="#">Massey</a>	06/06/1995	1847	Thunderstorm Winds	0 kts.	0	0	15K	0
84	<a href="#">Danville</a>	07/03/1995	1615	Thunderstorm Winds	0 kts.	0	0	5K	0
85	<a href="#">Hartselle</a>	07/03/1995	1630	Thunderstorm Winds	0 kts.	0	0	5K	0
86	<a href="#">Oak Ridge</a>	07/03/1995	1630	Thunderstorm Wind	0 kts.	0	0	45K	0

87	<a href="#">Hartselle</a>	07/15/1995	1600	Thunderstorm Winds	0 kts.	0	0	4K	0
88	<a href="#">MORGAN</a>	07/21/1995	1725	Thunderstorm Winds	0 kts.	0	0	15K	0
89	<a href="#">Decatur</a>	07/24/1995	1500	Thunderstorm Winds	0 kts.	0	0	0	0
90	<a href="#">Hartselle</a>	07/26/1995	1508	Thunderstorm Winds	0 kts.	0	0	5K	0
91	<a href="#">Hartselle</a>	08/08/1995	1434	Thunderstorm Winds	0 kts.	0	0	1K	0
92	<a href="#">Danville</a>	08/08/1995	1436	Thunderstorm Winds	0 kts.	0	0	2K	0
93	<a href="#">Decatur</a>	04/20/1996	07:30 AM	Tstm Wind	50 kts.	0	0	28K	4K
94	<a href="#">Hartselle</a>	04/23/1996	12:30 AM	Tstm Wind	50 kts.	0	0	25K	2K
95	<a href="#">Decatur</a>	04/29/1996	02:00 PM	Tstm Wind	52 kts.	0	0	10K	2K
96	<a href="#">Hartselle</a>	05/27/1996	04:00 PM	Tstm Wind	52 kts.	0	0	25K	2K
97	<a href="#">Priceville</a>	05/27/1996	07:45 PM	Tstm Wind	50 kts.	0	0	10K	2K
98	<a href="#">Decatur</a>	05/28/1996	01:00 AM	Tstm Wind	50 kts.	0	0	10K	0K
99	<a href="#">Decatur</a>	07/02/1996	01:00 PM	Tstm Wind	65 kts.	0	0	30K	0K
100	<a href="#">Hartselle</a>	07/14/1996	06:44 PM	Tstm Wind	50 kts.	0	0	15K	2K
101	<a href="#">Lacey Spring</a>	07/14/1996	07:03 PM	Tstm Wind	50 kts.	0	0	12K	0K
102	<a href="#">Priceville</a>	08/24/1996	12:50 PM	Tstm Wind	50 kts.	0	0	20K	2K
103	<a href="#">Falkville</a>	09/16/1996	07:00 AM	Tstm Wind	50 kts.	0	0	5K	1K
104	<a href="#">Decatur</a>	11/07/1996	03:15 PM	Tstm Wind	50 kts.	0	0	5K	0K
105	<a href="#">Decatur</a>	01/04/1997	11:30	Tstm Wind	50	0	0	15K	3K

		PM		kts.				
106 <a href="#">Decatur</a>	02/21/1997	07:10 AM	Tstm Wind	50 kts.	0	0	4K	0K
107 <a href="#">Trinity</a>	03/05/1997	01:40 PM	Tstm Wind	50 kts.	0	0	4K	0K
108 <a href="#">Falkville</a>	03/05/1997	02:21 PM	Tstm Wind	50 kts.	0	0	4K	0K
109 <a href="#">Decatur</a>	05/02/1997	05:00 PM	Tstm Wind	50 kts.	0	0	6K	0K
110 <a href="#">Eva</a>	06/16/1997	03:23 PM	Tstm Wind	50 kts.	0	0	5K	0K
111 <a href="#">Somerville</a>	06/16/1997	03:28 PM	Tstm Wind	50 kts.	0	0	0	0
112 <a href="#">Somerville</a>	07/28/1997	02:28 PM	Tstm Wind	0 kts.	0	0	4K	0K
113 <a href="#">Decatur</a>	10/25/1997	06:57 PM	Tstm Wind	0 kts.	0	0	1K	0K
114 <a href="#">Hartselle</a>	04/03/1998	04:37 PM	Tstm Wind	50 kts.	0	0	2K	0K
115 <a href="#">Decatur</a>	04/08/1998	08:20 PM	Tstm Wind	55 kts.	0	0	20K	10K
116 <a href="#">Decatur</a>	04/08/1998	08:45 PM	Tstm Wind	50 kts.	0	0	10K	5K
117 <a href="#">Countywide</a>	06/05/1998	04:25 AM	Tstm Wind	60 kts.	0	0	65K	12K
118 <a href="#">Hartselle</a>	06/19/1998	09:37 AM	Tstm Wind	50 kts.	0	0	5K	0K
119 <a href="#">Decatur</a>	04/04/1999	12:05 AM	Tstm Wind	50 kts.	0	0	3K	0K
120 <a href="#">Hartselle</a>	06/05/1999	02:04 AM	Tstm Wind	50 kts.	0	0	5K	0K
121 <a href="#">Hartselle</a>	07/24/1999	05:30 PM	Tstm Wind	50 kts.	0	0	0K	0K
122 <a href="#">Laceys Spg</a>	01/03/2000	10:30 PM	Tstm Wind	50 kts.	0	0	25K	0K
123 <a href="#">Countywide</a>	01/03/2000	11:30 PM	Tstm Wind	50 kts.	0	0	5K	0K

124 <a href="#">Countywide</a>	02/13/2000	07:14 PM	Tstm Wind	65 kts.	0	0	60K	0K
125 <a href="#">Hartselle</a>	02/13/2000	07:39 PM	Tstm Wind	60 kts.	0	0	40K	0K
126 <a href="#">Danville</a>	04/03/2000	11:00 AM	Tstm Wind	65 kts.	0	0	5K	0K
127 <a href="#">Priceville</a>	04/03/2000	11:25 AM	Tstm Wind	65 kts.	0	0	20K	0K
128 <a href="#">Massey</a>	04/20/2000	07:22 PM	Tstm Wind	55 kts.	0	0	3K	0K
129 <a href="#">Decatur</a>	07/12/2000	04:17 PM	Tstm Wind	55 kts.	0	0	3K	0K
130 <a href="#">Countywide</a>	07/20/2000	03:50 PM	Tstm Wind	60 kts.	0	0	30K	0K
131 <a href="#">Priceville</a>	08/10/2000	04:35 PM	Tstm Wind	50 kts.	0	0	3K	0K
132 <a href="#">Decatur</a>	09/24/2000	08:10 PM	Tstm Wind	50 kts.	0	0	2K	0K
133 <a href="#">Countywide</a>	02/16/2001	03:10 PM	Tstm Wind	55 kts.	0	0	6K	0K
134 <a href="#">Decatur</a>	06/04/2001	05:05 PM	Tstm Wind	50 kts.	0	0	4K	0K
135 <a href="#">Hartselle</a>	06/26/2001	02:55 PM	Tstm Wind	50 kts.	0	0	2K	0K
136 <a href="#">Countywide</a>	07/05/2001	12:40 PM	Tstm Wind	55 kts.	0	0	4K	0K
137 <a href="#">Countywide</a>	07/10/2001	03:25 PM	Tstm Wind	50 kts.	0	0	2K	0K
138 <a href="#">Decatur</a>	10/24/2001	08:45 PM	Tstm Wind	50 kts.	0	0	3K	0K
139 <a href="#">Trinity</a>	11/29/2001	04:25 PM	Tstm Wind	50 kts.	0	0	2K	0K
140 <a href="#">Decatur</a>	05/03/2002	03:15 AM	Tstm Wind	50 kts.	0	0	2K	0K
141 <a href="#">Union Hill</a>	08/20/2002	02:40 PM	Tstm Wind	50 kts.	0	0	10K	0K
142 <a href="#">Eva</a>	08/20/2002	02:50	Tstm Wind	50	0	0	4K	0K

		PM		kts.				
143	<a href="#">Decatur</a>	05/06/2003	10:00 PM	Tstm Wind	60 kts.	0	0	0
144	<a href="#">Hartselle</a>	05/06/2003	10:00 PM	Tstm Wind	50 kts.	0	0	0
145	<a href="#">Decatur</a>	05/17/2003	10:24 AM	Tstm Wind	50 kts.	0	0	0
146	<a href="#">Decatur</a>	06/11/2003	02:10 PM	Tstm Wind	50 kts.	0	0	0
147	<a href="#">Priceville</a>	06/11/2003	02:15 PM	Tstm Wind	50 kts.	0	0	0
148	<a href="#">Falkville</a>	07/21/2003	02:45 PM	Tstm Wind	60 kts.	0	0	0
149	<a href="#">Decatur</a>	08/22/2003	10:00 PM	Tstm Wind	50 kts.	0	0	0
150	<a href="#">Falkville</a>	11/18/2003	01:03 PM	Tstm Wind	60 kts.	0	0	0
151	<a href="#">Falkville</a>	11/18/2003	01:23 PM	Tstm Wind	60 kts.	0	0	10K
152	<a href="#">Somerville</a>	11/18/2003	12:15 PM	Tstm Wind	60 kts.	0	0	0
153	<a href="#">Decatur</a>	05/30/2004	11:50 PM	Tstm Wind	60 kts.	0	0	0
154	<a href="#">Decatur</a>	06/22/2004	04:20 PM	Tstm Wind	50 kts.	0	0	0
155	<a href="#">Decatur</a>	07/07/2004	03:20 PM	Tstm Wind	52 kts.	0	0	0
156	<a href="#">Massey</a>	07/07/2004	03:30 PM	Tstm Wind	50 kts.	0	0	0
157	<a href="#">Hartselle</a>	07/12/2004	02:43 PM	Tstm Wind	50 kts.	0	0	0
158	<a href="#">Hartselle</a>	07/13/2004	02:43 PM	Tstm Wind	50 kts.	0	0	0
159	<a href="#">Decatur</a>	07/14/2004	03:50 PM	Tstm Wind	50 kts.	0	0	0
160	<a href="#">Hulaco</a>	07/14/2004	06:20 PM	Tstm Wind	50 kts.	0	0	0

161	<a href="#">Decatur</a>	04/30/2005	01:17 AM	Tstm Wind	50 kts.	0	0	0	0
162	<a href="#">Eva</a>	05/20/2005	12:18 PM	Tstm Wind	50 kts.	0	0	0	0
163	<a href="#">Somerville</a>	06/06/2005	12:50 PM	Tstm Wind	50 kts.	0	0	0	0
164	<a href="#">Basham</a>	07/01/2005	04:20 PM	Tstm Wind	50 kts.	0	0	10K	0
165	<a href="#">Decatur</a>	07/01/2005	10:55 AM	Tstm Wind	50 kts.	0	0	0	0
166	<a href="#">Decatur</a>	07/21/2005	02:50 PM	Tstm Wind	50 kts.	0	0	0	0
167	<a href="#">Decatur</a>	08/06/2005	03:08 AM	Tstm Wind	50 kts.	0	0	0	0
168	<a href="#">Eva</a>	11/28/2005	02:23 PM	Tstm Wind	60 kts.	0	0	0	0
169	<a href="#">Trinity</a>	12/04/2005	01:12 AM	Tstm Wind	70 kts.	0	0	15K	0
170	<a href="#">Decatur</a>	12/04/2005	01:15 AM	Tstm Wind	60 kts.	0	0	0	0
171	<a href="#">Falkville</a>	12/04/2005	01:35 AM	Tstm Wind	60 kts.	0	0	0	0
172	<a href="#">Laceys Spg</a>	12/04/2005	01:35 AM	Tstm Wind	60 kts.	0	0	0	0
173	<a href="#">Eva</a>	03/09/2006	04:50 PM	Tstm Wind	80 kts.	0	0	5K	0
174	<a href="#">Decatur</a>	03/09/2006	05:10 PM	Tstm Wind	70 kts.	0	0	1K	0
175	<a href="#">Decatur</a>	06/04/2006	03:25 PM	Tstm Wind	50 kts.	0	0	0	0
176	<a href="#">Countywide</a>	07/19/2006	01:40 PM	Tstm Wind	50 kts.	0	0	0	0
177	<a href="#">Eva</a>	07/29/2006	12:50 PM	Tstm Wind	50 kts.	0	0	0	0
178	<a href="#">Decatur</a>	08/10/2006	12:59 PM	Tstm Wind	50 kts.	0	0	0	0
179	<a href="#">Hartselle</a>	08/20/2006	03:05	Tstm Wind	50	0	0	5K	0

		PM		kts.					
180	<a href="#">Decatur</a>	06/08/2007	15:10 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
181	<a href="#">Somerville</a>	06/15/2007	18:13 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
182	<a href="#">Trinity</a>	06/24/2007	15:00 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
183	<a href="#">Decatur</a>	07/01/2007	12:38 PM	Thunderstorm Wind	55 kts.	0	0	0K	0K
184	<a href="#">Hulaco</a>	07/01/2007	13:20 PM	Thunderstorm Wind	56 kts.	0	0	0K	0K
185	<a href="#">Decatur</a>	07/20/2007	09:06 AM	Thunderstorm Wind	50 kts.	0	0	0K	0K
186	<a href="#">Echols Xrds</a>	07/25/2007	17:45 PM	Thunderstorm Wind	50 kts.	0	0	0K	0K
187	<a href="#">Basham</a>	08/17/2007	15:02 PM	Thunderstorm Wind	50 kts.	0	0	0K	0K
188	<a href="#">Hartselle</a>	02/26/2008	01:55 AM	Thunderstorm Wind	50 kts.	0	0	5K	0K
189	<a href="#">Leesdale</a>	05/10/2008	23:35 PM	Thunderstorm Wind	52 kts.	0	0	3K	0K
190	<a href="#">Somerville</a>	05/10/2008	23:42 PM	Thunderstorm Wind	52 kts.	0	0	5K	0K
191	<a href="#">Cole Spgs</a>	05/10/2008	23:56 PM	Thunderstorm Wind	52 kts.	0	0	3K	0K
192	<a href="#">Furney Xrds</a>	07/22/2008	12:38 PM	Thunderstorm Wind	65 kts.	0	0	6K	0K
193	<a href="#">Hartselle</a>	07/22/2008	12:50 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
194	<a href="#">Decatur</a>	07/22/2008	13:35 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
195	<a href="#">Mt Tabor</a>	07/31/2008	14:20 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
196	<a href="#">Oden Ridge</a>	07/31/2008	14:42 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
197	<a href="#">Huntsville Laceys Sp</a>	08/07/2008	10:57 AM	Thunderstorm Wind	52 kts.	0	0	1K	0K



198 <a href="#">Huntsville Laceys Sp</a>	12/20/2008	18:30 PM	Thunderstorm Wind	56 kts.	0	0	4K	0K
199 <a href="#">Austinville</a>	04/02/2009	15:39 PM	Thunderstorm Wind	56 kts.	0	0	6K	0K
200 <a href="#">Furney Xrds</a>	04/02/2009	15:56 PM	Thunderstorm Wind	52 kts.	0	0	10K	0K
201 <a href="#">Brooksville</a>	04/02/2009	18:47 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
202 <a href="#">Somerville</a>	04/02/2009	18:50 PM	Thunderstorm Wind	56 kts.	0	0	16K	0K
203 <a href="#">Basham</a>	04/10/2009	13:00 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
204 <a href="#">Cedar Lake</a>	04/10/2009	13:00 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
205 <a href="#">Crowtown</a>	04/10/2009	13:01 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
206 <a href="#">Fairview</a>	04/10/2009	13:01 PM	Thunderstorm Wind	56 kts.	0	0	15K	0K
207 <a href="#">Brooksville</a>	04/10/2009	13:02 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
208 <a href="#">Decatur</a>	04/10/2009	13:02 PM	Thunderstorm Wind	52 kts.	0	0	4K	0K
209 <a href="#">Decatur</a>	04/10/2009	13:02 PM	Thunderstorm Wind	52 kts.	0	0	6K	0K
210 <a href="#">Center Dale</a>	04/10/2009	13:05 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
211 <a href="#">Penn</a>	04/10/2009	13:50 PM	Thunderstorm Wind	52 kts.	0	0	6K	0K
212 <a href="#">Brooksville</a>	04/19/2009	17:59 PM	Thunderstorm Wind	56 kts.	1	0	41K	0K
213 <a href="#">Morgan City</a>	05/01/2009	19:58 PM	Thunderstorm Wind	50 kts.	0	0	1K	0K
214 <a href="#">Center Dale</a>	05/01/2009	20:55 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
215 <a href="#">Oden Ridge</a>	05/02/2009	20:37 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
216 <a href="#">Morgan</a>	05/03/2009	14:33	Thunderstorm	50	0	0	2K	0K

<a href="#">City</a>		PM	Wind	kts.				
217 <a href="#">Oak Ridge</a>	05/06/2009	04:31 AM	Thunderstorm Wind	56 kts.	0	0	6K	0K
218 <a href="#">Oakworth</a>	05/06/2009	07:34 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
219 <a href="#">Oakworth</a>	05/06/2009	07:39 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
220 <a href="#">Lacon</a>	05/06/2009	07:43 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
221 <a href="#">Oden Ridge</a>	05/06/2009	07:43 AM	Thunderstorm Wind	52 kts.	0	0	6K	0K
222 <a href="#">Lacon</a>	05/06/2009	07:48 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
223 <a href="#">Center Grove</a>	05/06/2009	07:57 AM	Thunderstorm Wind	50 kts.	0	0	2K	0K
224 <a href="#">West Pt</a>	05/15/2009	19:15 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
225 <a href="#">Moulton Hgts</a>	05/27/2009	17:05 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
226 <a href="#">Trinity</a>	06/10/2009	17:23 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
227 <a href="#">Pumpkin Center</a>	06/14/2009	09:48 AM	Thunderstorm Wind	52 kts.	0	0	10K	0K
228 <a href="#">Griffin Addition</a>	06/15/2009	18:30 PM	Thunderstorm Wind	83 kts.	0	0	500K	0K
229 <a href="#">Morgan City</a>	06/28/2009	15:55 PM	Thunderstorm Wind	50 kts.	0	0	8K	0K
230 <a href="#">Union Hill</a>	06/28/2009	15:55 PM	Thunderstorm Wind	50 kts.	0	0	10K	0K
231 <a href="#">Griffin Addition</a>	07/05/2009	02:25 AM	Thunderstorm Wind	50 kts.	0	0	2K	0K
232 <a href="#">Basham</a>	07/12/2009	13:37 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
233 <a href="#">Pumpkin Center</a>	07/12/2009	13:39 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
234 <a href="#">Oakworth</a>	07/12/2009	13:48 PM	Thunderstorm Wind	50 kts.	0	0	5K	0K

235 <a href="#">Cole Spgs</a>	07/30/2009	17:50 PM	Thunderstorm Wind	56 kts.	0	0	30K	0K
236 <a href="#">Pumpkin Center</a>	10/09/2009	14:50 PM	Thunderstorm Wind	52 kts.	0	0	5K	0K
237 <a href="#">Pumpkin Center</a>	10/09/2009	14:53 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
238 <a href="#">Pumpkin Center</a>	10/09/2009	14:53 PM	Thunderstorm Wind	52 kts.	0	0	7K	0K
239 <a href="#">Pumpkin Center</a>	10/09/2009	14:53 PM	Thunderstorm Wind	52 kts.	0	0	10K	0K
240 <a href="#">Hartselle</a>	10/09/2009	15:02 PM	Thunderstorm Wind	52 kts.	0	0	4K	0K
241 <a href="#">Leesdale</a>	10/09/2009	15:03 PM	Thunderstorm Wind	52 kts.	0	0	3K	0K
TOTALS:					1	2	1.683 M	47K

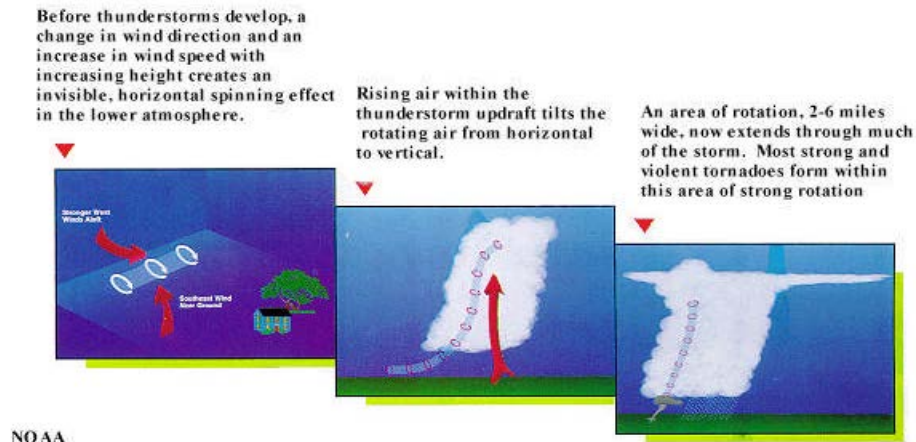
Source: NOAA Storm Events

The extent/range of magnitude or severity that could be experienced by Morgan County due to a thunderstorm/high wind event is minor to major.

Morgan County experienced 241 thunderstorm/high wind events in a 53 year period resulting in a greater than 100% probability that a thunderstorm/high wind event will occur on an annual basis. The total amount of damages for the 241 thunderstorm/high wind events was \$1,730,000 with 120 thunderstorm/high wind events causing damage resulting in an estimated \$14,417 of expected annual damages from future events.

### **Tornado Related High Wind History in Morgan County, AL General Description of the Hazard**

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. The formation of tornadoes from thunderstorms is explained in **Figure 5.2-6**.



**Figure 5.2-6**  
**How Do Tornadoes Form?**  
 Source: NWS Phoenix

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 5.2-6**. The letter F may precede the number (e.g., FO, F1, and F2). Most tornadoes last less than 30 minutes, but can exist for more than an hour. The path of a tornado can range from a few hundred feet to miles, and tornado widths may range from tens of yards to more than a quarter of a mile.

**Table 5.2-6**  
**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 mph	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 mph	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.

Category	Wind Speed	Description of Damage
F4	207-260 mph	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 5.2-7** and 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 is 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.

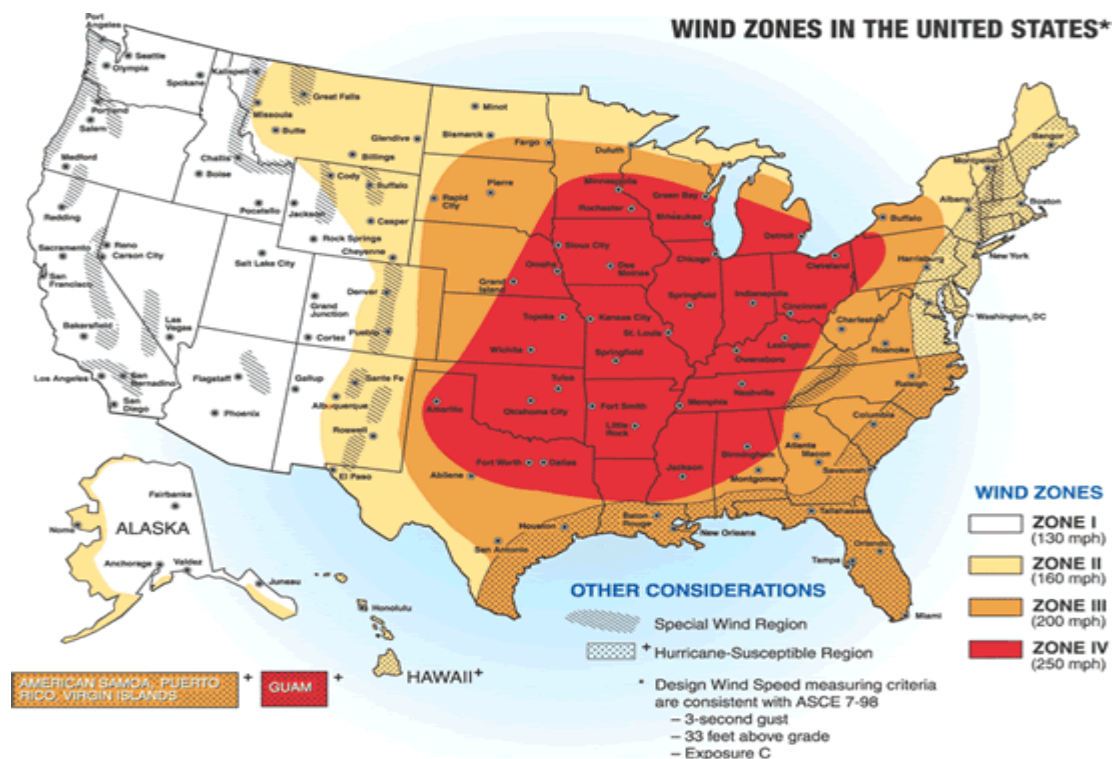
**Table 5.2-7  
Enhanced Fujita Tornado Scale**

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 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.

Category	Wind Speed	Description of Damage
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.

According to **Figure 5.2-7**, the U. S. Wind Zone map, Morgan County is located in Zone IV. This map shows the frequency and strength of extreme windstorms across the U. S. The map is based on 40 years of tornado history and more than 100 years of hurricane history. Zone IV has experienced both frequent and strong tornadoes, with wind speeds reaching 250 mph.

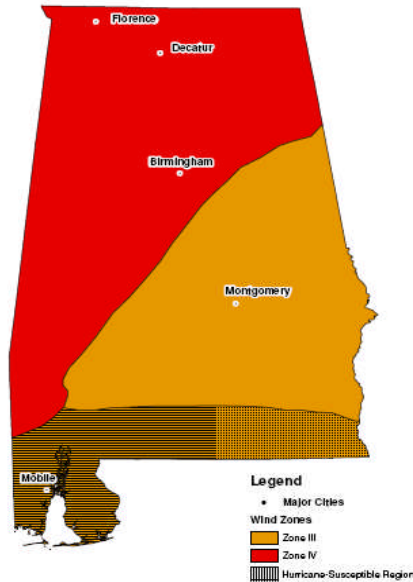


Source: [www.fema.gov](http://www.fema.gov)

**Figure 5.2-7**

**Nature of the Hazard in Morgan County, AL**

Figure 5.2-7 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 5.2-8**  
**Design Wind Speeds (3 second gust)\***  
 Source: ASCE 7-98  
 \*Zone 4 represents 250 mph

Since 1950 there have been 32 tornadoes reported to the National Weather Service and NOAA for Morgan County. Table 5.2-8 shows a summary of countywide tornado activities, including deaths, injuries, and property and crop damages from 1950 thru 2010.

**Table 5.2-8 Morgan County Tornado Events**

32 TORNADO(s) were reported in Morgan County, Alabama between 01/01/1950 and 02/28/2010.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** PropertyDamage  
**CrD:** Crop Damage

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">MORGAN</a>	03/22/1952	1500	Tornado	F4	4	50	25K	0
2 <a href="#">MORGAN</a>	04/24/1955	0545	Tornado	F4	5	20	2.5 M	0
3 <a href="#">MORGAN</a>	04/08/1957	1015	Tornado	F3	2	90	0K	0

4	<a href="#">MORGAN</a>	11/18/1957	1700	Tornado	F1	0	0	25K	0
5	<a href="#">MORGAN</a>	04/05/1958	2000	Tornado	F1	0	0	3K	0
6	<a href="#">MORGAN</a>	05/25/1958	1600	Tornado	F2	0	1	25K	0
7	<a href="#">MORGAN</a>	12/18/1967	0325	Tornado	F2	2	0	2.5 M	0
8	<a href="#">MORGAN</a>	08/01/1970	1845	Tornado	F1	0	0	25K	0
9	<a href="#">MORGAN</a>	11/27/1973	1845	Tornado	F2	0	3	250 K	0
10	<a href="#">MORGAN</a>	04/03/1974	1745	Tornado	F5	0	56	0K	0
11	<a href="#">MORGAN</a>	04/03/1974	2100	Tornado	F5	0	0	0K	0
12	<a href="#">MORGAN</a>	04/03/1974	2124	Tornado	F3	0	0	2.5 M	0
13	<a href="#">MORGAN</a>	05/12/1978	2315	Tornado	F1	0	11	250 K	0
14	<a href="#">MORGAN</a>	05/19/1983	0235	Tornado	F2	0	0	25K	0
15	<a href="#">MORGAN</a>	11/10/1984	1422	Tornado	F1	0	0	25K	0
16	<a href="#">MORGAN</a>	08/16/1985	1140	Tornado	F3	0	2	2.5 M	0
17	<a href="#">MORGAN</a>	08/16/1985	1351	Tornado	F3	0	0	2.5 M	0
18	<a href="#">MORGAN</a>	11/22/1992	0620	Tornado	F0	0	0	250 K	0
19	<a href="#">Lacey's Springs</a>	03/07/1995	1710	Tornado	F0	0	0	50K	0
20	<a href="#">Falkville</a>	01/22/1999	04:43 PM	Tornado	F0	0	0	0K	0K
21	<a href="#">Trinity</a>	11/24/2001	12:13 PM	Tornado	F2	0	0	250 K	0K
22	<a href="#">Decatur</a>	04/07/2006	09:16 PM	Tornado	F0	0	0	1K	0
23	<a href="#">Danville</a>	04/07/2006	09:41 PM	Tornado	F1	0	0	80K	0



24 <a href="#">Trinity</a>	06/19/2007	12:00 PM	Tornado	F0	0	0	0K	0K
25 <a href="#">Pumpkin Center</a>	02/06/2008	03:20 AM	Tornado	F2	0	0	0K	0K
26 <a href="#">Center Grove</a>	04/11/2008	13:06 PM	Tornado	F0	0	0	0K	0K
27 <a href="#">Oak Ridge</a>	05/08/2008	13:15 PM	Tornado	F0	0	0	10K	0K
28 <a href="#">Huntsville Laceys Sp</a>	04/02/2009	16:26 PM	Tornado	F1	0	0	66K	0K
29 <a href="#">Pumpkin Center</a>	04/19/2009	17:43 PM	Tornado	F0	0	0	25K	0K
30 <a href="#">Brooksville</a>	04/19/2009	17:58 PM	Tornado	F0	1	0	20K	0K
31 <a href="#">Pumpkin Center</a>	05/06/2009	07:27 AM	Tornado	F1	0	0	50K	0K
32 <a href="#">Oakworth</a>	05/06/2009	07:42 AM	Tornado	F0	0	0	50K	0K
TOTALS:					14	233	14.0 05M	0

Source: NOAA Storm Events

### Tornado Related High Wind History in Morgan County, Alabama

Table 5.2-8 shows a summary of Morgan County's annual tornado activity, including deaths, injuries, and property and crop damages from 1950 thru 2010. During this time period, Morgan County experienced 32 tornado events resulting in 14 deaths, 233 injuries, \$14.005 million in property damage, and no crop damage. Tornadoes are one of the most significant natural hazards that occur within Morgan County. Although they might not occur as frequently as other storms, an isolated tornado can cause incredible damages. Tornadoes are also the most likely hazard, with the possible exception of flooding, to cause injuries and death.

- On 4/3/74, a F3 tornado resulted in property damages of \$2,500,000, but no crop damages.
- On 8/16/85, two F3 tornadoes resulted in property damages of \$2,500,000, no crop damages, and two injuries.
- On 4/3/74, a F3 tornado resulted in property damages of \$2,500,000, but no crop damages.
- On 3/22/52 a F4 tornado resulted in 4 fatalities, 50 injuries, and \$25,000 of property damages.
- On 4/24/55 a F4 tornado resulted in 5 fatalities, 20 injuries, and \$2,500,000 of property damages.
- On 4/8/57 a F3 tornado resulted in 2 fatalities, 90 injuries, but no property or crop damages.
- On 5/25/58 a F2 tornado resulted in one injury and \$25,000 of property damages.

- On 12/18/67 a F2 tornado resulted in 3 injuries and \$250,000 of property damages.
- On 11/27/73 a F2 tornado resulted in 3 injuries and \$250,000 of property damages.
- On 4/3/74 two F5 tornadoes and 1 F3 tornado resulted in 56 injuries and \$250,000 of property damages.
- On 5/12/78 a F1 tornado resulted in 11 injuries and \$250,000 of property damages.
- On 8/16/85 a F3 tornado resulted in 2 injuries and \$250,000 of property damages.
- On 4/19/09 a F0 tornado resulted in 1 fatality and \$20,000 of property damages.

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 according to **Table 5.2-8** (2 per year) 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 tornados and the locations that they impact.

The entire county is vulnerable to high winds caused by tornadoes. The most likely time for tornadoes is during the spring months from March through April and into May, with a secondary peak of activity in November. Morgan County has identified tornadoes as hazards to which they are vulnerable. Particular vulnerabilities in this regard include schools. Although there are certainly other places where people may tend to congregate, it is probable that schools have the greatest concentration of people, day in and day out, of any other facilities.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a tornado event is minor to major.

Morgan County experienced 32 tornado events in a 57 year period resulting in a greater than 100% probability that a tornado event will occur on an annual basis. The total amount of damages for the 32 tornado events was \$14,005,000 with 25 tornado high wind events causing damage resulting in an estimated \$560,200 of expected annual damages from future events.

### **High Wind History in Morgan County, Alabama**

#### **Hurricane Related High Wind History and Extent in Morgan County, Alabama**

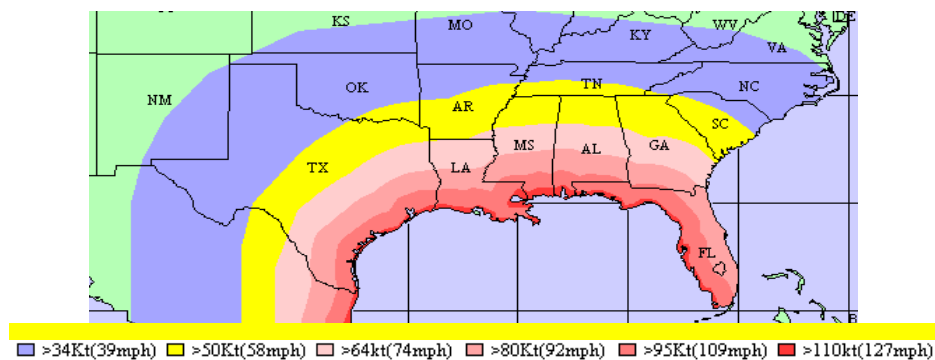
In October 1995 Hurricane Opal rushed across the panhandle of Florida and into Alabama, resulting in a presidential disaster declaration for Morgan County on October 4, 1995. Wind speeds at landfall were 125 miles per hour. Damage varied with many trees, signs, and power lines downed. Heavy rain also caused creeks and streams to swell to bank-full and beyond, however, there were very few reports of water flooding buildings. Water damage occurred to structures in many locations where wind or falling trees damaged roofs.

On July 10, 2005, Hurricane Dennis made landfall as a Category 3 hurricane on the western Florida panhandle. The remnants of tropical storm Dennis moved northward from the Gulf Coast and into the Tennessee Valley during the evening of July 10th. Gusty winds in excess of tropical storm force resulted in some minor tree damage across north Alabama along with several power outages. The winds and rain diminished during the early morning hours of July 11th. Most of the damage was a result of strong winds associated with Dennis' passing rain bands. Morgan County was declared a disaster.

Hurricane Ivan made landfall on September 16, 2004 near Gulf Shores in Baldwin County as a strong Category 3 hurricane. Tropical Storm force winds were felt across the entire county. While some structural wind damage would have been expected, most of the major structural damage that occurred over inland areas would not have been as substantial if it had not been for fallen trees. Power outages across the county were reported. No injuries, property damage, or crop damage occurred in Morgan County. Morgan County was declared a disaster due to tropical storm winds.

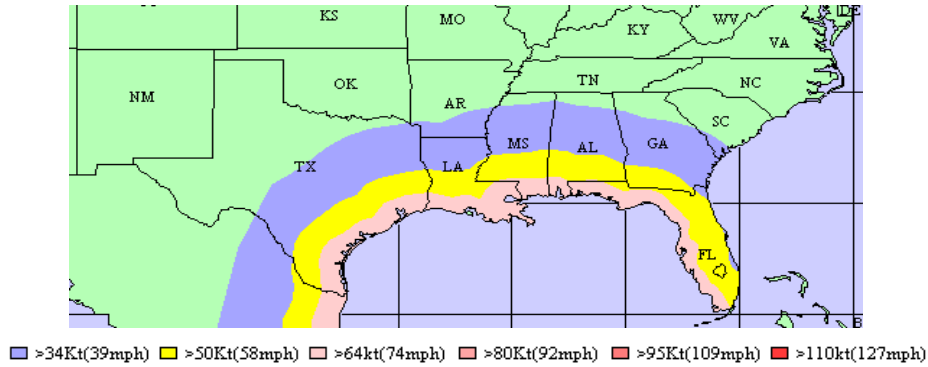
Hurricane Katrina made landfall along the Louisiana and Mississippi Gulf Coasts on August 29, 2005 as a strong Category 3 hurricane before moving inland along the Mississippi-Alabama border. Tropical storm force winds (>34 mph) were felt throughout Morgan County. Morgan County was declared a disaster due to tropical storm winds. The remnants of Hurricane Katrina moved northward along the Alabama/Mississippi state line. Katrina was still a strong tropical storm as the center passed just west of North Alabama during the evening hours of August 29th. Most of North Alabama experienced tropical storm force wind gusts for several hours with a few wind gusts as high as 60 mph being reported. While structural damage was very limited, a few homes did receive minor roof damage due to the loss of a few shingles. Numerous trees and power lines were blown down across the entire area and thousands of people lost power. Katrina moved relatively quickly to the north and thus rainfall was limited. Rainfall amounts were around four to five inches near the Alabama/Mississippi line but tapered off significantly farther to the east with locations near the Alabama/Georgia line only seeing a half inch or less.

As demonstrated in **Figure 5.2-9**, if a fast moving Category 4 hurricane hits the State of Alabama, Morgan County is capable of receiving winds of 58 mph for that same storm.



**Figure 5.2-9**  
**Extent of Inland Winds for a Category 4 Hurricane**  
**Moving Forward at 25 mph**  
 Source: National Hurricane Center

As demonstrated in **Figure 5.2-10**, even a typical Category 2 hurricane is capable of spreading tropical storm force winds near 39 mph over the southern areas of Morgan County.



**Figure 5.2-10**

**Extent of Inland Winds for a Category 2 Hurricane  
Moving Forward at 14 mph**

Source: National Hurricane Center

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.

The entire county is vulnerable to high winds caused by hurricanes/tropical storms. Hurricane Season begins June 1 and ends November 30 of each year. Morgan County has identified hurricane/tropical storm winds as hazards to which they are vulnerable.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a high wind event from a hurricane/tropical storm is minimum to minor.

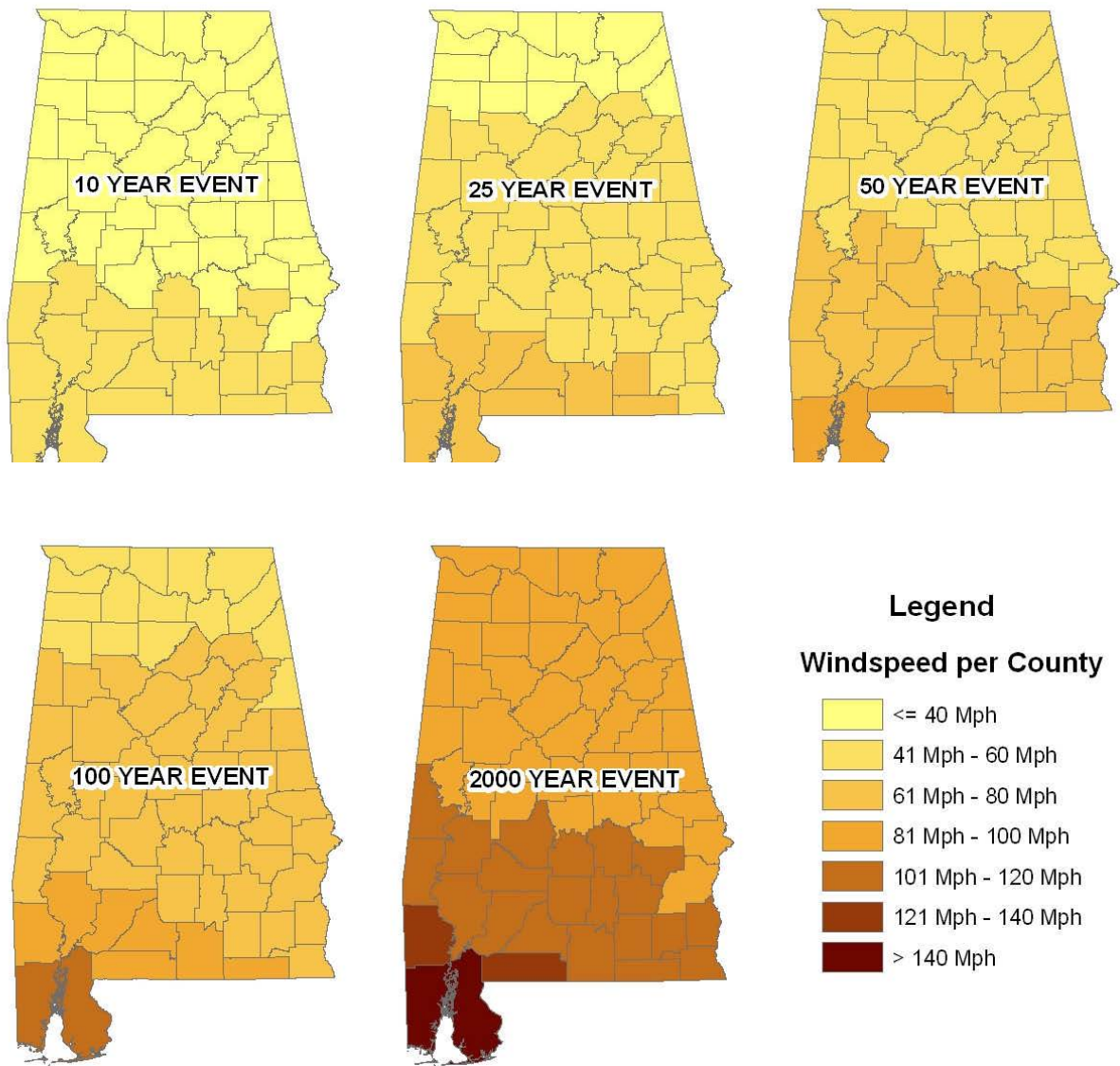
Morgan County experienced 4 hurricane/tropical storm events in a 10 year period resulting in a less than 50% probability that a hurricane/tropical storm event will occur on an annual basis. The total amount of damages for the 4 hurricane/tropical storm events was \$110,000,000 (statewide) with 1 hurricane/tropical storm events causing damage resulting in an estimated \$110,000,000 (statewide) of expected annual damages from future events.

**Probability of High Winds in Morgan County, Alabama**

Morgan County has been significantly affected by high winds caused by tropical storms and hurricanes 4 times (i.e. disaster declared) in the last 10 years. All jurisdictions in Morgan County are susceptible to high wind hazards.

**Figure 5.2-11** shows the maximum expected one-minute, open terrain, sustained wind speeds from hurricanes for 10, 25, 50, 100, and 2000 year return periods as determined by FEMA. Because the impacts of these high winds are severe and events can occur throughout the county and can be widespread, the qualitative ranking for probability for high winds is high.

**Figure 5.2-11 Probabilistic Maximum Sustained Wind Speeds**



As shown in **Figure 5.2-11**, Morgan County wind speeds for a 10-year and 25-year events are <= 40 mph; 50-year events are 41 mph – 60 mph; 100-year events are 61 mph – 80 mph; and 2000-year event is 81 mph – 100 mph.

#### **5.2.4 Winter Storms/Snow and Ice Events/Extreme Cold Events**

##### **General Description of the Hazard**

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 Morgan County.

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.

Morgan County has experienced winter storms, although these incidents do not occur on a frequent basis. The county does not keep much equipment to react to winter weather events. Winter storms/snow and ice events can have a great effect on Morgan County even if they are very minor.

#### **Nature and Extent of the Hazard in Morgan County, AL**

This section describes winter storms as they occur throughout the county. Winter storms in Morgan County are not as severe or common as winter storms in the northern United States. Typically, a winter storm in Morgan County consists of freezing rain or several inches of snow that may or may not be accompanied by frozen roadways. However, because the county and its citizens are unaccustomed to them, they 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 fell 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.

The extent/range of magnitude or severity that could be experienced by Morgan County due to an extreme cold event is minimum to minor.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a winter storm event is minor to major.

#### **Winter Storm/Snow and Ice/Extreme Cold Event History in Morgan County, Alabama**

Hazards of these types could potentially create property damage by producing up to 2-8 inches of snow and ice that would incapacitate the entire county.

What most called the worst winter storm in Alabama history struck Friday afternoon (March 12, 1993) and lasted until mid-day Saturday. Snow began falling over north Alabama Friday afternoon, then spread southward overnight, reaching all the way to the Gulf Coast. The storm was caused by a strong and massive low pressure system that moved from the western Gulf of Mexico into the Florida panhandle, and up the Eastern Seaboard. The heaviest snow began after

midnight when northerly winds of 40 to 55 mph became common. Frequent lightning discharges occurred for several hours giving an eerie blue-tinged glow to the atmosphere. By mid-day Saturday snow had accumulated to 6 to 12 inches over North Alabama. A 40-mile-wide band of 12 to 20 inches fell from the Birmingham area northeastward to DeKalb and Cherokee counties, generally following the Appalachian Mountains. High winds combined with the heavy wet snow, felled numerous trees and knocked down power lines over a wide area. Numerous roads became impassable, and hundreds of thousands of homes were without power. It was estimated that 400,000 homes were without electricity, and many remained so for several days. Compounding the snow and power problems, temperatures fell well into the single digits and teens across much of the entire state Saturday night. Only 4-wheel drive vehicles could barely maneuver roads, and some roads in north Alabama remained impassable until the following Tuesday. The snow and high winds knocked many radio and television stations off the air, and severely hampered emergency personnel responding to fires, stranded motorists, and those in dire need of medical attention. As if the snow, high winds, and extreme cold were not enough, many large trees fell onto homes and businesses. Numerous awnings and roofs collapsed under the weight of the heavy snow. Most of the damage estimates were at least \$50 million. Some estimates ranged between \$80 and \$100 million. A total of \$5.0 billion of property damages resulted statewide. Four deaths occurred in Morgan County as a result of this storm.

On December 23, 1998 a winter storm brought a mixture of freezing rain...sleet...and rain to the northern half of Alabama. The northwestern quarter of Alabama was especially hard hit. The precipitation began in a narrow band across Fayette, Walker, Cullman, and Marshall counties around 2 am and then around 5am in the rest of the counties and lasted until early afternoon on the 24th. The northwestern quarter of the state saw temperatures at or below freezing for the majority of the event. Liquid equivalent precipitation ranged from one to three inches. Significant ice accumulations of one half to one inch were common across the area. Numerous trees were down across every county. Significant power outages were encountered and many locations did not return to service until the 26th or 27th. The National Guard was activated in a few northwestern counties to help with the cleanup duties. Numerous roads were closed during the event. Numerous multiple vehicle and single automobile accidents occurred due to the icy road conditions. \$14.4 million dollars of property damage and 1 fatality occurred as a result of this storm.

Morgan County has experienced 23 winter storm/snow and ice related events during the years 1993 - 2010 that resulted in five deaths, two injuries, \$5.016 billion of property damage, and \$38,000 of crop damage.

### **Probability of Winter Storms in Morgan County, Alabama**

In general, according to recent history winter storms in Alabama are more likely to affect northern counties more often than southern counties. **Figure 5.2-12** below shows the average number of winter storms per year for each county from 1995-2006. Morgan County has on average 1.001 to 1.286 winter storms per year.

Morgan County experienced 3 extreme cold events in a 13 year period resulting in a less than 50% probability that an extreme cold event will occur on an annual basis. The total amount of damages for the 2 extreme cold events was \$52,000,000 with 1 extreme cold event causing

damage resulting in an estimated \$52,000,000 of expected annual damages from future events. However, there is insufficient data to retrieve the amount of damage in dollars just for Morgan County. The 52 million was for the State of Alabama as a whole.

Morgan County experienced 23 winter storm/snow/ice events in a 17 year period resulting in a greater than 100% probability that a winter storm event will occur on an annual basis. The total amount of damages for the 23 winter storm events was \$5,054,000 with 9 winter storm events causing damage resulting in an estimated \$562,000 of expected annual damages from future events.



Figure 5.2-12

Alabama Winter Storm Return Interval by County

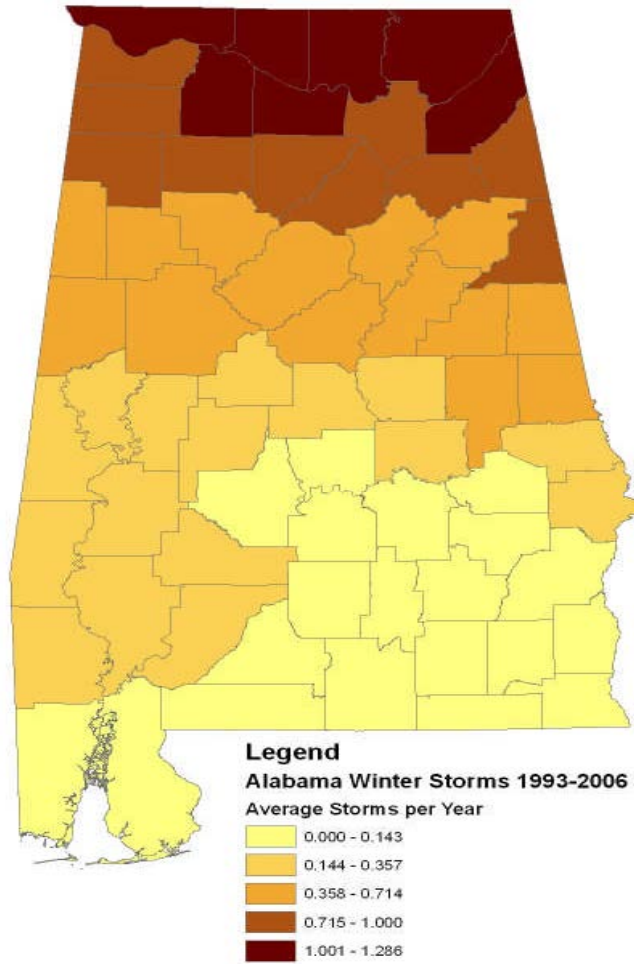


Table 5.2-9 shows a summary of countywide annual snow and ice activity, including deaths, injuries, and property and crop damages from 1950 thru 2009.

**Table 5.2-9 Winter Storm/Snow and Ice/Extreme Cold Events**

(23) Winter Storm/Snow and Ice/(3) Extreme Cold event(s) were reported in Morgan County, Alabama between 01/01/1950 and 02/28/2010.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** PropertyDamage  
**CrD:** Crop Damage

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">ALZ001&gt;018</a>	03/12/1993	2200	Winter Storm	N/A	4	0	5.0B	0
2 <a href="#">ALZ001&gt;007</a>	02/09/1994	2200	Ice Storm/flash Flood	N/A	0	2	0	0
3 <a href="#">ALZ001&gt;011 - 014 - 016&gt;018 - 020</a>	02/06/1995	2100	Snow/ice	N/A	0	0	0	0
4 <a href="#">North Alabama</a>	02/11/1995	1300	Snow/ice	N/A	0	0	0	0
5 <a href="#">ALZ001&gt;038</a>	01/06/1996	08:00 PM	Winter Storm	N/A	0	0	380K	38K
6 <a href="#">ALZ001&gt;027 - 030&gt;032 - 034</a>	02/01/1996	03:00 PM	Winter Storm	N/A	0	0	595K	0
7 <a href="#">ALZ003&gt;015</a>	02/16/1996	02:00 AM	Winter Storm	N/A	0	0	195K	0
8 <a href="#">ALZ001&gt;010</a>	01/10/1997	10:00 AM	Winter Storm	N/A	0	0	64K	0K
9 <a href="#">ALZ001&gt;010 - 016 - 018&gt;021 - 028&gt;029 - 037&gt;038 - 047</a>	12/29/1997	01:00 AM	Winter Storm	N/A	0	0	0K	0K
10	02/04/1998	01:30	Winter	N/A	0	0	27K	0K

<a href="#">ALZ006&gt;010 - 018&gt;021</a>		AM	Storm					
11 <a href="#">ALZ001&gt;008 - 011&gt;017</a>	12/23/1998	02:00 AM	Ice Storm	N/A	1	0	14.4M	0K
12 <a href="#">ALZ001&gt;010 - 016&gt;018 - 020 - 026</a>	01/06/1999	12:00 PM	Winter Storm	N/A	0	0	0K	0K
13 <a href="#">ALZ001&gt;007 - 009&gt;017</a>	12/21/1999	04:00 AM	Ice Storm	N/A	0	0	0K	0K
14 <a href="#">ALZ005 - 007 - 014&gt;017 - 024&gt;027 - 033&gt;037 - 041 - 043</a>	01/28/2000	12:00 AM	Winter Storm	N/A	0	0	227K	0K
15 <a href="#">ALZ006&gt;010 - 016&gt;018 - 024&gt;027</a>	03/20/2001	12:00 AM	Heavy Snow	N/A	0	0	0K	0K
16 <a href="#">ALZ001&gt;007 - 009&gt;011 - 014 - 016 - 018&gt;021</a>	02/05/2002	11:30 PM	Winter Storm	N/A	0	0	30K	0K
17 <a href="#">ALZ007</a>	03/01/2009	06:52 AM	Winter Weather	N/A	0	0	0K	0K
18 <a href="#">ALZ007 - 016</a>	12/04/2009	23:00 PM	Winter Weather	N/A	0	0	0K	0K
19 <a href="#">ALZ006 - 007</a>	01/07/2010	06:30 AM	Winter Weather	N/A	0	0	0K	0K
20 <a href="#">ALZ005&gt;007</a>	01/29/2010	08:30 AM	Winter Storm	N/A	0	0	0K	0K
21 <a href="#">ALZ005&gt;007</a>	01/29/2010	08:30 AM	Winter Weather	N/A	0	0	0K	0K
22 <a href="#">ALZ007 - 016</a>	02/12/2010	07:00 AM	Winter Weather	N/A	0	0	0K	0K

23 <a href="#">ALZ007</a>	02/15/2010	15:00 PM	Winter Weather	N/A	0	0	0K	0K
24 <a href="#">ALZ001&gt;050</a>	02/03/1996	06:00 PM	Extreme Cold	N/A	0	0	0	0
25 <a href="#">ALZ001&gt;050</a>	03/07/1996	08:00 AM	Extreme Cold	N/A	0	0	0	52.0M
26 <a href="#">ALZ007</a>	01/16/2009	03:00 AM	Cold/wind Chill	N/A	0	0	0K	0K
TOTALS:					5	2	5.016B	52,038,000

Source: NOAA Storm Events

### 5.2.5 Landslides/Land Subsidence/Sinkholes

#### General Description of the Hazards

**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). A combination of two or more landslide movements is referred to as a complex movement. Below is a brief discussion of the various types of landslide movements.

Most of Morgan County is not susceptible to landslides due to the levelness of the terrain. Landslides are known to occur, however, in the hilly areas in the northwest portion of the county. The northwest portion of the county is not a pathway of significant future population growth and land development. The most immediate vulnerability of the area to landslide hazards is land development, particularly housing, that is constructed in the hilly area in the northwest portion of the county.

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 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, finegrained 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 down slope 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.

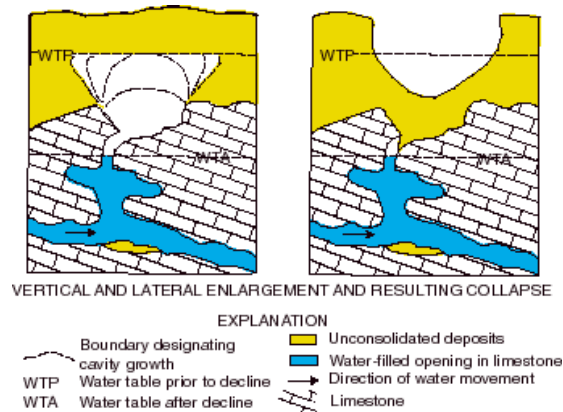
**Land Subsidence/Sinkholes** - There are three types of potential problems associated with the existence or formation of sinkholes: subsidence, flooding, and pollution. The term subsidence commonly involves a gradual sinking, but it also refers to an instantaneous or catastrophic collapse. In Morgan County, sinkholes are common where the rock below the land surface is Morgan, 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.

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,
- Changes in groundwater flow,
- Increased loading, and
- Deterioration (abandoned coal mines).

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 5.2-13**  
**Water Level Decline**

Source: Alabama Department of Transportation

Changes in the groundwater flow (as indicated in **Figure 5.2-13**) 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.

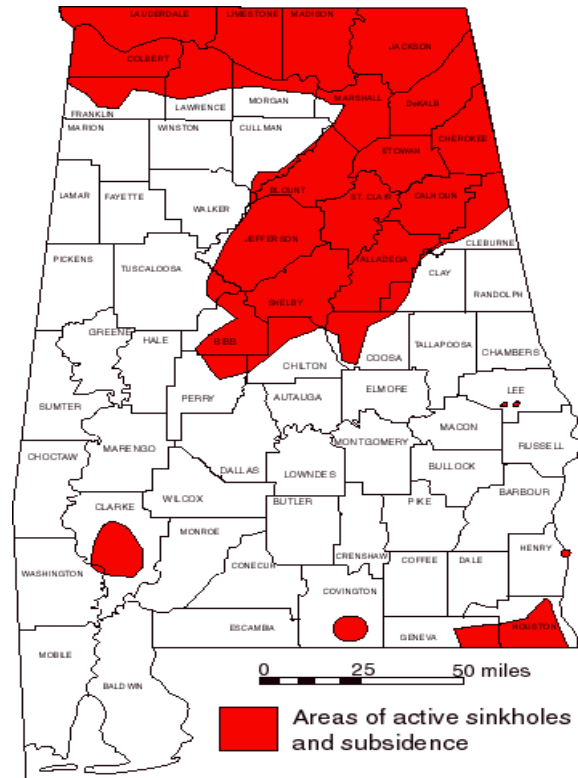
### **Nature and Extent of the Hazard in Morgan County, Alabama**

A landslide is a geological phenomenon which includes a wide range of ground movement, such as rock falls, deep failure of slopes and shallow debris flows, which can occur in offshore, coastal and onshore environments. Although the gravity is the primary force for a landslide to occur, there are other contributing factors affecting the original slope stability. Typically, pre-conditional factors build up specific sub-surface conditions that make the area/slope prone to failure, whereas the actual landslide often requires a trigger before being released.

Land subsidence, the loss of surface elevation due to the removal of subsurface support, ranges from broad, regional lowering of the land surface to localized collapse. The primary cause of land subsidence is a direct result of human activity often in areas of karsts geology. The human activities that may trigger subsidence include mining and the withdrawal of groundwater and/or petroleum. The most dramatic form of subsidence is the collapse of superficial material into underground voids.

A sinkhole is a natural depression or hole in the surface topography caused by the removal of soil or bedrock, often both, by water. They may be formed gradually or suddenly. Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by circulating ground water. As the rock dissolves, spaces and caverns develop underground. These sinkholes can be dramatic because the surface land usually stays intact until there is not enough support. Then a sudden collapse of the land surface can occur. **Figure 5.2-14** shows the active sinkholes and land subsidence in Morgan County.

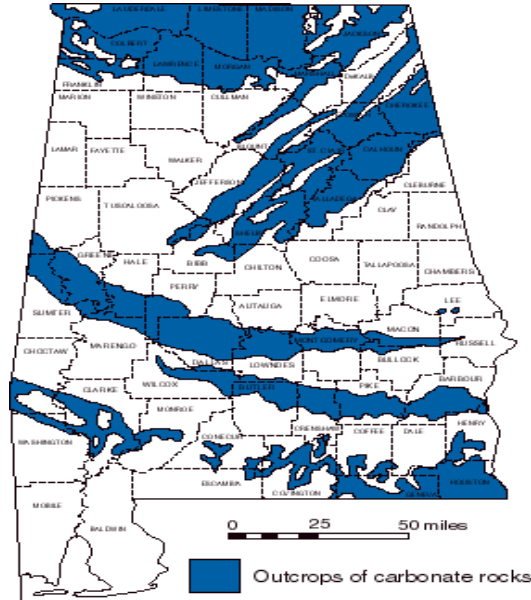
**Figure 5.2-14 Active Sinkholes and Land Subsidence in Morgan County, Alabama**



*Source: The Geological Survey of Alabama*

**Hazard Profile.** The northern/north central portions of the county are susceptible to land subsidence as indicated in **Figure 5.2-15** from the Alabama Geological Survey. Historically, land subsidence or sinkhole events have not been well documented. Morgan County geology has a medium susceptibility to landslide events.

**Figure 5.2-15 Landslide Susceptibility in Morgan County, AL**



*Source: U. S. Geological Survey*

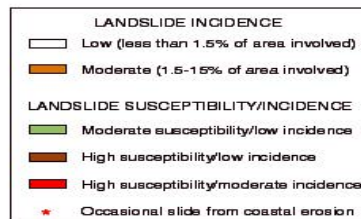
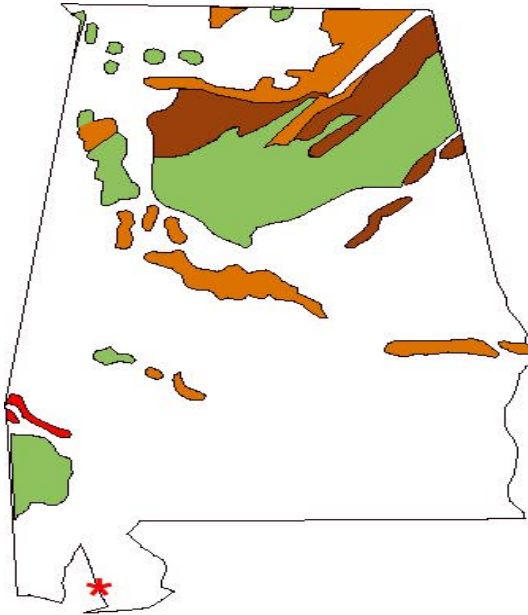
Distribution of Morgan Outcrops in Alabama

### LANDSLIDE SUSCEPTIBILITY

Landslide incidences as shown in **Figure 5.2-16** are defined as the number of landslides that have occurred in a given geographic area. Susceptibility to land sliding 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. Most all of the county is susceptible to landslide incidences, as depicted in the figure above.



**Figure 5.2-16 Landslide Incidences in Morgan County, AL**



*Source: U.S. Geological Survey*

The map units are split into three incidence categories according to the percentage of the area affected by landslides. High incidence means greater than 15 percent of a given area has been involved in land sliding; 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 land sliding. Susceptibility is not indicated where it is the same as or lower than incidence. Because the map above was prepared at a small scale using limited landslide and climate information, it is not intended for local planning or actual site selection.

Areas in Morgan County underlain by carbonate rocks and 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. The Geological Survey of Alabama reports two historical landslides for the Morgan County area.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a landslide/land subsidence/sinkhole event is minimum to minor based on the lack of historical records and detailed geologic studies.

**Probability of Future Occurrences.** The probability of future occurrences cannot be predicted due to a lack of historical records and detailed geologic studies. These are random events, which can be influenced by drought conditions. As depicted in the figure below, there have been nine historic landslides reported in Morgan County.

The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on an over steepened slope is the primary reason for a landslide, there are other contributing factors:

- Erosion by rivers, glaciers, or ocean waves creates over-steepened slopes
- Rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- Earthquakes create stresses that cause or encourage the failure of weak slopes
- Earthquakes of magnitude 4.0 and greater have been known to trigger landslides
- Volcanic eruptions produce loose ash deposits, heavy rain, and debris flows
- Excess weight from accumulation of rain or snow, stockpiling of rock or ore from waste piles, or from man-made structures may stress weak slopes to fail

#### **Probability of Landslides/Land Subsidence/Sinkholes in Morgan County, Alabama**

Morgan County is located in a part of the state where the geology is low to moderate landslide incidence susceptibility to subsidence and low incidence, as shown in **Figure 5.2-16**. Precise locations of susceptibility would require extensive and costly geologic studies, which are not available.

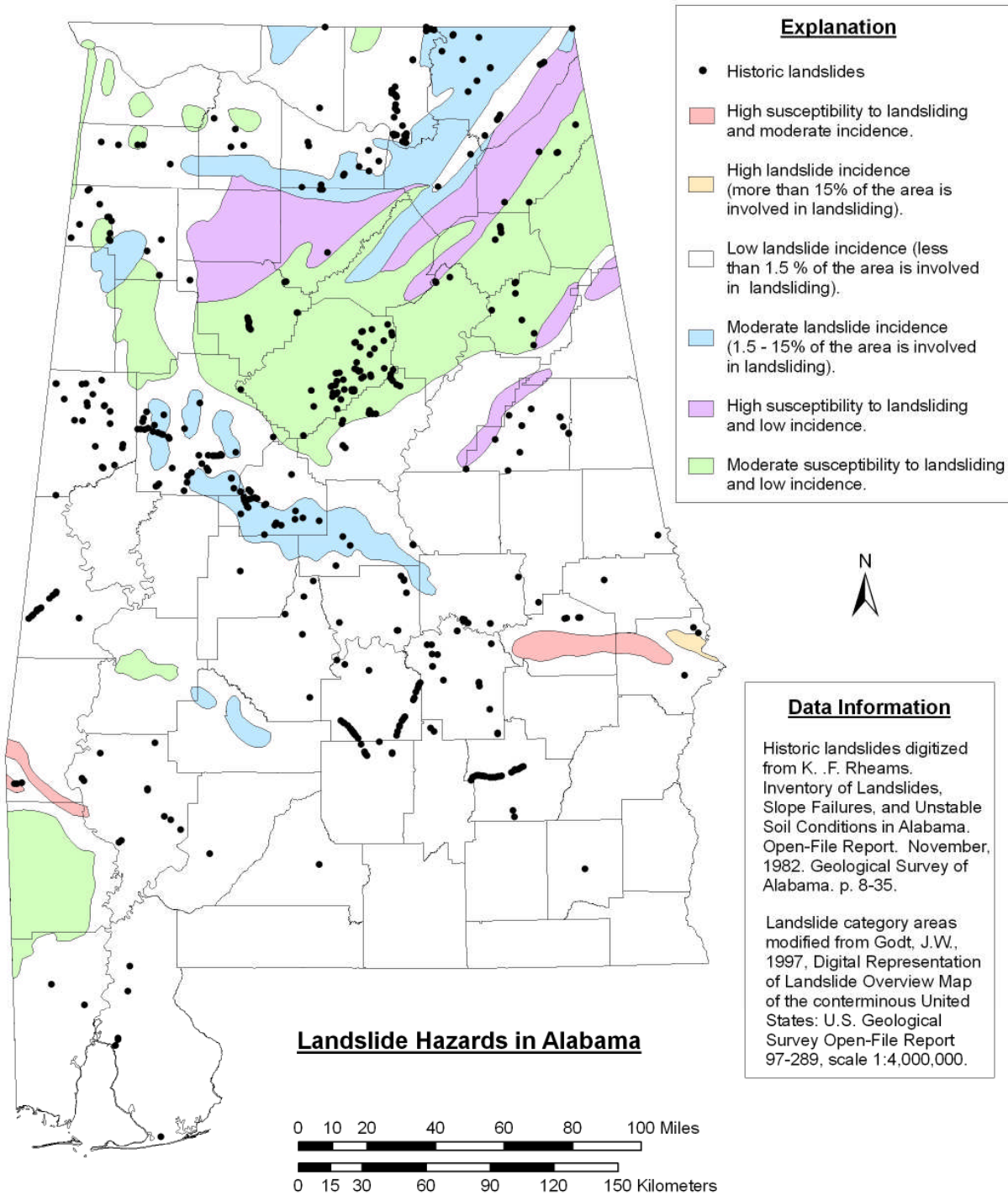
As development continues in rural areas of Morgan County it is likely that sinkholes will begin to have a greater impact on communities. When subsidence occurs in developed areas it can have a significant impact on communities including loss of property values, increased insurance costs and potential injuries.

In Morgan County, sinkholes are common where the rock below the land surface is Morgan, 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.

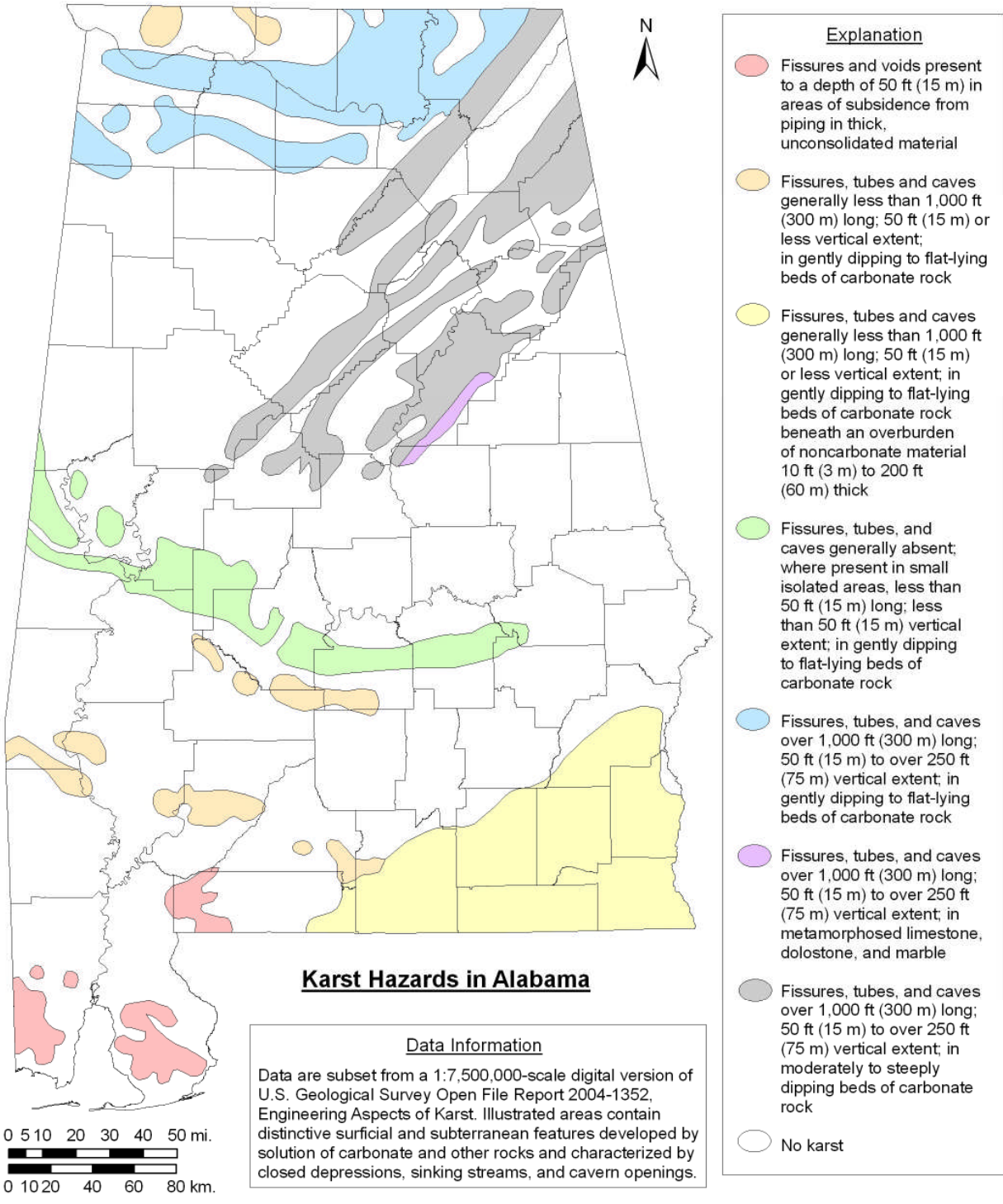
Sinkholes and subsidence are also common in those areas of the state underlain by old abandoned coal and iron mines. Pillars left for roof support in the mines generally deteriorate over time and eventually collapse, removing roof support. This is particularly a problem where mines underlie more recently developed residential areas and roads.

Parts of the county are characterized by carbonate rocks, such as Morgan and dolomite, which are vulnerable to solution in the humid southern climate. Areas in Morgan County 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. **Figure 5.2-18**, 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.

Morgan County is at a slight risk for sinkholes. The probability of future occurrences cannot be predicted due to a lack of historical records and detailed geologic studies.



**Figure 5.2-17**  
**Statewide Landslide Incidence and Susceptibility by County**  
*Sources: Geological Survey of Alabama*



**Figure 5.2-18**  
**Karst Areas in Morgan County Most Likely to Experience Sinkholes and Subsidence**  
*Source: Geological Survey of Alabama*

## 5.2.6 Earthquakes

### General Description of the Hazard

Morgan County is at a low to medium risk for an earthquake to occur, though minor effects from the three seismic zones are not out of the question. 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 compression 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 5.2-10**. 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 5.2-10**

**Earthquake PGA, Magnitude and Intensity Comparison**

<b>PGA ( %g)</b>	<b>Magnitude (Richter)</b>	<b>Intensity (MMI)</b>	<b>Description (MMI)</b>
<0.17 – 1.4	1.0 – 3.0	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.

PGA ( %g)	Magnitude (Richter)	Intensity (MMI)	Description (MMI)
34 – 124	6.0 – 6.9	VIII - 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.
<i>Source: Wald, Quitariano, Heaton, and Kanamori, 1999.</i>			

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). Sand blows were common following major New Madrid earthquakes in the central United States.

### **Nature and Extent of the Hazard in Morgan County, Alabama**

A major earthquake in Morgan County could result in great loss of life and property damage in the billions of dollars. Adding to the danger is the fact that structures in the area were not built to withstand earthquake shaking. Construction of many buildings on steep slopes susceptible to landslides and in karst terrains susceptible to sinkholes will be a major contributing factor to damage from future earthquakes in the county.

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 whole state. Morgan County lies within the SASZ and is at a low risk for earthquakes. The chart below lists recorded earthquakes since 1990 for Morgan County.

Date	County	Nearest Town	Lat	Long	Depth_ km	Magnitude	Description
12/15/1990	Morgan	Decatur	34.45	87.3	16.4	1.8	Not felt
3/17/1992	Morgan	Decatur	34.42	87.2	7.5	2	Not felt

*Source: Geologic Survey of Alabama – Geologic Hazards Program at [www.gsa.state.al.us/gsa/geologichazards/earthquakes/al.html](http://www.gsa.state.al.us/gsa/geologichazards/earthquakes/al.html)*

Despite the occurrences of earthquakes, the actual damage sustained was minor. Earthquakes are not expected to be a significant natural hazard for Morgan County. In most cases, adherence to the provisions of typical building codes will likely prevent most potential damages from becoming severe.

The extent/range of magnitude or severity that could be experienced by Morgan County due to an earthquake event is minimum to minor based on information available and the lack of detailed geologic studies. However, if the earthquake was of a higher magnitude the extent could be of a great loss and billions of dollars.

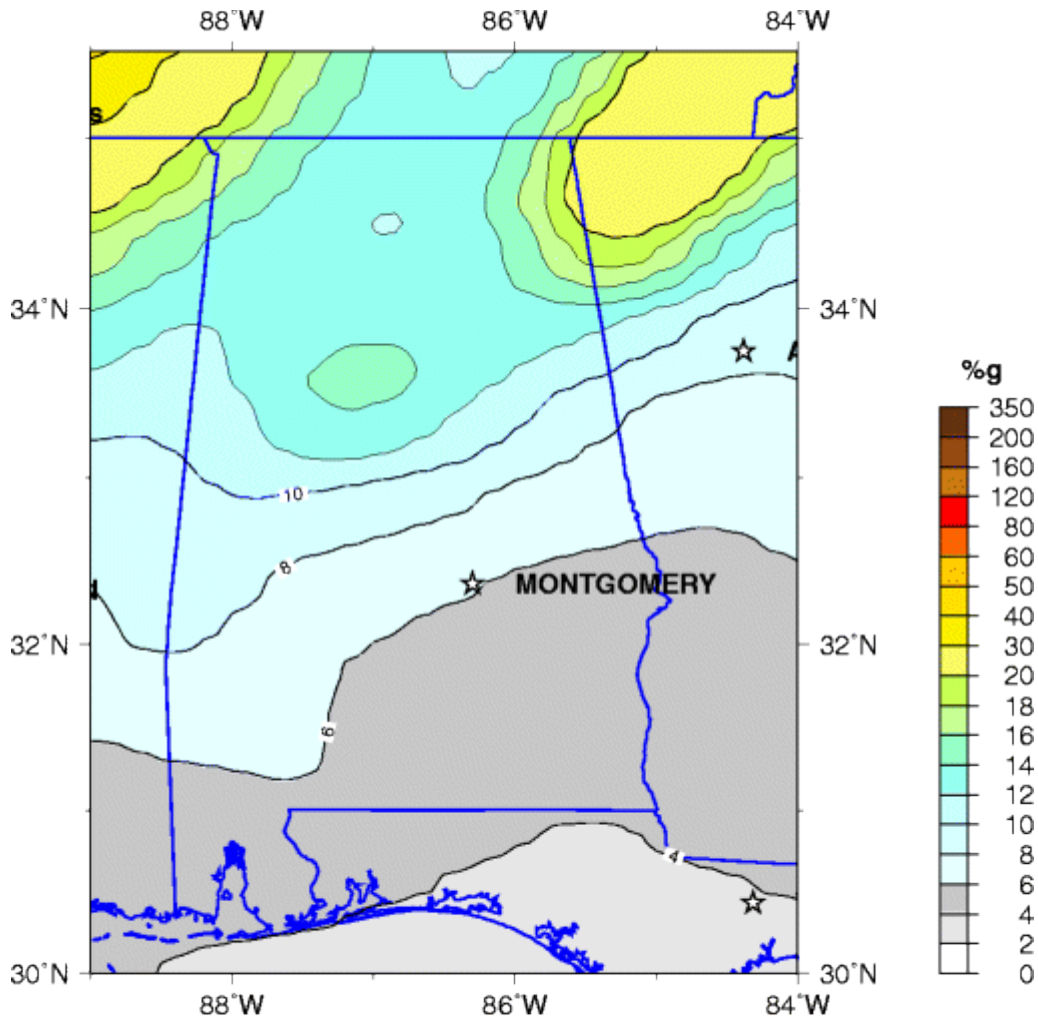
### **Probability of Earthquakes in Morgan County, Alabama**

Earthquakes occurring in Morgan County are predominantly low magnitude events so the qualitative probability in **Section 5.3** is medium. However, there is growing concern that a high magnitude event is inevitable and earthquakes are becoming a much larger concern to the county. GSA is currently working to better define seismic hazards and impacts throughout the county. **Figure 5.2-19** shows the Percent Ground Acceleration (PGA) with two percent 50 year exceedance probability. The risk of a significant, damage-causing earthquake in Morgan County is low to moderate based upon the available information. The entire county is equally at risk.

In accordance with FEMA guidelines, an area with 3% or greater probability of exceedance in 50 years should be further assessed for vulnerability. Morgan County’s risk falls at approximately the 10-14% probability of exceedance.

Based upon available information, Morgan County experienced 2 earthquake events in a 2 year period resulting in a greater than 100% probability that an earthquake event will occur on an annual basis. The total amount of damages for the 2 earthquake events was \$0 with 0 earthquake events causing damage resulting in an estimated \$0 of expected annual damages from future events.





**Peak Acceleration (%g) with 2% Probability of Exceedance in 50 Years  
site: NEHRP B-C boundary  
National Seismic Hazard Mapping Project (2008)  
Figure 5.2-19**

*Source: United States Geological Survey, 2008*

### 5.2.7 Drought/Extreme Heat Events

#### General Description of the Hazard

Drought is a normal part of virtually every climate on the planet, including areas of both high and low normal rainfalls. 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.

□ Socioeconomic 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.

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). Heat stress can be indexed by combining the effects of temperature and humidity, as shown in **Table 5.2-11**. 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.

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).

Morgan County has experienced extreme heat and drought incidences, as well as extreme cold events and winter storms, placing them in a moderate susceptibility to these types of hazards.

### **Nature of the Hazard in Morgan County, Alabama**

Drought is a natural event that, unlike floods or tornadoes, does not occur in a violent burst but gradually happens; furthermore, the duration and extent of drought conditions are unknown

because rainfall is unpredictable in amount, duration and location. Drought events can potentially affect the entire county.

The Alabama Drought Management Plan (DMP), developed by the Alabama Department of Economic and Community Affairs – Office of Water Resources (ADECA-OWR), defines drought in terms of several indices that describe the relative amounts of surface water flow, groundwater levels, and recent precipitation as compared to localized norms. Because drought is defined in relative terms, it can be stated that all areas of the county are susceptible to drought.

When drought occurs in Morgan County, the social, economic, and environmental impacts have the potential to be severe and widespread. A few of these impacts are listed below:

- Damage to livestock and crops;
- Increase local vulnerabilities to sinkholes and wildfire;
- Create water usage conflicts;
- Speed up coastal erosion;
- Damage fisheries; and
- Inflate energy prices due to loss of hydro-power.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a drought/extreme heat event is minimum to minor.

Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Humid or muggy conditions occur when a “dome” of high atmospheric pressure traps hazy, damp air near the ground. The combination of high temperatures and humid conditions increase the level of discomfort and the potential for danger to humans. A sibling to the heat wave is the drought. Droughts occur when a long period passes without any substantial rainfall. A heat wave combined with a drought is a very dangerous situation.

**Hazard Profile.** Morgan County occasionally experiences droughts and extreme summer heat. According to NOAA, there are 18 recorded droughts with no deaths or damages and 5 hot temperature extreme events recorded resulting in two deaths, and no property or crop damages between 1950 and 2010. (Source: NOAA; <http://www4.ncdc.noaa.gov/cgiwin/wvcgi.dll?wwevent~storms>).

**Community Impacts.** The human risks associated with extreme heat include heatstroke, heat exhaustion, heat syncope, heat cramps. A description of each of these conditions follows:

- Heatstroke is considered a medical emergency and is often fatal. It exists when rectal temperature rises above 105°F as a result of environmental temperatures. Patients may be delirious, stuporous, or comatose. The death to care ratio in reported cases averages about 15%.
- Heat Exhaustion is much less severe than heatstroke. The body temperature may be normal or slightly elevated. A person suffering from heat exhaustion may complain of dizziness,

weakness or fatigue. The primary cause of heat exhaustion is fluid and electrolyte imbalance. The normalization of fluids will typically alleviate the situation.

- Heat Syncope is typically associated with exercise by people who are not acclimated to exercise. The symptom is a sudden loss of consciousness. Consciousness returns promptly when the person lies down. The cause is primarily associated with circulatory instability as a result of heat. The condition typically causes little or no harm to the individual.
- Heat Cramps are typically a problem for individuals who exercise outdoors but are unaccustomed to heat. Similar to heat exhaustion it is thought to be a result of a mild imbalance of fluids and electrolytes.

In 1979 R. G. Steadman, a meteorologist, developed the heat index, which is a relationship between dry bulb temperatures (at different humidity) and the skin’s resistance to heat and moisture transfer. Utilizing Steadman’s heat index, the following table was developed to show the risk associated with ranges in apparent temperature or heat index.

**Table 5.2-11 Heat Index/Heat Disorders**

<b>Danger Category</b>	<b>Heat Disorder</b>	<b>Apparent Temperature (°F)</b>
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.	80-90

*Source: National Weather Service, 1997*

Risks associated with drought include, effects to the water supply, impact on agriculture, increase in wildfires, negative impact on hydroelectric power, and other activities dependent upon water such as recreation and navigation.

**Location and Extents.** Droughts and heat waves have a county-wide impact.

**Probability of Future Occurrences.** Though historically not a major problem, the region is susceptible to hot temperature extreme events and drought conditions.

The climate of Morgan County is best described as being closer to a continental climate. Average temperature ranges from 40.2 °F in January; 61.5° F in April; 79.3° F in July; and 61.3° F in

October. Generally, Morgan County experiences mild and dry winters and warm and humid summers.

**History of Drought/Extreme Heat Events in Morgan County, Alabama**

Morgan County occasionally experiences short droughts and extreme heat in the summer months; however, there are no records that indicate either crop or property damage.

According to the NCDC, there were 17 drought events and 4 excessive heat events from 1996 through 2010 as noted in **Table 5.2-12**. However, further investigation reveals that most of these were simply dry periods without substantial rainfall. Two deaths were reported; however, no damages or injuries were reported.

**Table 5.2-12 Drought and Excessive Heat Events for Morgan County**

18 DROUGHT and 5 EXTREME HEAT event(s) were reported in Morgan County, Alabama between 01/01/1950 and 02/28/2010.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** PropertyDamage  
**CrD:** Crop Damage

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">ALZ005&gt;007 - 009</a>	03/13/2007	00:00 AM	Drought	N/A	0	0	0K	0K
2 <a href="#">ALZ001&gt;010 - 016</a>	04/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
3 <a href="#">ALZ001&gt;010 - 016</a>	05/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
4 <a href="#">ALZ001&gt;010 - 016</a>	06/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
5 <a href="#">ALZ001&gt;010 - 016</a>	07/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
6 <a href="#">ALZ001&gt;010 - 016</a>	08/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
7 <a href="#">ALZ001&gt;010 - 016</a>	09/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K



8 <a href="#">ALZ001&gt;010 - 016</a>	10/01/2007	00:00 AM	Drought	N/A	0	0	OK	OK
9 <a href="#">ALZ001&gt;010 - 016</a>	11/01/2007	00:00 AM	Drought	N/A	0	0	OK	OK
10 <a href="#">ALZ001&gt;010 - 016</a>	12/01/2007	00:00 AM	Drought	N/A	0	0	OK	OK
11 <a href="#">ALZ001&gt;010 - 016</a>	01/01/2008	00:00 AM	Drought	N/A	0	0	OK	OK
12 <a href="#">ALZ001&gt;010 - 016</a>	02/01/2008	00:00 AM	Drought	N/A	0	0	OK	OK
13 <a href="#">ALZ001&gt;010 - 016</a>	03/01/2008	00:00 AM	Drought	N/A	0	0	OK	OK
14 <a href="#">ALZ001&gt;010 - 016</a>	04/01/2008	00:00 AM	Drought	N/A	0	0	OK	OK
15 <a href="#">ALZ001 - 004&gt;010 - 016</a>	05/01/2008	00:00 AM	Drought	N/A	0	0	OK	OK
16 <a href="#">ALZ004 - 006&gt;010 - 016</a>	06/01/2008	00:00 AM	Drought	N/A	0	0	OK	OK
17 <a href="#">ALZ004&gt;010 - 016</a>	07/01/2008	00:00 AM	Drought	N/A	0	0	OK	OK
18 <a href="#">ALZ004&gt;007 - 009&gt;010 - 016</a>	08/01/2008	00:00 AM	Drought	N/A	0	0	OK	OK
19 <a href="#">ALZ001&gt;050</a>	02/23/1996	08:00 AM	Excessive Heat	N/A	0	0	0	0
20 <a href="#">ALZ001&gt;010 - 016</a>	08/01/2007	00:00 AM	Heat	N/A	0	0	OK	OK
21 <a href="#">ALZ007</a>	08/09/2007	00:00 AM	Heat	N/A	1	0	OK	OK
22 <a href="#">ALZ007</a>	08/13/2007	00:00 AM	Heat	N/A	1	0	OK	OK
<a href="#">ALZ004&gt;007 - 016</a>	06/28/2009	10:00 AM	Excessive Heat	N/A	0	0	OK	OK
TOTALS:					2	0	0	0

Source: NOAA Storm Events

## Probability of Drought in Morgan County, AL

The future incidence of drought is highly unpredictable, conditions may be localized or widespread, and not much historical data is available making it difficult to determine the future probability of drought conditions with any accuracy. The qualitative probability rating for drought in **Section 5.3** is high.

Normally, rainfall occurs consistently throughout the year, but there are occasions that drought conditions will occur. This type of hazard can affect Morgan County's agricultural uses and contribute to wildfire incidents. Extreme heat and drought conditions can potentially affect the entire county by stressing citizens and the municipal and agricultural water supply.

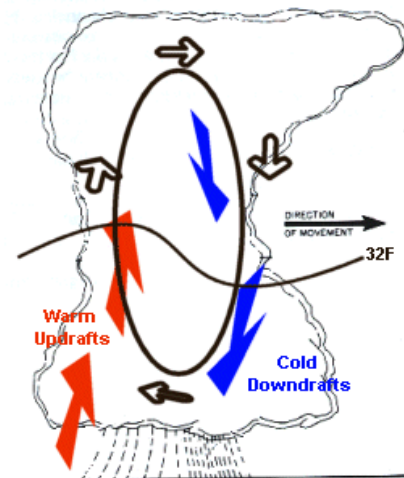
Morgan County experienced 18 drought events in a 2 year period resulting in a greater than 100% probability that a drought event will occur on an annual basis. The total amount of damages for the 18 drought events was \$0 with 0 drought events causing damage resulting in an estimated \$0 of expected annual damages from future events.

Morgan County experienced 5 extreme heat events in a 13 year period resulting in a less than 50% probability that an extreme heat event will occur on an annual basis. The total amount of damages for the 5 extreme heat events was \$0 with 0 extreme heat events causing damage resulting in an estimated \$0 of expected annual damages from future events.

### 5.2.8 Hail

#### General Description of the Hazard

Morgan County is at a severe risk of experiencing hail which has ranged from pea size to grapefruit size in some areas of the county. 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 5.2-20**, 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).



**Figure 5.2-20**

#### **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). 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 5.2-13**. Note that penny size (3/4 inches in diameter) or larger hail is considered severe.

**Table 5.2-13 Estimating Hail Size**

<b>Size</b>	<b>Inches in Diameter</b>
Pea	1/4 inch
Marble/mothball	1/2 inch
Dime/Penny	3/4 inch
Nickel	7/8 inch
Quarter	1 inch
Ping-Pong Ball	1 1/2 inch
Golf Ball	1 3/4 inch
Tennis Ball	2 1/2 inch
Baseball	2 3/4 inch
Tea Cup	3 inches
Grapefruit	4 inches
Softball	4 1/2 inches
<i>Source: NWS, January 10, 2003</i>	

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.

**Nature and Extent of the Hazard in Morgan County, AL**

Hailstorms occur throughout Morgan County and 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. As explained below, it is rare that a hailstorm in Morgan County causes significant damages. The entire county is susceptible to hailstorms.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a hail event is minor to major.



### Hail History in Morgan County, AL

Severe storms include thunderstorms/high winds, flooding, lightning, and hail. According to the National Weather Service, Morgan County has experienced each of these natural hazard events, resulting in both property and crop damage. The expectation of future occurrences necessitates profiling and a mitigation plan for each of these events.

From 1955 to 2009, 127 hail storm events caused approximately \$204,000 in property damages and \$8,000 in crop damages in Morgan County. This damage was caused by severe hail storm events that had hail with a diameter of .75 inches up to 4.25 inches. No deaths or injuries were reported due to hail storms. **Table 5.2-14** shows pertinent information relating to the 127 hail events in Morgan County.

**Table 5.2-14 Hail Disaster/Emergency Events in Morgan County**

**127 HAIL EVENTS(s)** were reported in Morgan County, Alabama between 01/01/1950 and 02/28/2010.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">MORGAN</a>	03/25/1955	1610	Hail	0.75 in.	0	0	0	0
2 <a href="#">MORGAN</a>	06/21/1957	1800	Hail	2.00 in.	0	0	0	0
3 <a href="#">MORGAN</a>	11/24/1957	1300	Hail	1.75 in.	0	0	0	0
4 <a href="#">MORGAN</a>	11/21/1965	1645	Hail	1.75 in.	0	0	0	0
5 <a href="#">MORGAN</a>	11/21/1965	1750	Hail	1.75 in.	0	0	0	0
6 <a href="#">MORGAN</a>	12/27/1968	2245	Hail	1.75 in.	0	0	0	0
7 <a href="#">MORGAN</a>	05/02/1974	1310	Hail	1.75 in.	0	0	0	0
8 <a href="#">MORGAN</a>	05/09/1974	2244	Hail	1.75 in.	0	0	0	0
9 <a href="#">MORGAN</a>	04/23/1977	1455	Hail	0.75 in.	0	0	0	0

10	<a href="#">MORGAN</a>	07/17/1980	1505	Hail	1.75 in.	0	0	0	0
11	<a href="#">MORGAN</a>	03/17/1982	1240	Hail	1.50 in.	0	0	0	0
12	<a href="#">MORGAN</a>	03/25/1982	1310	Hail	0.75 in.	0	0	0	0
13	<a href="#">MORGAN</a>	06/14/1983	1740	Hail	1.75 in.	0	0	0	0
14	<a href="#">MORGAN</a>	08/22/1983	1630	Hail	1.00 in.	0	0	0	0
15	<a href="#">MORGAN</a>	03/28/1984	0044	Hail	1.00 in.	0	0	0	0
16	<a href="#">MORGAN</a>	05/07/1984	1646	Hail	1.75 in.	0	0	0	0
17	<a href="#">MORGAN</a>	05/07/1984	1652	Hail	3.00 in.	0	0	0	0
18	<a href="#">MORGAN</a>	05/07/1984	1940	Hail	0.75 in.	0	0	0	0
19	<a href="#">MORGAN</a>	07/10/1985	2030	Hail	0.75 in.	0	0	0	0
20	<a href="#">MORGAN</a>	02/06/1986	1308	Hail	1.75 in.	0	0	0	0
21	<a href="#">MORGAN</a>	09/21/1986	1345	Hail	1.75 in.	0	0	0	0
22	<a href="#">MORGAN</a>	09/26/1986	1310	Hail	1.75 in.	0	0	0	0
23	<a href="#">MORGAN</a>	03/29/1987	1852	Hail	1.75 in.	0	0	0	0
24	<a href="#">MORGAN</a>	04/14/1987	1734	Hail	0.75 in.	0	0	0	0
25	<a href="#">MORGAN</a>	03/30/1989	2348	Hail	1.00 in.	0	0	0	0
26	<a href="#">MORGAN</a>	04/04/1989	0320	Hail	0.75 in.	0	0	0	0
27	<a href="#">MORGAN</a>	11/15/1989	1600	Hail	1.75 in.	0	0	0	0
28	<a href="#">MORGAN</a>	08/29/1990	1958	Hail	0.75	0	0	0	0

				in.				
29 <a href="#">MORGAN</a>	04/09/1991	1316	Hail	0.75 in.	0	0	0	0
30 <a href="#">MORGAN</a>	04/09/1991	1740	Hail	0.75 in.	0	0	0	0
31 <a href="#">MORGAN</a>	05/03/1993	1646	Hail	0.75 in.	0	0	0	0
32 <a href="#">MORGAN</a>	05/03/1993	1710	Hail	0.75 in.	0	0	0	0
33 <a href="#">Priceville</a>	05/15/1994	1235	Hail	0.75 in.	0	0	0	0
34 <a href="#">Harknotselle</a>	06/25/1994	1420	Hail	0.75 in.	0	0	5K	0
35 <a href="#">Hartselle</a>	11/27/1994	2223	Hail	0.75 in.	0	0	0	0
36 <a href="#">Hartselle</a>	05/14/1995	0845	Hail	0.75 in.	0	0	0	0
37 <a href="#">Trinity</a>	07/24/1995	1434	Hail	0.75 in.	0	0	0	0
38 <a href="#">Danville</a>	07/24/1995	1437	Hail	0.50 in.	0	0	0	0
39 <a href="#">Decatur</a>	07/24/1995	1443	Hail	1.75 in.	0	0	0	0
40 <a href="#">Hartselle</a>	01/24/1997	03:45 PM	Hail	0.75 in.	0	0	5K	0K
41 <a href="#">Falkville</a>	01/24/1997	04:05 PM	Hail	1.00 in.	0	0	7K	2K
42 <a href="#">Trinity</a>	01/24/1997	04:45 PM	Hail	1.00 in.	0	0	7K	1K
43 <a href="#">Decatur</a>	01/24/1997	04:58 PM	Hail	0.75 in.	0	0	5K	0K
44 <a href="#">Hartselle</a>	01/24/1997	05:08 PM	Hail	0.75 in.	0	0	5K	0K
45 <a href="#">Hartselle</a>	01/24/1997	06:53 PM	Hail	0.75 in.	0	0	5K	0K
46 <a href="#">Eva</a>	01/24/1997	07:14 PM	Hail	0.75 in.	0	0	5K	0K

47	<a href="#">Decatur</a>	10/25/1997	06:57 PM	Hail	0.75 in.	0	0	2K	0K
48	<a href="#">Hulaco</a>	04/08/1998	06:35 PM	Hail	1.00 in.	0	0	2K	3K
49	<a href="#">Decatur</a>	04/08/1998	08:20 PM	Hail	1.00 in.	0	0	2K	2K
50	<a href="#">Decatur</a>	04/08/1998	08:22 PM	Hail	0.75 in.	0	0	0K	0K
51	<a href="#">Falkville</a>	05/06/1998	02:35 PM	Hail	0.75 in.	0	0	0K	0K
52	<a href="#">Hartselle</a>	05/07/1998	07:55 PM	Hail	0.88 in.	0	0	0K	0K
53	<a href="#">Falkville</a>	01/18/1999	12:53 AM	Hail	1.00 in.	0	0	0K	0K
54	<a href="#">Priceville</a>	05/13/1999	10:47 AM	Hail	0.75 in.	0	0	0K	0K
55	<a href="#">Priceville</a>	05/13/1999	11:11 AM	Hail	2.50 in.	0	0	0K	0K
56	<a href="#">Falkville</a>	04/27/2000	06:25 PM	Hail	0.88 in.	0	0	0K	0K
57	<a href="#">Laceys Spg</a>	08/10/2000	04:37 PM	Hail	0.75 in.	0	0	0K	0K
58	<a href="#">Somerville</a>	12/16/2000	04:15 PM	Hail	0.75 in.	0	0	0K	0K
59	<a href="#">Laceys Spg</a>	06/26/2001	03:05 PM	Hail	1.00 in.	0	0	0K	0K
60	<a href="#">Trinity</a>	03/29/2002	09:35 PM	Hail	0.88 in.	0	0	0K	0K
61	<a href="#">Neel</a>	03/29/2002	10:20 PM	Hail	2.00 in.	0	0	2K	0K
62	<a href="#">Decatur</a>	06/30/2002	04:00 PM	Hail	0.75 in.	0	0	0K	0K
63	<a href="#">Lacon</a>	08/02/2002	09:37 PM	Hail	1.75 in.	0	0	2K	0K
64	<a href="#">Eva</a>	08/18/2002	02:47 PM	Hail	0.75 in.	0	0	0K	0K
65	<a href="#">Hartselle</a>	05/02/2003	03:21	Hail	0.88	0	0	0	0



		PM		in.				
66 <a href="#">Falkville</a>	05/02/2003	03:33 PM	Hail	1.75 in.	0	0	0	0
67 <a href="#">Hartselle</a>	05/02/2003	03:40 PM	Hail	1.00 in.	0	0	0	0
68 <a href="#">Falkville</a>	05/05/2003	04:15 AM	Hail	0.88 in.	0	0	0	0
69 <a href="#">Decatur</a>	05/05/2003	11:12 AM	Hail	0.88 in.	0	0	0	0
70 <a href="#">Trinity</a>	06/11/2003	02:00 PM	Hail	0.75 in.	0	0	0	0
71 <a href="#">Hartselle</a>	07/12/2004	02:43 PM	Hail	0.75 in.	0	0	0	0
72 <a href="#">Trinity</a>	02/21/2005	05:15 PM	Hail	1.00 in.	0	0	0	0
73 <a href="#">Decatur</a>	02/21/2005	05:30 PM	Hail	0.75 in.	0	0	0	0
74 <a href="#">Hartselle</a>	02/21/2005	06:10 PM	Hail	0.75 in.	0	0	0	0
75 <a href="#">Laceys Spg</a>	02/21/2005	06:35 PM	Hail	0.75 in.	0	0	0	0
76 <a href="#">Decatur</a>	06/20/2005	05:20 PM	Hail	0.75 in.	0	0	0	0
77 <a href="#">Decatur</a>	08/13/2005	02:40 PM	Hail	0.88 in.	0	0	0	0
78 <a href="#">Somerville</a>	03/09/2006	05:10 PM	Hail	1.75 in.	0	0	0	0
79 <a href="#">Hartselle</a>	04/03/2006	02:15 AM	Hail	0.75 in.	0	0	0	0
80 <a href="#">Trinity</a>	04/07/2006	09:09 PM	Hail	1.75 in.	0	0	0	0
81 <a href="#">Hartselle</a>	04/07/2006	09:10 PM	Hail	0.88 in.	0	0	0	0
82 <a href="#">Decatur</a>	04/07/2006	09:13 PM	Hail	1.75 in.	0	0	0	0
83 <a href="#">Decatur</a>	04/07/2006	09:15 PM	Hail	2.00 in.	0	0	20K	0

84	<a href="#">Priceville</a>	04/07/2006	09:24 PM	Hail	1.75 in.	0	0	0	0
85	<a href="#">Danville</a>	04/07/2006	09:45 PM	Hail	1.75 in.	0	0	25K	0
86	<a href="#">Hartselle</a>	04/07/2006	09:53 PM	Hail	2.50 in.	0	0	40K	0
87	<a href="#">Laceys Spg</a>	04/07/2006	10:00 PM	Hail	1.75 in.	0	0	40K	0
88	<a href="#">Somerville</a>	04/07/2006	10:01 PM	Hail	1.75 in.	0	0	15K	0
89	<a href="#">Morgan City</a>	04/07/2006	10:19 PM	Hail	0.88 in.	0	0	0	0
90	<a href="#">Hulaco</a>	04/19/2006	01:35 PM	Hail	1.25 in.	0	0	0	0
91	<a href="#">Hartselle</a>	04/19/2006	11:01 PM	Hail	0.88 in.	0	0	0	0
92	<a href="#">Hartselle</a>	04/19/2006	11:24 PM	Hail	0.88 in.	0	0	0	0
93	<a href="#">Hartselle</a>	04/19/2006	11:24 PM	Hail	0.88 in.	0	0	0	0
94	<a href="#">Falkville</a>	04/20/2006	05:35 PM	Hail	1.75 in.	0	0	0	0
95	<a href="#">Morgan City</a>	04/20/2006	05:50 PM	Hail	0.88 in.	0	0	0	0
96	<a href="#">Somerville</a>	04/20/2006	05:55 PM	Hail	1.00 in.	0	0	0	0
97	<a href="#">Falkville</a>	04/21/2006	05:13 AM	Hail	0.88 in.	0	0	0	0
98	<a href="#">Somerville</a>	04/21/2006	05:23 AM	Hail	0.75 in.	0	0	0	0
99	<a href="#">Lacon</a>	07/19/2006	02:00 PM	Hail	0.75 in.	0	0	0	0
100	<a href="#">Eva</a>	06/28/2007	15:27 PM	Hail	0.88 in.	0	0	0K	0K
101	<a href="#">Danville</a>	06/01/2008	15:10 PM	Hail	0.88 in.	0	0	0K	0K
102	<a href="#">Trinity</a>	07/22/2008	13:38	Hail	0.75	0	0	0K	0K

		PM		in.				
103 <a href="#">Moulton Hgts</a>	04/10/2009	13:09 PM	Hail	2.75 in.	0	0	OK	OK
104 <a href="#">Oakworth</a>	04/10/2009	13:10 PM	Hail	1.00 in.	0	0	OK	OK
105 <a href="#">Fairview</a>	04/10/2009	13:12 PM	Hail	1.00 in.	0	0	OK	OK
106 <a href="#">Decatur</a>	04/10/2009	13:13 PM	Hail	4.25 in.	0	0	OK	OK
107 <a href="#">Massey</a>	04/10/2009	13:54 PM	Hail	1.75 in.	0	0	OK	OK
108 <a href="#">Morgan City</a>	04/10/2009	13:57 PM	Hail	2.75 in.	0	0	OK	OK
109 <a href="#">Wilhites</a>	04/10/2009	14:07 PM	Hail	1.75 in.	0	0	OK	OK
110 <a href="#">Leesdale</a>	04/10/2009	14:21 PM	Hail	0.75 in.	0	0	OK	OK
111 <a href="#">Oak Ridge</a>	04/19/2009	17:52 PM	Hail	1.75 in.	0	0	OK	OK
112 <a href="#">Trinity</a>	05/01/2009	18:49 PM	Hail	1.25 in.	0	0	OK	OK
113 <a href="#">Trinity</a>	05/01/2009	18:53 PM	Hail	0.88 in.	0	0	OK	OK
114 <a href="#">Laceys Spg</a>	05/15/2009	18:44 PM	Hail	1.75 in.	0	0	OK	OK
115 <a href="#">Trinity</a>	06/15/2009	18:25 PM	Hail	3.50 in.	0	0	OK	OK
116 <a href="#">Trinity</a>	06/15/2009	18:26 PM	Hail	3.75 in.	0	0	OK	OK
117 <a href="#">Trinity</a>	06/15/2009	18:29 PM	Hail	1.25 in.	0	0	OK	OK
118 <a href="#">Moulton Hgts</a>	06/15/2009	18:31 PM	Hail	1.00 in.	0	0	OK	OK
119 <a href="#">Moulton Hgts</a>	06/15/2009	18:31 PM	Hail	2.75 in.	0	0	OK	OK
120 <a href="#">Decatur</a>	06/15/2009	18:33 PM	Hail	1.00 in.	0	0	OK	OK

121 <a href="#">Griffin Addition</a>	06/15/2009	18:34 PM	Hail	0.88 in.	0	0	0K	0K
122 <a href="#">Griffin Addition</a>	06/15/2009	18:34 PM	Hail	1.00 in.	0	0	0K	0K
123 <a href="#">Decatur</a>	06/15/2009	18:35 PM	Hail	1.75 in.	0	0	0K	0K
124 <a href="#">Oakworth</a>	06/15/2009	18:35 PM	Hail	2.75 in.	0	0	10K	0K
125 <a href="#">Oakworth</a>	06/15/2009	18:36 PM	Hail	1.75 in.	0	0	0K	0K
126 <a href="#">Hartselle</a>	06/15/2009	18:47 PM	Hail	1.00 in.	0	0	0K	0K
127 <a href="#">Somerville</a>	06/15/2009	18:50 PM	Hail	1.75 in.	0	0	0K	0K
TOTALS:					0	0	204K	8K

Source: NOAA Storm Events

### **Hailstorm Probability in Morgan County, Alabama**

As discussed above, hailstorms occur in some form or fashion on a very regular basis in Morgan County. The annual probability of hail occurring somewhere in the county is clearly quite high. However, the site-specific incidence of hail is considered low because of the localized nature of the hazard. Morgan County has an average of 2.35 hail storms per year.

Morgan County experienced 127 hail events in a 54 year period resulting in a greater than 100% probability that a hail event will occur on an annual basis. The total amount of damages for the 127 hail events was \$212,000 with 18 hail events causing damage resulting in an estimated \$11,778 of expected annual damages from future events.

## **5.2.9 Wildfire**

### **General Description of the Hazard**

Morgan County is at a slight to moderate risk of a wildfire. 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 Morgan County, the vast majority of these fires occur on privately owned land. 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 Morgan County. 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.

### **Nature and Extent of the Hazard in Morgan County, Alabama**

The vast majority of wild land fires occur on privately owned lands. Additionally, the majority of the fires occur in areas where homes or structures are endangered. These areas are known as the wild land urban interface and are defined as areas where development meets wild land vegetation, both of which provide fuel for fires. The wild land urban interface areas have increased significantly throughout the county, and now face the risk of major losses from wildfires. In Morgan County, most wild land urban interface areas are considered “intermixed.”

Instead of having large forest areas surrounding an isolated town, Morgan County contains many scattered homes and farms spread across the forest areas.

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.

In addition to affecting people, wildfires may severely impact livestock inflicting a severe economic impact on farmers. Timber loss to fire creates an economic loss to both the private landowner and the county’s economy. Wildfires in Morgan County generally are moderate in intensity, resulting in destruction of undergrowth and some timber. The soil surface layer of the forest recovers quickly, minimizing erosion and water quality impacts. The entire Morgan County is vulnerable to wildfires.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a wildfire event is minor to major.

### Wildfire History in Morgan County, Alabama

The frequency and severity of wildfires is dependent on weather and on human activity. Nearly all wildfires in Morgan County are human caused (only a small 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. Even small fires can threaten lives, damage forest resources and destroy structures. **Table 5.2-15** shows the number of fires and acres burned during the period 1995 to 2006, as recorded by the Alabama Forestry Commission. Morgan County had a total of 248 fires during this 12 year period, affecting a total of 2,192 acres.

**Table 5.2-15 Wildfires in Morgan County 1995-2006**

Wildfires in Morgan County 1995-2006					
County	Total # of Fires	Average # of Fires	Total Acres Burned	Average Acres Burned	Average Fire Size
Morgan	248	20.7	2,192	182.7	8.8

*Source: Alabama Forestry Commission*

### Probability of Wildfires in Morgan County, Alabama

Morgan County is located in an area where the current fire danger conditions are low to moderate, according to the U. S. Forestry Service. Morgan County is less than 10% non-typed forest land. An area of the county located southeast off of AL Highway 67 has an extreme fire occurrence according to the Alabama Forestry Commission (2008). This area is neighboring a fire fighting resource. Nine areas of the county have a high fire occurrence, several areas have medium fire occurrence; and most areas have a low fire occurrence according to the Alabama Forestry Commission (2008).

Wildfires are an ongoing threat to both rural Morgan County and wild land urban interface communities at risk. 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, and so forth. Wildfire probability can be expected to remain relatively constant over the long run, assuming that weather patterns do not change significantly.

**The average number of fires per year per square mile 1995 – 2006 in Morgan County is between 0.0309 – 0.0537.** Source: Alabama Forestry Commission

Morgan County experienced 248 wildfire events in an 11 year period resulting in a greater than 100% probability that a wildfire event will occur on an annual basis. The total amount of acres burned for the 248 wildfire events was 2,192 resulting in an estimated 9 acres burned per wildfire event.

## 5.2.10 Lightning

### General Description of the Hazard

Lightning typically occurs as a by-product of a thunderstorm. 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.

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 5.2-21 Formation of Lightning**

Source: University Corporation for Atmospheric Research (UCAR)

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 is 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.

Morgan County is at a moderate risk of lightning incidences.

### **Nature and Extent of the Hazard in Morgan County, Alabama**

Lightning typically occurs as a by-product of a thunderstorm. Occasionally, thunderstorms are severe with frequent lightning and large hail. Morgan County is most vulnerable to this type of storm. The entire Morgan County is susceptible to lightning events.

On October 26, 1997, lightning struck an electric meter box at the Roundtop Community Church in Falkville, in the southern part of the county. This lightning incident started a fire and as a result the entire church was destroyed.

Scattered showers and thunderstorms with heavy downpours and frequent lightning occurred during the morning hours on May 13, 2009 along a frontal boundary. Lightning struck a four story, 20,000 square foot house on Breeding Drive North of Hartselle. A mother and child were in the home at the time and escaped without injury, as the fire erupted and quickly spread throughout the house. Tragically, this house was burned to the ground. In addition, the blaze destroyed two antique cars.

The extent/range of magnitude or severity that could be experienced by Morgan County due to a lightning event is minimum to minor.

### **Probability of Lightning in Morgan County, Alabama**

The probability of a lightning strike causing damage somewhere in Morgan County is high. However, because the impacts are so localized, the site-specific incidence of a lightning strike occurring is considered very low.

Two lightning events, one in March of 1996 and another in July of 1999 resulted in a total of two injuries. No deaths have been reported due to any lightning event.

Morgan County experienced 22 lightning events in a 15 year period resulting in a greater than 100% probability that a lightning event will occur on an annual basis. The total amount of damages for the 22 lightning events was \$2,826,000 with 21 lightning events causing damage resulting in an estimated \$134,571 of expected annual damages from future events.

**Table 5.2-16 Morgan County Lightning Events**

22 LIGHTNING event(s) were reported in Morgan County, Alabama between 01/01/1950 and 02/28/2010.

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** PropertyDamage  
**CrD:** Crop Damage

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">Decatur</a>	06/07/1994	1713	Lightning	N/A	0	0	1K	0
2 <a href="#">Decatur</a>	06/09/1994	0840	Lightning	N/A	0	0	5K	0
3 <a href="#">Decatur</a>	06/17/1994	1758	Lightning	N/A	0	0	5K	0
4 <a href="#">Decatur</a>	06/17/1994	1810	Lightning	N/A	0	0	50K	0
5 <a href="#">Decatur</a>	06/17/1994	1815	Lightning	N/A	0	0	1K	0
6 <a href="#">Decatur</a>	06/29/1994	0000	Lightning	N/A	0	0	1K	0
7 <a href="#">W Falkville</a>	01/27/1995	2200	Lightning	N/A	0	0	5K	0
8 <a href="#">Lacon</a>	02/15/1995	1630	Lightning	N/A	0	0	50K	0
9 <a href="#">Decatur</a>	06/24/1995	0000	Lightning	N/A	0	0	65K	0
10 <a href="#">Danville</a>	07/03/1995	1615	Lightning	N/A	0	0	20K	0
11 <a href="#">Decatur</a>	03/05/1996	09:00 PM	Lightning	N/A	0	1	2K	0
12 <a href="#">Decatur</a>	02/21/1997	07:10 AM	Lightning	N/A	0	0	4K	0K
13 <a href="#">Decatur</a>	07/08/1997	02:32 PM	Lightning	N/A	0	0	8K	0K
14 <a href="#">Hartselle</a>	10/25/1997	09:30 PM	Lightning	N/A	0	0	90K	0K
15 <a href="#">Falkville</a>	10/26/1997	02:20 AM	Lightning	N/A	0	0	250K	0K
16 <a href="#">Decatur</a>	07/01/1999	12:30 PM	Lightning	N/A	0	1	10K	0K
17 <a href="#">Decatur</a>	06/30/2002	04:00 PM	Lightning	N/A	0	0	20K	0K
18 <a href="#">Decatur</a>	09/20/2002	07:00	Lightning	N/A	0	0	15K	0K

		PM						
19 <a href="#">Basham</a>	06/02/2006	03:00 PM	Lightning	N/A	0	0	200K	0
20 <a href="#">Decatur</a>	07/22/2006	07:30 AM	Lightning	N/A	0	0	0	0
21 <a href="#">Falkville</a>	05/01/2009	12:45 PM	Lightning	N/A	0	0	25K	0K
22 <a href="#">Hartselle</a>	05/13/2009	07:00 AM	Lightning	N/A	0	0	2.0M	0K
TOTALS:					0	2	2.826 M	0

Source: NOAA Storm Events

### 5.3 Methodology for Identifying Natural Hazards for Additional Analysis

Although the Interim Final Rule (see **Appendix B**) requires that all natural hazards affecting the county must be included in a detailed overview, it is not practical or desirable to perform detailed countywide risk assessments on all these hazards. This is because many of the hazards have little probability of affecting the county and/or it is difficult to mitigate their effects. Because of this, the MCEMA concurred with the State EMA and determined that it would be desirable to reduce the initial list of hazards to those that have the most potential for damaging the county or its citizens in the future.

To reduce the overall number of hazards that will be given detailed risk assessments, the MCEMA mirrored the AEMA 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 Morgan County risks relative to each other, in order to identify the most significant ones, and concentrate the risk assessment on these. The hazards are given low, medium or high ratings in the two categories. This method was initially suggested to the AEMA by FEMA Region IV, at a February 26, 2004 SHMT meeting. The criteria used were:

1. History - High rating indicates that the hazard has affected the 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 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 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).

The committee determined that hazards with “high” ratings in both the probability and ease of mitigation categories are provided detailed and comprehensive risk assessments in later subsections. Those that received medium or low ratings in either category may or may not be provided detailed risk assessments due to lack of available data, but are in some cases included as risks to county-owned facilities and are also included in mitigation goals, objectives, strategies and actions. The hazard that received a high rating in each category was high wind (which includes high winds from hurricanes, windstorms, and tornadoes). **Table 5.3-1** shows all of the hazards considered in this methodology, and the rankings assigned by the committee.

**Table 5.3-1  
Qualitative Rankings of 10 Hazards,  
based on Probability of Occurrence and Mitigation Potential**

<b>Hazard</b>	<b>Data Sources</b>	<b>Probability Rating</b>	<b>Mitigation Potential Rating</b>	<b>Disposition in Plan</b>
1. Wildfire	Alabama Forestry Commission	H	L	Profile and risk assessment
2. Drought/ Extreme Heat Temperatures	NOAA	H	L	Profile and risk assessment
3. High Winds (Includes hurricanes, tornados, and windstorms)	NOAA Storm Events and Alabama Coastal Hazards Assessment  National Weather Service  Alabama Disaster Center	H	H	Profile and risk assessment
4. Flooding (includes storm surge, riverine, and flash flooding, and hurricanes)	National Oceanic and Atmospheric Administration (NOAA) Storm Events Database  National Oceanic and Atmospheric Administration (NOAA) Alabama Coastal Hazards Assessment  National Weather Service  Flood Insurance Rate Map (FIRM)	M	H	Profile and risk assessment
5. Hail	NOAA	M	L	Profile and risk assessment
6. Winter Storms/ Snow and Ice/ Extreme Cold Temperatures	NOAA Storm Events and Alabama Coastal Hazards Assessment  Alabama Disaster Center	M	L	Profile and risk assessment
7. Lightning	NOAA  National Weather Service	L	L	Profile and risk assessment



Hazard	Data Sources	Probability Rating	Mitigation Potential Rating	Disposition in Plan
8. Earthquakes	NOAA Alabama Coastal Hazards Assessment  National Seismic Hazard Mapping Project map, USGS  Geological Survey of Alabama	L	L	Profile and risk assessment
9. Landslides/ Land Subsidence/ Sinkholes	Geological Survey of Alabama  United States Geological Survey (USGS)	L	L	Profiled, but not part of detailed risk assessment
10. Dam Failures	AL Dept. of Economic and Community Affairs (ADECA)  NOAA	L	L	Profiled, but not part of detailed risk assessment

## 5.4 General Discussion of Vulnerability and Risk

Prior to reading the following sections about countywide risk, it is important to understand the meanings of several terms that appear in the federal and state hazard mitigation planning rules and this plan. The terms *risk* and *vulnerability* appear many times in both places, and the terms are defined below and given some context in terms of this plan.

### 5.4.1 Definition of Risk

In the context of hazard mitigation planning, *risk* is defined as the expected future losses to a community, business or county from the effects of natural events. The concept has several other concepts embedded in it. These are described below.

**Probability** is the likelihood that events of particular severities will occur. The ability of scientists and engineers to calculate probability varies considerably depending on the hazard in question. In many areas of the country, flood studies of various kinds can provide reasonably accurate estimates of how often water will reach particular places and elevations. On the other hand, tornadoes and earthquakes are nearly impossible to predict, except in the most general sense.

Probability is a key element of risk because it determines how often the events are likely to happen. It is important to note that risk is cumulative. This means that although natural hazards may not affect a place in any particular year, the probability of one or more events (in some places multiple events) occurring “adds up” over time. Risk calculations incorporate all expected future events – usually with some limit on the time horizon that is considered – in order to account for both repetitive events and for the probabilities that accumulate over time. For example, although earthquakes are infrequent in most places, there is some possibility of an earthquake occurring in any year. Therefore, the possibility of an earthquake occurrence increases over time.

**Severity** is the measure of “how bad” a hazard event is. Severity is measured in various ways, depending on the hazard. For example, floods can be measured in terms of depth, velocity, duration, contamination potential, debris flow, and so forth. Tornadoes are measured primarily in terms of wind speed, although their duration on the ground can also be an important factor in their destructiveness.

**Vulnerability** is the extent to which something is damaged by a hazard. Vulnerability is very often measured using “damage functions.” These are based on studies of how buildings perform when they are exposed to hazards. Similar functions are available for infrastructure and other physical assets. Injury and mortality functions (how many people are injured or die during events) are also sometimes used as indicators of vulnerability, but these are generally not as reliable as functions for physical assets because there are many more variables.

**Value** is how much it would cost to replace an asset that may be damaged or lost due to the impact of a natural hazard. There are many sources of this information, including standard cost estimating guides, experience of local officials, and statistical studies.

**Risk** is expressed in dollars of future expected losses. It is calculated in this way so that different kinds of losses can be adequately compared. For example, without a common basis for comparison, it would be virtually impossible to determine if the risk of injury from future earthquakes is greater than damage to vehicles in future floods. When the expected losses are converted to and expressed in dollars, the damages can be compared and prioritized. In combination with the concepts discussed above, almost any kind of hazard can be quantified and its risk expressed. The exceptions to this idea are *infrequent* or *highly unpredictable* events such as meteors impacting the earth, or manmade hazards such as terrorism. In these cases, the element of probability is virtually impossible to characterize, and the risk calculus cannot be accurate without it. Risk calculations often start with an annualized (yearly) loss figure, which is then projected into the future for some pre-determined period of time, then *discounted* to today’s value using a discount rate. This is a standard economic methodology that is required by the federal government for analyses of many of its programs, including FEMA’s mitigation initiatives. Those who are interested can read more about the required methodology, which is described in Office of Management and Budget (OMB) Circular No. A - 94.

The risk calculation techniques that were used as the basis for this plan are carefully described in the sections that follow, and conform to standard methodologies that FEMA/AEMA /Local EMA and other federal/state/local agencies have been using for many years. A discount rate of 7 percent and a 30 year time horizon is used in all calculations unless otherwise specified. The 7 percent discount rate was the OMB-mandated rate at the time this plan was developed, and the 30 year horizon is a medium-term figure that blends the expected life of a variety of potential mitigation actions. The sections in the plan dealing with specific mitigation activities use other time horizons as indicated, but the discount rate always remains at 7 percent.

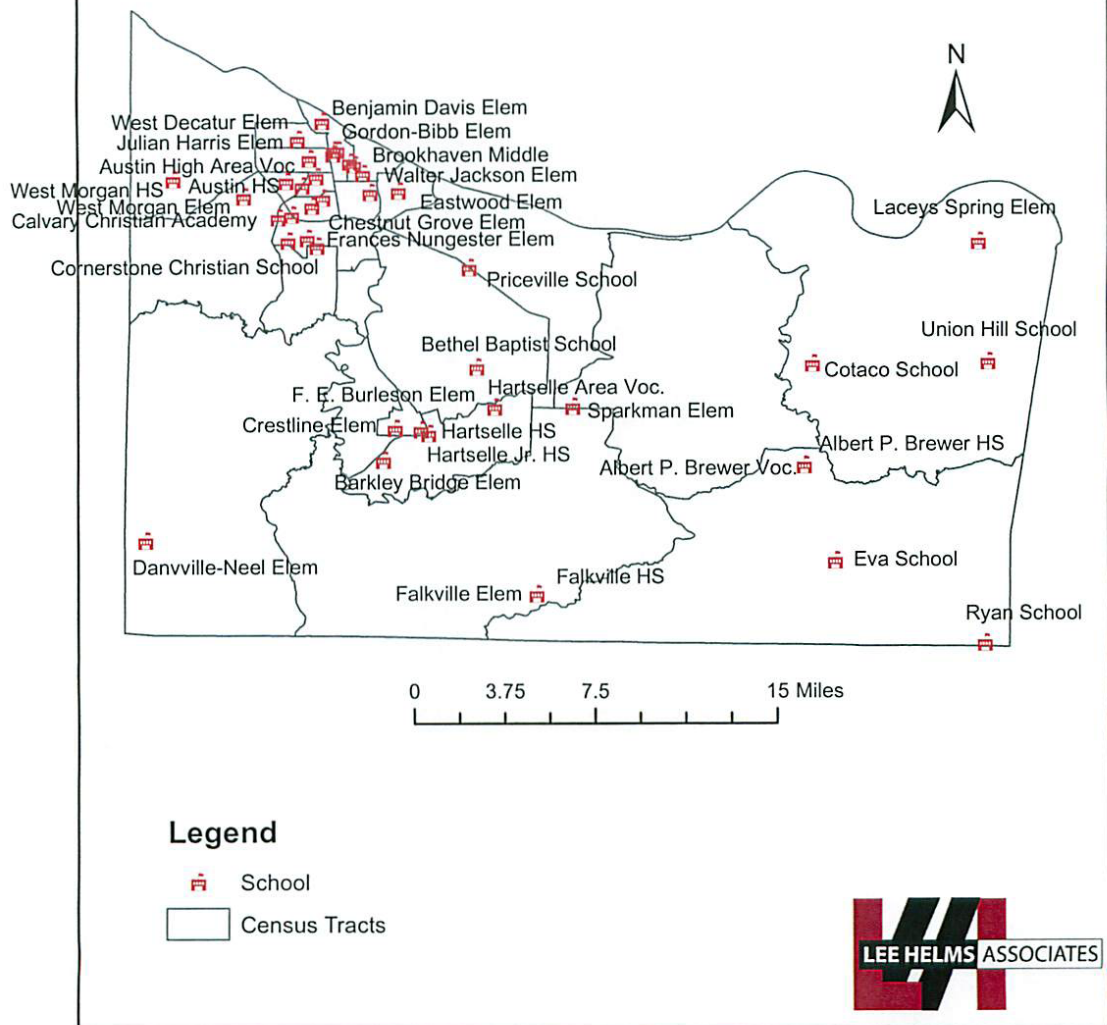
## 5.5 Vulnerability Assessment and Loss Estimation Background

Because it forms the basis of the county's hazard mitigation plan, the county-level risk assessment should be as comprehensive as possible. As discussed in **Section 5.3**, the MCEMA developed an initial list of hazards that were identified and profiled in **Section 5.2**. The MCEMA then used a ranking methodology to determine which of these would be further analyzed to determine countywide potential losses. The ranking methodology used five criteria to determine if each hazard should be included in the plan as explained in **Section 5.3**.

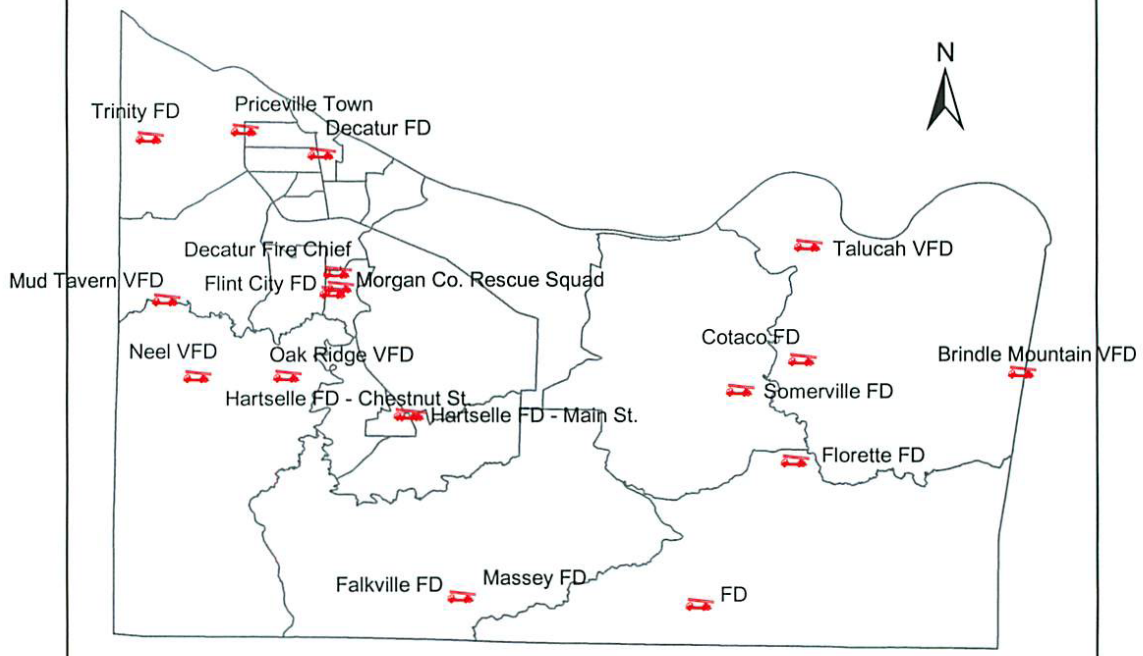
As explained in **Section 5.4**, the risk assessment is a determination of expected future losses, and is analogous to the term "loss estimation" in this document. Risk assessment/loss estimation is based on several closely related factors, including the probability and severity of hazards, and the vulnerability of assets countywide, including property, people, and functions such as businesses and government operations. Although it is possible to determine hazard probability and severity with some accuracy, vulnerability assessments are best conducted on an asset-specific basis, something that is not possible given the scope of this plan. Because of this, the results of the vulnerability assessments and loss estimates in this section should be considered general in nature, and most accurate relative to each other. The methods used for risk calculations vary by hazard. The methodologies are discussed in detail in the subsections below.

See **Figure 5.5-1**, **Figure 5.5-2**, **Figure 5.5-3**, and **Figure 5.5-4** for critical facilities located in Morgan County, AL. (*Source: HAZUS 2009*)

Figure 5.5-1  
Morgan County's Educational Facilities



## Figure 5.5-2 Morgan County's Fire Departments



0    3.75    7.5    15 Miles

**Legend**

- Fire Stations
- Census Tracts



Figure 5.5-3  
Morgan County's Law Enforcement Facilities

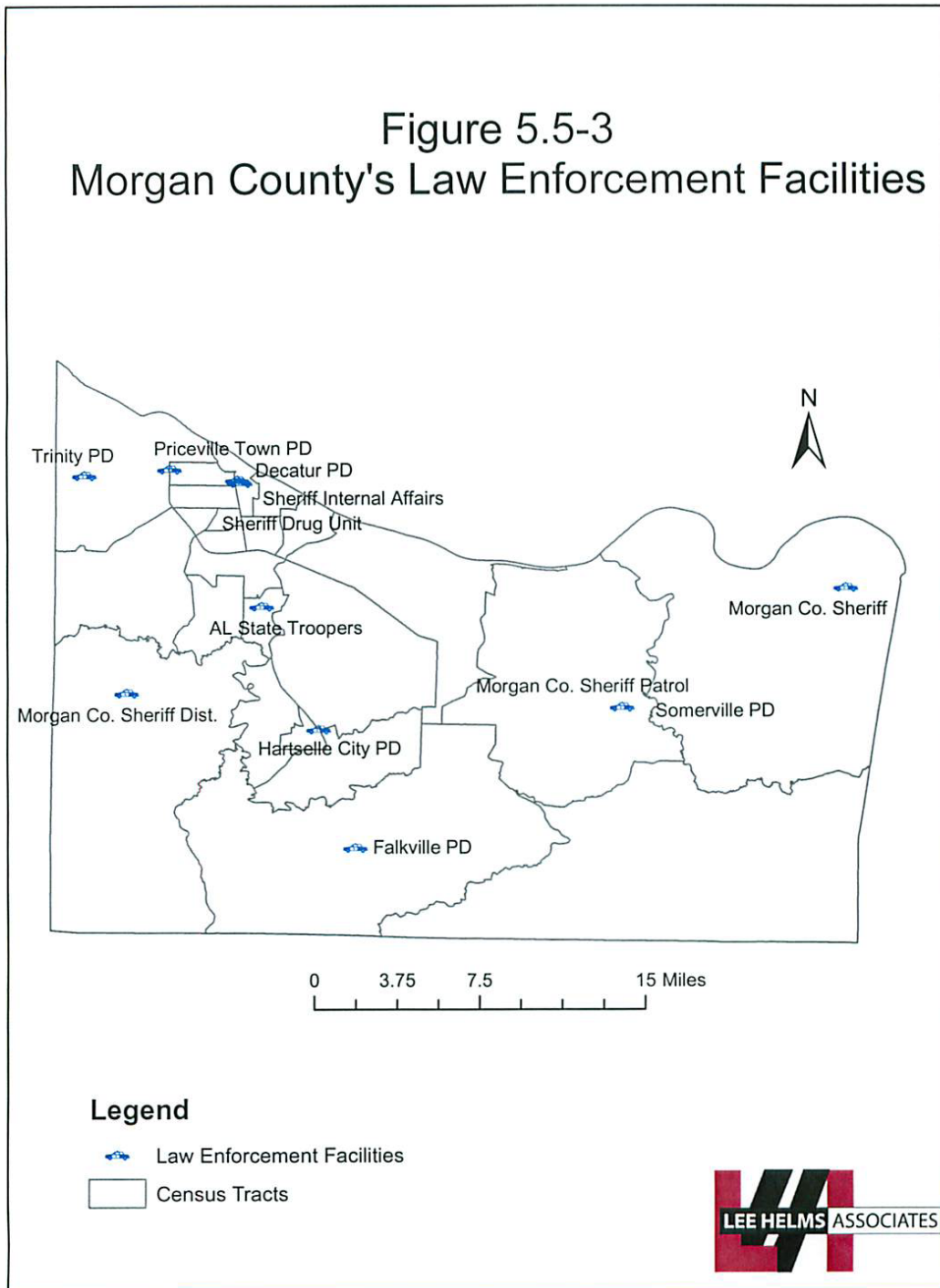
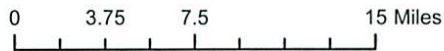
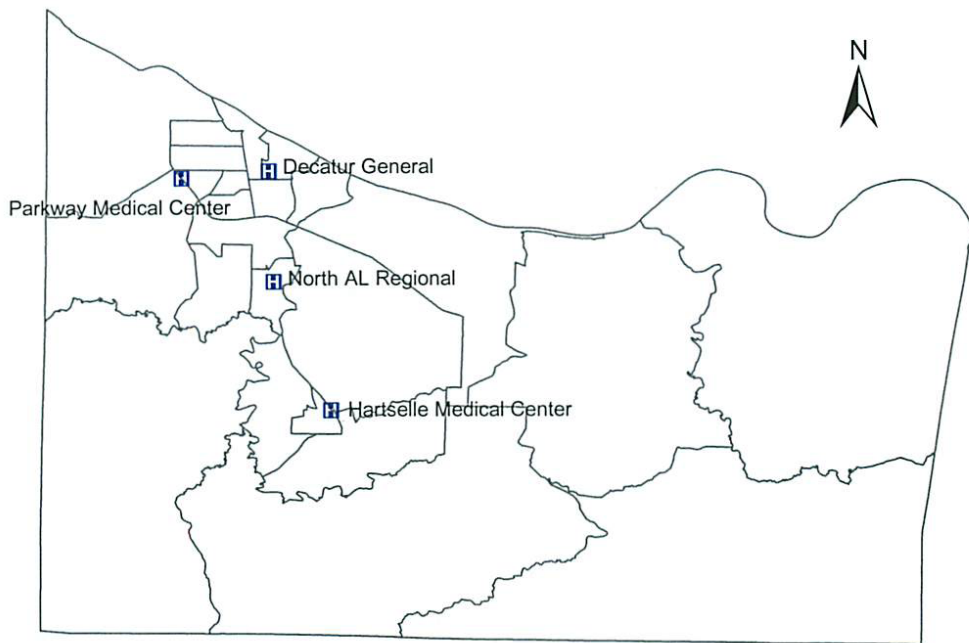




Figure 5.5-4  
Morgan County's Medical Facilities



**Legend**

-  Medical Facilities
-  Census Tracts



### 5.5.1 General Risk

#### Methodology 1 - Risk Estimates from Local Mitigation Plans

Requirement §201.6(c)(2)(ii) of the IFR states that “a description of an overall summary of each hazard and its impact on the community” shall be included in the plan.

**Table 5.5-1** below summarizes the risk determinations for Morgan County. This review process is explained in greater detail in **Section 7.3**.

**Table 5.5-1 Summary of Annual Potential Loss Estimates for Specific Hazards**

Summary of Annual Potential Loss Estimates for Specific Hazards					
County	Flood	Hurricane	Tornado	Wind (from Thunderstorm Wind)	Total Estimated Risk
Morgan	\$177,100	\$110,000,000	\$560,200	\$14,417	\$110,751,717

Source: NCDC/NOAA

#### Strengths, Biases and Limitations of Methodology 1

This summary of local hazard mitigation plan risk assessments shows strong consistency with the fact that coastal counties and those with the highest populations appear to have the most projected future damages (risk), based on the calculations. As hazard mitigation planning matures and the local plan is reviewed and updated over time, the risk assessment methodologies and results will improve, although even in their present state they appear consistent with other results, suggesting that the existing determinations are likely to be relatively accurate.

#### Methodology 2 –

### 5.5.2 Flood Risk

Floods are the most extensively studied natural hazard in most parts of the U.S. For most areas of moderate or greater population density and known flooding, detailed flood studies exist that show where floodwaters are likely to go and the frequency with which they are likely to occur. There is also an array of experimental data about the damages floods have caused in many areas. There are also various sources of information about how many people and structures are located in various areas. This information can be obtained from U.S. Census reports. These three sources of information were all used in determining countywide risk from floods. The techniques used and the results are discussed in the paragraphs below.

#### 5.5.2.1 Summary of Local Risk Assessments

Potential loss estimates can be found in **Section 5.5.1**.

#### 5.5.2.2 Countywide Risk Assessment

Because of the availability of data, four separate methods were used to estimate flood risk countywide. These are discussed in turn below. Although statistical corroboration was not possible because of the nature of the data, the combination of methods was to provide a broader range of information to better characterize the flood risk. The summary of project worksheet figures from six recent Alabama disasters for Morgan County was \$0.



**Methodology 1 – Analysis of NFIP Claims Data**

This method is based on a straightforward analysis of historic National Flood Insurance Program claims data in the county. **Table 5.5-2** shows the history of flood insurance claims in the county, from 1978 to 2007. Most of the columns are self-explanatory. The risk estimate (Column H) was determined using the average annual loss and multiplying the figure by the standard present value coefficient for a 7 percent discount rate (required by OMB) over a 30 year horizon.

**Table 5.5-2 Summary of Flood Insurance Claims Statistics for Morgan County**

County	A	B	C	D	E	F	G	H	I	J
	# of Flood Ins. Policies	# of Flood Ins. Claims	# of Claims per Policy	Total \$ Value Amt. of All Claims	# of Claims per Year	Avg. \$ Value Amt. per Claim	Avg. Annual # of Claims County-wide	Total Risk Projection Over a 30-Year Horizon	# of Repetitive Loss Properties	Types of Repetitive Loss Properties
Morgan	953	82	0.09	\$819,972	2.83	\$10,000	\$28,275	\$350,891	20	6 – Residential and 14 - Businesses

*Source: FEMA Region IV NFIP Query from State Plan/State NFIP Coordinator as of 10/07/2009*

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. Morgan County is selected for a High Risk with past damages of \$819,972 and future risk of \$350,891.

**Strengths, Biases and Limitations of Methodology 1**

This analysis uses FEMA/NFIP flood insurance claim data obtained from FEMA Region IV in May 2007. 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 countywide. 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.

**Methodology 2 – Analysis of NFIP Repetitive Loss Claims Data**

The second flood risk assessment method is based on National Flood Insurance Program (NFIP) repetitive loss insurance claims over a period of about 29 years (the data begins in 1978). The claims information was obtained from FEMA Region IV in May 2007 and located in the State Plan. The data was sorted into counties, and then sorted again to count both the numbers of claims over the period and the amount of claims in dollars. These figures were then each divided by the reporting period to determine an annual number of claims and dollar losses (**Table 5.5-2**). This is the annualized figure discussed in the previous section on risk definitions. 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.



According to the FEMA/National Flood Insurance Program as noted in the state plan and the State NFIP Coordinator, Morgan County experienced 0 – 49 NFIP Claims during the years 1978-2007; \$178,249.01 - \$600,362 is the total 30-year risk projection developed from NFIP claim analysis; 0 – 100 NFIP repetitive loss claims; and \$0 - \$188,222 is the total 30-year risk projection based on analysis of NFIP repetitive loss claim analysis.

### **Strengths, Biases and Limitations of Methodology 2**

This analysis uses FEMA/NFIP repetitive loss flood claim data obtained from FEMA Region IV in May 2007 and from the State NFIP Coordinator in October 2009. 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. 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 at the county level. The data can, however, provide insight into the relative flood risk in the county, accepting the bias noted previously. Morgan County and its participating jurisdictions experienced no repetitive losses.

### **Methodology 3 – GIS Analysis of Census Data and Digital Flood Maps**

*Note: Census data regarding population and Q3 floodplain boundary coverage have not changed since the 2005 version of the Plan, so this information is considered still valid and the discussion has not changed from the initial Plan.*

The third method is based on a process in which U.S. census block population data is overlaid on base maps that show the boundaries of the 100-year floodplain, from FEMA flood hazard boundary maps (also known as Q3 maps.) This method shows the percentage of each census block group that is in the floodplain. This information can then be used to infer the number of people and structures that are exposed to flooding. Although the information used in the initial analysis is at a block group level, the data can easily be converted to county level to be compared to the results of the other risk assessment methodologies. Only 19 counties in Alabama have Q3 floodplain maps available. There is a FEMA Q3 floodplain map available for Morgan County showing approximately 15,748 of population in the 100-year floodplain.

### **Strengths, Biases and Limitations of Methodology 3**

This method is based on data considered reliable because it comes from public sources such as the U.S. Census and FEMA floodplain maps. 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 group figures can be considered reliable, the exact distribution of people and structures within the individual block group areas is not known. As noted above, GIS technology was used to calculate the percentage of individual block groups that are in the flood plain. This method assumes that populations and structures are evenly distributed across block groups. The accuracy of this assumption cannot be tested within the scope of this plan, but presumably some block

groups and counties will have higher than expected densities of people and structures in the floodplain, and some will have lower densities.

#### **Methodology 4 – Analysis of FEMA HAZUS-MH Data**

HAZUS-MH is a nationally applicable standardized methodology and software program that contains models for estimating potential losses from earthquakes, floods, and hurricane winds.

HAZUS-MH was developed by the Federal Emergency Management Agency (FEMA) under contract with the National Institute of Building Sciences (NIBS). The NIBS maintains committees of wind, flood, earthquake 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 hurricane winds, floods, and earthquakes. 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, critical facilities and infrastructure.
- Economic loss – lost jobs, business interruptions, repair and reconstruction costs.
- Social impacts – impacts to people, including requirements for shelters and medical aid.

HAZUS-MH uses state-of-the-art geographic information system (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 hurricane winds, floods, and earthquakes on populations. HAZUS-MH will be fast-running to facilitate 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 great 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 to the specific conditions of a community. This level

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.

Three data input tools have been developed to support data collection. The Inventory Collection Tool (InCAST) helps users collect and manage local building data for more refined analyses than are possible with the national level data sets that come with HAZUS. InCAST was released in 2002 with expanded capabilities for multi-hazard data collection. HAZUS-MH includes an enhanced Building Inventory Tool (BIT) allows users to import building data and is most useful when handling large datasets (over 100,000 records), such as tax assessor records. The Flood Information Tool (FIT) helps users manipulate flood data into the format required by the HAZUS flood model.

**Table 5.5-3  
Flood Risk to Morgan County Critical Facilities**

<b>Jurisdiction</b>	<b>Police</b>	<b>Schools</b>	<b>Fire</b>	<b>Medical</b>	<b>Total</b>
Decatur	\$6,300,000	\$104,447,740	\$2,700,000	\$85,295,910	\$198,743,650
Trinity	\$1,260,000	\$9,272,510	\$540,000	N/A	\$11,072,510
Hartselle	\$1,260,000	\$36,900,220	\$1,620,000	\$10,058,480	\$49,838,700
Joppa	N/A	\$1,632,420	N/A	N/A	\$1,632,420
Somerville (County)	\$2,520,000	\$25,444,830	\$1,620,000	N/A	\$29,584,830
Falkville	\$1,260,000	\$8,807,460	\$1,080,000	N/A	\$11,147,460
Eva	N/A	\$4,308,820	\$540,000	N/A	\$4,848,820
Laceys Spring (County)	\$1,260,000	\$3,625,490	N/A	N/A	\$4,885,490
Danville (County)	\$1,260,000	\$4,783,360	\$540,000	N/A	\$6,583,360
Valhermoso Springs	N/A	N/A	\$540,000	N/A	\$540,000
<b>Total</b>	<b>\$15,120,000</b>	<b>\$199,222,850</b>	<b>\$9,180,000</b>	<b>\$95,354,390</b>	<b>\$318,877,240</b>

*Source: HAZUS 2009*

### 5.5.2.3 County-owned Facilities in Flood Hazard Areas

From the time the initial version of this plan was developed up to the present plan revision time, no reliable list of county-owned facilities existed outside FEMA's HAZUS software, which does not discriminate between state and locally-owned public facilities. As part of the planning process, local agencies were asked about their flood risk, but the answers to this query cannot be considered an accurate determination of flood risk. An ongoing recommendation is that the county performs an inventory of its facilities, and then gathers basic information about them to support more detailed and accurate risk assessments. Since the original plan was developed, priorities were necessarily shifted and this inventory has not been developed. Part of the county's longer-term effort in this update is to initiate the process of inventorying and prioritizing county facilities for more detailed risk assessments, for flood, wind and earthquake hazards. MCEMA expects this process to be completed by the next plan update in 2015. The inventory and

prioritization process will use (1) the county's risk management database, which includes a complete inventory of the county's facilities and (2) the NFIP insurance claims databases, which will provide some insight into the loss history. The process of developing this prioritized list has not yet been fully detailed, but will include a combination of use, value, criticality, maximum occupancy, structure type (where applicable) and loss history. After the prioritized list is developed, the county intends to perform risk assessments using standard methodologies that incorporate a range of facility-specific data, loss histories, and engineering information to calculate potential future losses from natural hazards. After this effort is complete, the county will update this plan to include the inventory process and risk assessment results from the detailed studies.

#### **5.5.2.4 Potential Dollar Losses to County Facilities in Flood Hazard Areas**

Flood risk assessment Method 4 (above), and **Table 5.5-4** provide estimated dollar losses to essential facilities due to floods. The inventory of facilities and the loss calculation were performed using the FEMA HAZUS tool, as well as local records. Facilities included police and fire stations, emergency operations centers, schools, and hospitals. As noted elsewhere, it is unlikely that HAZUS provides a comprehensive inventory of county-owned facilities. Numerous roads and other public infrastructure may be at risk from floods and other hazards, and are not included in this plan because of a lack of reliable data. It should also be noted that the facilities in the HAZUS output shown in **Table 5.5-4** is not necessarily all county-owned and/or operated facilities. In some cases the assets may be owned or operated by regional or state authorities. This part of the risk assessment is intended to provide supporting data for the overall result.

#### **5.5.3 Wind Risk**

As discussed throughout this document, the committee decided early in the plan updates process that it would separate the wind and flood elements of hurricanes into separate hazards. The committee then combined thunderstorms and high wind elements (tornadoes and hurricanes) into a single wind hazard.

##### **5.5.3.1 Summary of Local Risk Assessments**

Potential loss estimates for wind events can be found in **Section 5.5.1**.

##### **5.5.3.2 Countywide 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 Morgan County. NOAA maintains a database of tornadoes that extends back about 50 years. The database includes tornado strength, dollar damages and numbers of injuries and deaths. The NOAA database subdivides the information so it is possible to report the numbers of tornadoes and the injuries and casualties at the county level.

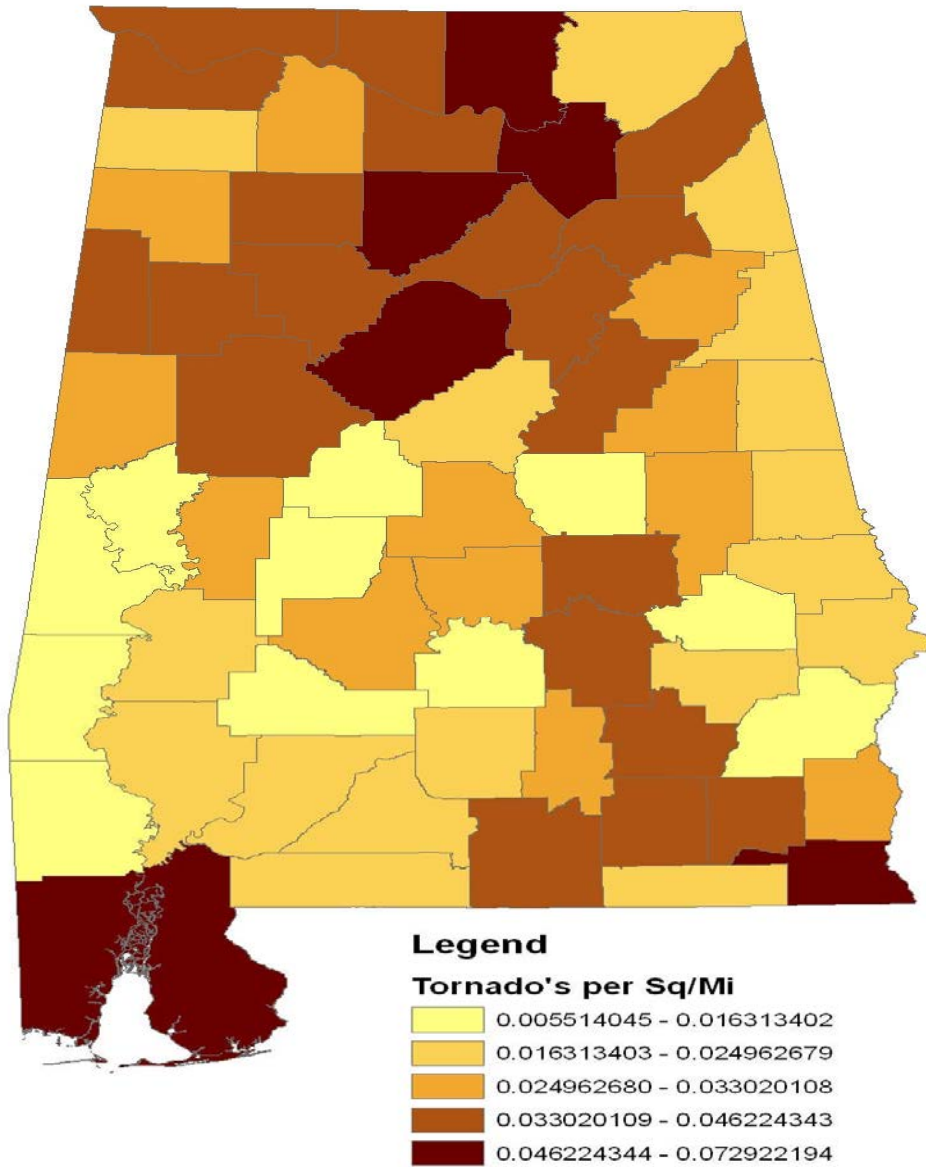
The NOAA data provided numbers of tornadoes by Fujita Class, damages in dollars, and injuries and deaths. The data are provided by year of occurrence. To determine countywide tornado risk, the NOAA data was first sorted by county and year. The figures for injuries and casualties were reported as raw numbers, so the data were converted to dollar figures using the values shown in **Table 5.5-4** below.

**Table 5.5-4 Values used for Monetary Conversion of Tornado Injuries and Deaths**

<b>Damage Category</b>	<b>Value for Monetary Conversion</b>
Injury (blended major and minor)	\$12,500
Death	\$2,200,000

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. The county damage, injury and casualty data were then projected to a 30-year horizon and discounted using a 7% discount rate, in accordance with OMB guidance (Circular No. A - 94). The resulting data was subsequently disaggregated to separate damages related to injuries and deaths from other damages. This was done because deaths cause a strong bias in the outcome due to their extremely high value.

**Figure 5.5-5 Tornadoes per Square Mile, 1950-2006**



*Source: National Climatic Data Center*

**Table 5.5-5 Summary of Tornado Risk in Morgan County**

County Name	# of Tornadoes	Tornadoes (Damage Only)			Tornadoes (Damage + Casualties)		
		Total	Annual Average	30-Year NPV	Total	Annual Average	30-Year NPV
Morgan County	33	\$14,055,000	\$242,328	\$3,944,744	\$44,855,000	\$1,129,157	\$5,132,415

*Source: National Climatic Data Center*

Note: The term NPV in the table stands for Net Present Value, which is the total expected future losses (risk) based on an annualized damage figure, a 30-year time horizon, and a 7% discount rate, as required by OMB guidance.

It should 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. **Table 5.5-5** 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 and there is a relatively small range of cost-effective mitigation options available to protect against more severe events.

**Table 5.5-6 Morgan County Tornado Damages and Future Risk by Category in Thousands of Dollars through July 2009**

Damage Category	Annual Damage (thousands)	30-Year Future Risk
Damage and Casualties	\$1,129,157	\$5,132,415

*Source: National Climatic Data Center*

**Strengths, Biases and Limitations of the Methodology**

Morgan County, 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 countywide basis. Clearly, as with all risks, the presence of vulnerable assets (including people) in particular areas increases risk because of the potential for damage, injury and death. 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 risk 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 of the central U.S. Much of the record of tornado events is based on *observations* of tornadoes forming or touching the ground, or on after-the-fact experimental 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 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 Morgan County experienced 33 tornadoes from 1952 to 2010, an average of 1.757 (approx. 2.0) per year countywide. Of these, the majority were Fujita class F-0 to F-1. (F0 = 10; F1 = 9; F2 = 6; F3 = 4; F4 = 2; F5 = 2). 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. Although tornadoes clearly have great potential to damage physical assets, the most significant damage they cause is in the form of injuries and casualties. Because of this, all other factors being equal, the *risk* from tornadoes is highly correlated with population density, the presence and efficiency of warning systems, and the availability and proximity of appropriate shelter.

**Hurricane Methodology – HAZUS Calculation of Losses**

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 National Oceanographic and Atmospheric Administration (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. FEMA’s HAZUS-MH software was used for the analysis in this section. The figures in **Table 5.5-7** are annual losses in the *Direct*, *Business* and *Total Loss* columns. The *Future Loss* column is the estimated future losses over a 30-year horizon, consistent with the other analyses in this section.

**Table 5.5-7 HAZUS Calculation of Dollar Losses**

<b>County</b>	<b>Annual Direct Loss</b>	<b>Annual Business Loss</b>	<b>Annual Total Loss</b>	<b>Future Loss – 30-Year Horizon</b>
Morgan County	\$1,050,000	\$161,000	\$1,210,000	\$15,018,000

*Source: FEMA/HAZUS 2007*

Morgan County is at a median risk for annual total loss and an average risk for Future Loss – 30-Year Horizon.

### **Strengths, Biases and Limitations of the Methodology**

These results are based on a default-data risk assessment from FEMA's HAZUS software. The patterns in the result are as predicted, and the most current version of HAZUS was used in the assessment, so the results are presumed to be reasonably reliable. Like any software, HAZUS is only as good as the information in its database.

#### **5.5.3.3 Potential Dollar Losses to County Facilities in High Wind Hazard Areas**

For this plan update, HAZUS 2009 records have been recorded in the following tables. **Section 5.5.4** of this plan provides a brief additional assessment and specific actions that the county is contemplating or already undertaking to address data insufficiencies in this area.

Upon completion of this inventory, the county will be able to combine this with high wind hazard maps for both hurricanes and tornadoes to delineate which facilities are in the high wind hazard areas. The county will also conduct detailed risk assessment on a subset of these facilities based on the prioritization process. The result of this work will be incorporated into this risk assessment.

Although there is clearly some tornado risk differential across the county due to the influences of climate and topography, the primary determinants of risk are population, availability of shelter, warning, and asset-specific characteristics (for example, building structural system, etc.). As a starting point, the county will use the prioritized inventory noted above as the basis for developing an inventory of data required for detailed risk assessment. The need for the data, as well as its utility, will be influenced by other factors as well, but it is possible to develop a basic set of common data points applicable to tornado risk without the requirement for very complex analysis.

**Table 5.5-8 Morgan County's Critical Facilities' Values**

<b>CRITICAL FACILITIES – MORGAN COUNTY</b>	
<b>FACILITY TYPE</b>	<b>REPLACEMENT VALUE</b>
Ryan School, 11001 Hwy. 67 South, Joppa, AL 35087-6210	\$1,632,420
Albert P. Brewer Voc., 59 Eva Road, Somerville, AL 35670	\$4,555,580
Albert P. Brewer High School, 59 Eva Road, Somerville, AL 35670-6423	\$10,715,110
Union Hill School, 2221 Union Hill Road, Somerville, AL 35670-6619	\$4,375,260
Cotaco School, 100 Cotaco School Road, Somerville, AL 35670-5329	\$5,798,880
Eva School, 20 School Road, Eva, AL 35621	\$4,308,820
Laceys Spring Elementary School, 48 School Road, Laceys Spring, AL 35754-4001	\$3,625,490
Danville-Neel Elementary School, 8688 Danville Road, Danville, AL 35619-6419	\$4,783,360
Morgan County Sheriff Dist. Station, 100 Neel School Road, Danville, AL 35619-6115	\$1,260,000
Morgan County Sheriff, 1865 Highway 231, Laceys Spring, AL 35754-3432	\$1,260,000
Somerville Police Department, Broad Street, Somerville, AL 35670-0000	\$1,260,000
Morgan County Sheriff – Patrol, 10001 W. Main Street, Somerville, AL 35670-0000	\$1,260,000
Florette Fire Department, 10 Florette Park Road, Somerville, AL 35670-6934	\$540,000
Cotaco Fire Department, 168 Benson Road, Somerville, AL 35670-5300	\$540,000
Somerville Fire Department, Broad Street, Somerville, AL 35670-0000	\$540,000
Talucah Volunteer Fire Department, Sharps Ford Rd., Valhermoso Springs, AL 35775-0000	\$540,000
Neel Volunteer Fire Department, 70 Neel School Road, Danville, AL 35619-6113	\$540,000
Fire Department, 4238 Eva Road, Eva, AL 35621-7629	\$540,000
Brindle Mountain Volunteer Fire Department, 4434 Hwy. 231, Union Grove, AL 35175-5270	\$540,000
<b>Total</b>	<b>\$48,614,920</b>

Source: HAZUS 2009

**Table 5.5-9 Decatur’s Critical Facilities’ Values**

<b>CRITICAL FACILITIES – CITY OF DECATUR</b>	
<b>FACILITY TYPE</b>	<b>REPLACEMENT VALUE</b>
St. Ann School, 240 Johnston Street, SE, Decatur, AL 35601	\$1,955,100
Montessori School, 402 Johnston Street, SE, Decatur, AL 35601-3008	\$474,540
Decatur Heritage Christian Academy, 2014 Sandlin Rd., Decatur, AL 35601	\$3,198,400
Cedar Ridge Middle School, 2715 Danville Road, SW, Decatur, AL 35603-4265	\$7,488,240
Calvary Christian Academy, 1413 Glenn Street, SW, Decatur, AL 35603	\$1,613,440
Cornerstone Christian School, 3211 Spring Ave., SW, Decatur, AL 35603	\$901,630
Priceville School, 317 Highway 67 South, Decatur, AL 35603-5403	\$8,285,470
Decatur High School, 1011 Prospect Dr., SE, Decatur, AL 35601-3229	\$10,155,160
Oak Park Middle School, 1218 16 <sup>th</sup> Ave., SE, Decatur, AL 35601-4325	\$6,102,580
Somerville Road Elementary School, 910 Somerville Road, SE, Decatur, AL 35601-3293	\$4,071,550
Eastwood Elementary School, 1802 26 <sup>th</sup> Ave., SE, Decatur, AL	\$2,752,330
Walter Jackson Elementary School, 1950 Park St., SE, Decatur, AL 35601-5262	\$1,869,690
Gordon-Bibb Elementary School, 211 Gordon Dr., SE, Decatur, AL 35601-2527	\$3,169,930
Leon Sheffield Elementary School, 801 Wilson St., NW, Decatur, AL 35601-1037	\$2,078,490
Benjamin Davis Elementary, 417 Monroe Dr., NW, Decatur, AL 35601-1515	\$2,325,250
West Decatur Elementary School, 708 Memorial Drive, NW, Decatur, AL 35601-2917	\$3,169,930
Brookhaven Middle School, 1302 5 <sup>th</sup> Ave., SW, Decatur, AL 35601-3838	\$5,988,690
Austinville Elementary School, 2320 Clara Ave., S. W., Decatur, AL 35601-6316	\$4,223,410
Austin High School, 1625 Danville Rd., SW, Decatur, AL 35601-5462	\$12,508,870
Woodmeade Elementary School, 1400 19 <sup>th</sup> Ave., SW, Decatur, AL 35601-4651	\$3,075,020



Austin High Area Voc. School, 1625 Danville Rd., SW, Decatur, AL 35601	\$4,555,580
Julian Harris Elementary School, 1922 McAuliffe Dr., SW, Decatur, AL 35603-1051	\$4,498,640
Frances Nungester Elementary School, 726 Tammy St., SW, Decatur, AL 35603-1328	\$4,821,330
Chestnut Grove Elementary School, 3205 Cedarhurst Dr., SW, Decatur, AL 35603-3127	\$5,191,470
Sheriff Drug Unit, 214 Oak St., NE, Decatur, AL 35601- 1828	\$1,260,000
Sheriff Internal Affairs, 302 Lee St., NE, Decatur, AL 35601-1926	\$1,260,000
Decatur Police Department, 402 Lee St., NE, Decatur, AL 35601-1928	\$1,260,000
Alabama State Troopers, 4204 U. S. Highway 31, Decatur, AL 35603-5000	\$1,260,000
Priceville Town Police Department, 520 Highway 67 South, Decatur, AL 35603-6302	\$1,260,000
Decatur Fire Department, 205 Gordon Drive, SE, Decatur, AL 35601-2527	\$540,000
Flint City Fire Department, 214 Oxmore Flint Road, Decatur, aL 35603-4804	\$540,000
Mud Tavern Volunteer Fire Department, 2278 Kirby Bridge Road, Decatur, AL 35603-3800	\$540,000
Decatur Fire Chief, 4119 Old Highway 31, Decatur, AL 35603-4864	\$540,000
Morgan County Rescue Squad, 4403 Old Highway 31, Decatur, AL 35603-4811	\$540,000
Decatur General Hospital, 1201 Seventh Street, SE, Decatur, AL 35601	\$51,499,420
Parkway Medical Center Hospital, 1874 Beltline Road, SW, Decatur, AL 35601	\$18,909,940
North Alabama Regional Hospital, 4218 Highway 31 South, Decatur, AL 35603	\$14,886,550
<b>Total</b>	<b>\$210,110,650</b>

Source: HAZUS 2009

**Table 5.5-10 Hartselle's Critical Facilities' Values**

<b>CRITICAL FACILITIES – CITY OF HARTSELLE</b>	
<b>FACILITY TYPE</b>	<b>REPLACEMENT VALUE</b>
Bethel Baptist School, 1301 Bethel Rd. NE, Hartselle, AL 35640	\$1,243,290
Sparkman Elementary School, 72 Plainview, Hartselle, AL 35640-5502	\$2,866,220
Barkley Bridge Elementary School, 2333 Barkley Bridge Rd., Hartselle, AL 35640-5119	\$3,986,140
F. E. Burluson Elementary School, 305 E. College Street, Hartselle, AL 35640	\$3,464,140
Hartselle Junior High School, 130 Petain St. SW, Hartselle, AL 35640-3228	\$6,757,450
Hartselle Area Voc. Center, 904 South Sparkman Street, Hartselle, AL 35640	\$4,555,580
Crestline Elementary School, 600 Crestline Drive, SW, Hartselle, AL 35640-2611	\$5,732,440
Hartselle High School, 904 South Sparkman Street, Hartselle, AL 35640-3198	\$8,294,960
Hartselle City Police Department, 150 Chestnut St., NW, Hartselle, AL 35640-2450	\$1,260,000
Hartselle Fire Department, 150 Chestnut St., NW, Hartselle, AL 35640-2450	\$540,000
Hartselle Fire Department, 200 Main Street, E, Hartselle, AL 35640-2437	\$540,000
Oak Ridge Volunteer Fire Department, 200 Simmons Road, Hartselle, AL 35640-4954	\$540,000
Hartselle Medical Center, 201 Pine Street, NW, Hartselle, AL 35640	\$10,058,480
<b>Total</b>	<b>\$49,838,700</b>

Source: HAZUS 2009

**Table 5.5-11 Falkville’s Critical Facilities’ Values**

<b>CRITICAL FACILITIES – CITY OF FALKVILLE</b>	
<b>FACILITY TYPE</b>	<b>REPLACEMENT VALUE</b>
Falkville Elementary School, 43 Clark Drive, Falkville, AL 35622-0388	\$4,622,020
Falkville High School, 43 Clark Drive, Falkville, AL 35622-0388	\$4,185,440
Falkville Police Department, 21 N. First Ave., Falkville, AL 35622-0000	\$1,260,000
Massey Fire Department, 3815 Nanceford, Falkville, AL 35622-000	\$540,000
Falkville Fire Department, E. Main Street, Falkville, AL 35622-0000	\$540,000
Ebenezer Fire Department	\$540,000
4 Wastewater Pumping Stations	\$80,000
2 Fresh water intakes from Hartselle/West Morgan	\$200,000
Joe Wheeler Power Stations	\$(gathering data)
Fairview Church (backup location for operations of the City of Falkville)	\$1,500,000
Police Firing Range	\$600,000
<b>Total</b>	<b>\$14,067,460+</b>

*Source: HAZUS 2009 and Chief Chris Free, Falkville Police and Fire Department*

**Table 5.5-12 Trinity's Critical Facilities' Values**

<b>CRITICAL FACILITIES – TOWN OF TRINITY</b>	
<b>FACILITY TYPE</b>	<b>REPLACEMENT VALUE</b>
West Morgan High School, 261 South Greenway Drive, Trinity, AL 35673-6002	\$4,147,480
West Morgan Elementary School, 261 South Greenway Drive, Trinity, AL 35673-9514	\$5,125,030
Trinity Police Department, 35 Preston Drive, Trinity, AL 35673-6552	\$1,260,000
Trinity Fire Department, 41 N. Seneca Drive, Trinity, AL 35673-5739	\$540,000
<b>Total</b>	<b>\$11,072,510</b>

*Source: HAZUS 2009*



**Table 5.5-13 Critical Roadways Vulnerable to Flooding and Landslides**

<b>CRITICAL ROADWAYS</b>			
<b>NAME</b>	<b>TYPE</b>	<b>FLOOD TYPE</b>	<b>DESCRIPTION</b>
Interstate 65			Major Highway
US Route 31			Major Highway
US Highway 72 Alt			Major Highway
US Highway 231			Major Highway
State Route 20			Major Highway
State Route 24			Major Highway
State Route 36			Major Highway
State Route 67			Major Highway
CSX Transportation Railway			Major Railway
Norfolk Southern Railway			Major Railway
Tennessee River			Major Waterway
Robinson Creek Road			Critical Roadway that often floods (Falkville)
Douglas Road			Critical Roadway that often floods (Falkville)
Buster Road			Critical Roadway that often floods (Falkville)
Culver Road			Critical Roadway that often floods (Falkville)
Townsend Road			Critical Roadway that often floods (Falkville)
Cedar Creek Road			Critical Roadway that often floods (Falkville)

*Source: Chief Chris Free, Falkville Police and Fire Department*

#### **5.5.4 Seismic Risk**

The county used FEMA’s HAZUS software to determine risk in Morgan County.

##### **5.5.4.1 Summary of Local Risk Assessments**

There are no potential loss estimates for earthquakes due to a lack of data and historical damages.

##### **5.5.4.2 Countywide Risk Assessment for Earthquakes**

###### **Earthquake Methodology – HAZUS Calculation of Losses**

FEMA’s HAZUS software was used to estimate seismic risk for Morgan County in Alabama. The methodology uses HAZUS default data about seismic hazards across the county in conjunction with countywide essential facility 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. To convert the estimated annual losses, the methodology uses a present value coefficient of 12.41 multiplied by the annual losses. The coefficient combines the required 7 percent discount rate with a standard 30-year time horizon to calculate future losses probable losses over that period.

#### **Strengths, Biases and Limitations of the Methodology**



This analysis uses FEMA's HAZUS software to calculate estimated seismic losses for Morgan County. The utility of these results is limited by several factors. First, the shake and soils data is in the process of being updated. Estimates will be more accurate if the new data can be incorporated into the next iteration of HAZUS calculations (or via another methodology). Second, facility-specific HAZUS data is limited to the defaults in the software providing a fairly reliable initial estimate. However, more detailed information about buildings (structure type, use, size, occupancy, etc.), will facilitate a much more detailed and accurate calculation. As a secondary part of its long-term plan update and maintenance processes, the county will be undertaking detailed risk assessments for critical county facilities; if possible, this work will include data collection for seismic risk calculations. The calculations will be introduced into a future plan update.

#### **5.5.4.3 Potential Dollar Losses to County Facilities in Seismic Hazard Areas**

As noted elsewhere in this plan, at the time these risk assessments were performed there was no comprehensive inventory of county-owned and/or operated facilities that included sufficient data for a detailed risk assessment. Without facility-, 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. As noted in the previous sub-section, the county will initiate the data-gathering process with an inventory of its most important facilities; prioritize these by potential risk, then gather the data that would be required to perform a formal risk assessment. **Section 5.5.4** of this plan provides a brief additional assessment of this issue, and specific actions that the county is contemplating or already undertaking to address data insufficiencies. Upon completion of this inventory, the county will be able to combine seismic risk maps to delineate which facilities are in the earthquake high hazard areas. The county will also conduct detailed risk assessment on a subset of these facilities based on the prioritization process. The result of this work will be incorporated into this risk assessment. Of note is that the northern portions of the state clearly have more risk than the southern portions. This is due to these areas being located in closer proximity to the NMSZ, SASZ, and SCSZ (seismic zones described in **Section 5.2.6**).

#### **5.5.5 General Summary and Recommendations**

As anticipated, data for countywide risk determinations was mostly available for flood hazards, although information related to wind risk has improved markedly since the last version of the plan. A reasonable amount of information regarding past occurrences and dollar damages for tornado and hurricane hazards presently exists, but the data is insufficient for even a marginally accurate risk assessment for these kinds of events. Accurate risk assessments for any of the hazards require site- and facility- specific data, including information about both the hazards themselves, as well as the performance of physical and operational elements. The information presented in this plan will be used as the basis for the county to prioritize its mitigation actions in the immediate future, and to determine additional measures it will 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 county, and outline some potential steps that the county can initiate to address them. In general, the flood risk assessment provides the expected results. As described in **Section 2**, 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. The most important action that the county can undertake at this point is to develop a comprehensive and reliable database of its facilities. Ultimately, this information is the basis of formal detailed risk assessments for all hazards, which can in turn be used to update the county's future mitigation plans. As noted in several places earlier in this section, as part of the 2010 plan update, the county began to perform an inventory and prioritization of county-owned facilities as the first step in detailed risk assessments for a subset of the most critical facilities. The results of this work are being incorporated into this part of the plan when they are completed.

## **5.6 Jurisdictions Most Threatened and Vulnerable to Damage and Loss**

IFR Subsection 201.6 (c) (2) (ii) requires that the Local Hazard Mitigation Plan include “a description of the jurisdiction’s vulnerability to the hazards...” This part of the Plan addresses that requirement. **Table 5.6-1 through Table 5.6-12** lists each jurisdiction’s vulnerability to hazards, as identified by the MCHMPC. **Table 5.6-13** lists the Direct Physical Losses to Structures and Contents in Morgan County (In Thousands of Dollars) as a result of hazards.

The vulnerability overview basically remains the same as stated in the previously approved plan with exceptions being to the data gathering and to the below items:

- Expected damages are noted in each hazard’s profile using this formula: Total amount of damages (in dollars) for each historical or reported event divided by the number of damage causing events within the time period = estimate of expected future damages.
- Vulnerable populations, to include the number of people and housing units potentially impacted in natural hazard events, were identified using the U. S. Census (2000) through Easy Analytic Software, Inc. (EASI Demographics) for the year 2010.
- Repetitive Loss Property information was identified through the State NFIP Coordinator and FEMA’s Repetitive Losses/BCX Claims record.
- Critical facilities are essential to the daily operation of Morgan County. The loss of use of these facilities could impose a severe impact on Morgan County, its municipalities, and its residents. Figures in this plan were gathered using the most current HAZUS-MH

2009 information; however, there are a few estimated values of buildings exposed to hazards that are not provided and are continuing to be updated.

- Probability of Occurrence is noted in each hazard's profile using this formula: Number of historical or reported events in a time period divided by the number of years the incidents occurred within = probability of future annual event occurrences. Also in **Table 5.6-1** through **Table 5.6-12**, an adjective description (Highly, Likely, and Possible) is used to state the Likelihood of Occurrence based on the above formula.
  - Highly = 100% or greater likelihood that the hazardous event will occur on an annual basis
  - Likely = 50% or greater likelihood that the hazardous event will occur on an annual basis
  - Possible = 1% or greater likelihood that the hazardous event will occur on an annual basis
- Location Size of Impact is noted in **Table 5.6-1** through **Table 5.6-12** using a percentage of the location size of impact a hazard could have on Morgan County and its jurisdictions. This description takes into account the land size at risk in relation to the entire county. This formula is used on a countywide basis.
- Impact of Hazard is noted in **Table 5.6-1** through **Table 5.6-12** using an adjective description (Critical, Limited, and Minimal) of the potential impact a hazard could have on Morgan County. This description takes into account the population, property, commerce, infrastructure, and services at risk in relation to the entire county.
  - Critical = The total population, property, commerce, infrastructures and services of the county that would be uniformly exposed to the effects of a hazard of a potentially great magnitude.
  - Limited = The total population, property, commerce, infrastructures, and services that would be exposed to the effects of moderate influence to the effect of a hazard.
  - Minimal = A limited area or segment of the population, property, commerce, infrastructures, and services that would be exposed to the effects of the hazard.
- Rank is noted in **Table 5.6-12** using 1 through 9. This rank takes into account the percentage and dollar amount of an annual future occurrence, the likelihood of occurrence, the location size of impact, and the impact of the hazard. The hazards are ranked only by countywide.

**Table 5.6-1  
Morgan County's Vulnerability to Damage and Loss from Hazards**

<b>Hazard</b>	<b>Likelihood of Occurrence</b>	<b>Location Size of Impact</b>	<b>Impact of Hazard</b>	<b>Rank</b>
Flooding	Likely	33%	Limited	7
High Wind	Highly	100%	Critical	1
Winter Storm/Snow & Ice/ Extreme Cold Temperature	Likely	100%	Limited	4
Landslide/Land Subsidence/Sinkhole	Possible	1%	Minimal	10
Earthquakes	Likely	5%	Minimal	8
Drought/Extreme Heat Temperature	Highly	100%	Minimal	2
Hail	Likely	100%	Minimal	6
Wildfire	Highly	100%	Minimal	3
Lightning	Likely	100%	Limited	5
Dam Failure	Possible	33%	Minimal	9

*Source: HAZUS 2009 and Easidemographics*

**Table 5.6-2  
Decatur's Vulnerability to Damage and Loss from Hazards**

<b>Hazard</b>	<b>Likelihood of Occurrence</b>	<b>Location Size of Impact</b>	<b>Impact of Hazard</b>
Flooding	Highly	16%	Limited
High Wind	Highly	48%	Critical
Winter Storm/Snow & Ice/ Extreme Cold Temperature	Possible	48%	Limited
Landslide/Land Subsidence/Sinkhole	Possible	.11%	Minimal
Earthquakes	Highly	.6%	Minimal
Drought/Extreme Heat Temperature	Possible	48%	Minimal
Hail	Likely	48%	Minimal
Wildfire	Highly	48%	Minimal
Lightning	Likely	48%	Limited
Dam Failure	Possible	16%	Minimal

*Source: HAZUS 2009 and Easidemographics*

**Table 5.6-3  
Hartselle's Vulnerability to Damage and Loss from Hazards**

<b>Hazard</b>	<b>Likelihood of Occurrence</b>	<b>Location Size of Impact</b>	<b>Impact of Hazard</b>
Flooding	Highly	3.7%	Limited
High Wind	Highly	11%	Critical
Winter Storm/Snow & Ice/ Extreme Cold Temperature	Possible	11%	Limited
Landslide/Land Subsidence/Sinkhole	Possible	.11%	Minimal
Earthquakes	Highly	.6%	Minimal
Drought/Extreme Heat Temperature	Possible	11%	Minimal
Hail	Likely	11%	Minimal
Wildfire	Highly	11%	Minimal
Lightning	Likely	11%	Limited
Dam Failure	Possible	3.7%	Minimal

*Source: HAZUS 2009 and Easidemographics*

**Table 5.6-4  
Falkville's Vulnerability to Damage and Loss from Hazards**

<b>Hazard</b>	<b>Likelihood of Occurrence</b>	<b>Location Size of Impact</b>	<b>Impact of Hazard</b>
Flooding	Highly	.4%	Limited
High Wind	Highly	1%	Critical
Winter Storm/Snow & Ice/ Extreme Cold Temperature	Possible	1%	Limited
Landslide/Land Subsidence/Sinkhole	Possible	.01%	Minimal
Earthquakes	Highly	.1%	Minimal
Drought/Extreme Heat Temperature	Possible	1%	Minimal
Hail	Likely	1%	Minimal
Wildfire	Highly	1%	Minimal
Lightning	Likely	1%	Limited
Dam Failure	Possible	.4%	Minimal

*Source: HAZUS 2009 and Easidemographics*

**Table 5.6-5  
Trinity’s Vulnerability to Damage and Loss from Hazards**

<b>Hazard</b>	<b>Likelihood of Occurrence</b>	<b>Location Size of Impact</b>	<b>Impact of Hazard</b>
Flooding	Highly	.7%	Limited
High Wind	Highly	2%	Critical
Winter Storm/Snow & Ice/ Extreme Cold Temperature	Possible	2%	Limited
Landslide/Land Subsidence/Sinkhole	Possible	.02%	Minimal
Earthquakes	Highly	.1%	Minimal
Drought/Extreme Heat Temperature	Possible	2%	Minimal
Hail	Likely	2%	Minimal
Wildfire	Highly	2%	Minimal
Lightning	Likely	2%	Limited
Dam Failure	Possible	.7%	Minimal

*Source: HAZUS 2009 and Easidemographics*

**5.6.1 Jurisdictions Most Vulnerable to Damage and Loss from Floods**

The following table summarizes the results from the county risk assessment for floods and names the jurisdictions most at risk. The Towns of Falkville and Flint City and Morgan County’s unincorporated areas ranked zero because they are the least at risks for flooding; whereas, the City of Decatur ranked one because it is the most at risks for flooding followed by the City of Hartselle that ranked 2 according to State Flood Insurance records on repetitive loss properties.

**Table 5.6-6  
Rank Based on the Number of Repetitive Loss Properties,  
According to State Flood Insurance Program Records**

<b>Jurisdiction</b>	<b>Rank</b>	<b># Repetitive Loss Properties</b>
City of Decatur	1	16
Town of Falkville	0	0
Town of Flint City	0	0
City of Hartselle	2	4
Morgan County (unincorporated areas)	0	0

*Source: State NFIP Coordinator as of 10/07/2009*

**Table 5.6-7 Direct Physical Losses to Structures and Contents in Morgan County  
(In Thousands of Dollars)**

County	Structure	Building	Contents	Total
Morgan	Residential	\$5,697,930	\$2,851,096	\$8,549,026
	Commercial	\$1,366,437	\$1,465,379	\$2,831,816
	Industrial	\$651,092	\$936,762	\$1,587,854
	Agricultural	\$24,490	\$24,490	\$48,980
	Religious	\$172,805	\$172,805	\$345,610
	Governmental	\$75,105	\$79,864	\$154,969
	Educational	\$68,572	\$72,335	\$140,907
<b>Total</b>		<b>\$8,056,431</b>	<b>\$5,602,731</b>	<b>\$13,659,162</b>

Source: HAZUS 2009

As noted in **Section 5.5** there are important differences in the source data and calculation methods that have a large influence on risk, i.e. the dollar amount of future damages. The most significant outcome of these calculations and tables is the repeated high rankings of certain jurisdictions in the calculations, not the specific dollar amounts of future risk.

### 5.6.2 Jurisdictions Most Vulnerable to Damage and Loss from High Winds

It is important to note that tornado wind risk is not the same as probability. Risk is the result of probability, severity, vulnerability, and value (see **Section 5.4**). The probability and severity of tornadoes are fairly well established and likely to remain constant.

**Table 5.6-8 Potential Tornado Damage for Morgan County**

County Name	# of Tornadoes	Damage Only		
		Total	Annual Average	30-Year NPV
Morgan	33	\$14,055,000	\$242,328	\$3,944,744

Source: National Climatic Data Center

Note: The term NPV in the table stands for Net Present Value, which is the total expected future losses (risk) based on an annualized damage figure, a 30-year time horizon, and a 7% discount rate, as required by OMB guidance.

As with the other hazards in this section, it is important to note that hurricane wind risk is not the same as probability. Risk is the result of probability, severity, vulnerability, and value (see **Section 5.4**). The probability and severity of hurricanes in Morgan County is fairly well established and likely to remain constant, notwithstanding the potential effects of global warming on weather patterns.

### 5.6.3 Jurisdictions Most Vulnerable to Damage and Loss from Earthquakes

Severe earthquakes are relatively unlikely in Morgan County, which explains the lack of risk figures. Decatur has experienced earthquakes of 1.8 and 2 magnitudes. Despite recent occurrences of earthquakes of some magnitude, the actual damage and loss were minor. Taking



into account the rareness of such events, the magnitude of such events, and the lack of significant damages attributable to such events, earthquake vulnerability for Morgan County is not expected to be significant. Adherence to the provisions of typical building codes will likely prevent most potential damages from becoming severe.

#### **5.6.4 Jurisdictions Most Vulnerable to Damage and Loss from Three Most Significant Hazards Countywide**

There are two methods by which the vulnerability to damage and loss can be compared countywide. The first of these is to add the calculated risks from the three hazards, and then simply rank them from most future risk to least. However, for the reasons discussed in **Section 5.5**, these figures can be somewhat misleading, particularly because of the disproportionate influence of deaths (primarily for the tornado hazard) have on the numerical outcome.

This ranking should be considered only a general indication of risk countywide. As noted elsewhere in this plan, accurate risk assessments and information about the performance and costs of mitigation measures (including policy changes), are the primary bases of mitigation planning. In order to be truly accurate, risk assessments must be highly localized, often addressing a single asset or operation. Because of this, the county-level risk assessment should be considered only a guide that identifies where the most risk is at a county level. In all cases the county will determine mitigation priorities based on the best available data, regardless of its source.

### **5.7 Impacts of Development Trends on Vulnerability**

Development trends, particularly population shifts and land use changes created by major economic development expansions and infrastructure improvements of countywide 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 natural hazards. 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 countywide significance that are expected to affect the location and extent of natural hazards vulnerability over time.

Morgan County's Government relies on the North Central Alabama Regional Council of Governments (NARCOG) for assistance in land use development. The following is acreage usage in order of most use to least use in Morgan County: Industrial, Commercial, Public, Residential, Transportation, Agriculture.

At the present time, there are no plans for future construction of any type in hazardous areas of the county.

Morgan County is part of one of the fastest growing regions in Alabama. However, the continued economic recession has significantly impacted the county. One new company located in Morgan County during 2009 creating fifteen new jobs. The total for new and expanding companies during the years of 2008-2009 was three; total investments were \$198,000,000; and the total

amount of jobs created was 67. Morgan County continues to create the most private investment in the NARCOG Region. (*Source: NARCOG*)

A major regional challenge is the impact of the 2005 Base Realignment and Closure (BRAC) Act that will add 4,700 direct and potentially 5,000 to 15,000 indirect jobs to the region by 2012 and an estimated population increase of 40,000 new residents, many of which will choose to live in Morgan County. Another related challenge is the large number (50-80 percent) of current employees of the Army at Redstone Arsenal eligible to retire by 2012. The BRAC-mandated expansion of Redstone Arsenal will provide opportunities for expanded procurement and innovation such as those experienced previously in the region. A few areas that present clear opportunities for regional economic development include alternative fuels initiatives by Oak Ridge National Laboratory, simulation and modeling in defense and aerospace applied to biomedical world by HAIB and Vanderbilt University, and the need for new technologies in aerospace, missile defense and aviation where molecular machines, biosensors and biomaterials offer significant benefits. (*Source: NARCOG*)

The new Valley Innovation Alliance's (VIA) Workforce Innovation in Regional Economic Development (WIRED) covers Northern Alabama and Southern Tennessee and is headquartered at Calhoun Community College. This workforce development program should enhance and strengthen our region and the rest of the Tennessee Valley area.

A Robotic Technology Park will be located at Calhoun Community College. The state-of-the-art training center will make Alabama more competitive in economic development efforts and training workers to support our existing high tech and automotive industries. The vision of Alabama Governor Bob Riley, the RTP is a collaboration between the state of Alabama, Calhoun Community College, Alabama Industrial Development Training (AIDT), and robotics industry leaders across the nation. When completed, the RTP will consist of three individual training facilities each targeted to a specific industry need. The three buildings will have an investment of approximately \$73 million, including robotics equipment, and is located on 53 acres across Highway 31 from Calhoun dedicated to workforce training and research and development. For more information please visit this website: <http://www.alabamartp.org>.

**Phase I:** The Robotic Maintenance Training Center will house an industry training program where technicians will be trained to work on robotic machinery. The 52,000 square foot facility will be staffed by trainers supplied by top robot builders and will be home to several major robotics and automation brands. (Completed)

**Phase II:** The Advanced Technology Research and Development Center will feature a test facility for companies currently in the robotics manufacturing industry. The 30,000 square foot facility will be used by NASA and the U.S. Army Missile Command for the purpose of research, development and testing of leading edge robotics used for military projects and space exploration. The structure will have appropriate infrastructure to support these activities with substantial outdoor areas for testing in a variety of environments. (Groundbreaking was held on Tuesday, June 22, 2010.)

**Phase III:** The Integration and Entrepreneurial Center will be a collaborative consolidation of technology involving higher education and industry. This facility will allow companies to

build and adapt robots for new industries. Start-up plants will be able to set up manufacturing lines to integrate software and equipment, test systems and train maintenance and production staff.

The Morgan County Industrial Park and Economic Development Cooperative (Morgan County, Decatur, Hartselle, Priceville, Falkville Trinity, Somerville, Eva, and the Decatur-Morgan County Port Authority) has issued \$16.7 million in bonds and approved the purchase of 166 acres for the Morgan Center Business Park to be located adjacent to I-65 in Hartselle, Alabama. This project showcases the spirit of regionalism and should have a huge impact on the region's economy. For more information please visit this website: <http://mceda.org>. The Decatur- Morgan County Chamber of Commerce has recently completed a "Retail & Business Development Guide" and a community action plan entitled "One Vision. One Voice. One Morgan County."

Future developments in certain areas of the county will be significantly limited as the result of difficulties with drainage, erosion, access, increased cost of development, and safety hazards.

The majority of all drinking water within the area is obtained from the Tennessee River or municipal reservoirs. Protecting groundwater supplies are not critical at this time. However, due to the potential and easy pollution of surface water, groundwater quality and quantity should not be ignored when planning for future growth.

Rail Service is provided to the Region by Norfolk Southern Railway (east/west) and CSX Transportation (north/south).

A major part of the state's navigation system is the Tennessee River. Accessibility to the Tennessee River has greatly influenced the agricultural and industrial growth of the area and is expected to enhance the area's prospects for future industrial development as well. There are three public use docking facilities on the Tennessee River including the Alabama State Docks, the Port of Decatur, and the Tennessee River Valley Terminal that provide access to a nine (9) foot, year-round navigable channel. Mallard Fox West is in a designated Foreign Trade Zone and U.S. Customs Port of Entry, which provides local industries with shipping and customs related advantages. Additionally, the Tennessee-Tombigbee Waterway provides access to the Gulf Coast and to other major ports in the east and west. The transportation advantages provided by the Tennessee River continue to exert considerable influence on industrial locations and economic growth in Morgan County.

Air transportation is provided to Morgan County by the Huntsville International Airport. Additionally, there are a number of smaller non-commercial airports offering variations of service located throughout the Region. These include Pryor Field in Decatur, a 5,100 foot runway.

Morgan County is served by some 20 carrier companies, motor freight terminal, UPS, Federal Express and Airborne Express.

At the present time, two major bus lines serve the North Central Alabama Region. Greyhound provides commercial bus service to the North and South, with six northbound and seven

southbound buses traversing the Morgan County area daily, while Continental Trailways buses makes two eastbound and three westbound runs daily through the area.

Presently, there are only three cities which offer public sanitary sewage within the county: Decatur, Falkville, and Hartselle. The remaining jurisdictions rely upon various on-site disposal systems, which include any method in which the entire disposal process occurs on the same site as the structure served. Additionally, the West Morgan/East Lawrence Water and Sewer Authority provide water and sewer service to its customers. The Town of Eva currently has a sanitary sewer system under construction.

Natural gas is furnished to the area by the following companies: Northwest Alabama Gas District, Decatur Utilities, Hartselle Utilities and Wheeler Basin Natural Gas. In addition, several L.P. gas companies operate within the county supplying areas not reached by natural gas.

Solid waste service is provided to the county by both local municipal collection and private collectors.

Morgan County currently has approximately 422 acres of industrial parks. The county is presently in the process of identifying additional acreage for future development.

Medical facilities in Morgan County include the Decatur General Hospital (273 beds), Parkway Medical Center (120 beds), and Hartselle Medical Center (150 beds). There are approximately 198 doctors, 45 dentists, and 956 nurses. (*Source: NARCOG*)

The Region's proximity to the Huntsville hi-tech economy, as well as its own Lockheed Missile and Space Company at Courtland, the United Launch Alliance (Boeing and Lockheed joint venture) and Nucor Steele Company located in Mallard Fox Industrial Park in Morgan County, provides opportunities for growth and economic development. Also, the steel industry is very much a part of the area's economy and is spreading into other parts of the state and into Tennessee.

According to comments received by NARCOG, safety hazards are faced by the residents of Morgan County due to the poor condition of roads and bridges throughout the rural areas of the county. Aging infrastructure and expanding infrastructure continue to challenge the sewer capacity of the area leading to rapidly increasing sewer rates and a significant number of houses on septic tanks. Another identified issue is the lack of municipal sewer systems in the rural areas of the county where there are failing septic tanks and poor soil conditions. The upgrading of water lines was identified as a need in several areas to provide for better fire protection in the rural portions of the county. One of the issues raised consistently is the workforce and the implications it holds for attracting and retaining industries. According to the National Association of Manufacturers and the Manufacturing Institute, this is a time of great challenge for U.S. manufacturers as they adapt to today's global economy. Companies across the country report experiencing a severe skills shortage. These shortages are exacerbated by changing demographics such as the retirement of baby boomers, technical advances demanding higher skills, and crushing global competition. At the same time, our education system is not producing students with the level of skills needed for today's advanced manufacturing. In response to this

human capital challenge, they have developed the “Dream It. Do It. Manufacturing Careers Campaign.” This is a grassroots economic development initiative that aims to foster growth, innovation and jobs by building entrepreneurial, regional alliances and providing youth-oriented awareness and education initiatives designed to captivate the next generation of American manufacturing talent.

According to NARCOG, below are **strengths** which are factors that are favorable or conducive to realizing the economic development potential of the county; **weaknesses** which are factors that restrict or limit the economic development potential of the county; **opportunities** which are possibilities due to favorable combinations of circumstances with the county; and **threats** which are circumstances or events with the potential to adversely impact the economic development potential of the region.

## **MORGAN COUNTY’S INFRASTRUCTURE:**

### **Transportation**

#### ***Strengths***

- A transportation network that is adequate to support industrial and commercial growth.
- An East-West rail network (Norfolk Southern), which is adequate to support industrial growth and expansion.
- Air transportation, which is adequate to meet industrial growth through the Huntsville International Airport and its port of entry.
- Water transportation, which is directly accessible by two of the three counties in the region.
- Direct access to the Tennessee-Tombigbee Waterway.
- The expanding and modernizing docks system at the Port of Decatur, along the Tennessee River.
- The Mallard-Fox dock system that enhances water transportation.
- Access to Interstate 65 and major 4 lane highways.

#### ***Weaknesses***

- Lack of funding to address problems in a timely manner.
- Substandard bridges in rural area.
- Lack of funding to replace substandard bridges.
- An inadequate statewide rail network to support industrial growth and expansion, particularly north-south (CSX).

- Railway transportation system is underutilized.

### ***Opportunities***

- Expand capacity of the Railway System.
- Widen Interstate 65 to six-lanes from Cullman/Jefferson County line to Tennessee

### **Natural Gas**

#### ***Strength***

- Availability of natural gas, primarily in incorporated areas, for economic development.

#### ***Weakness***

- Lack of natural gas in rural areas.

### **Water**

#### ***Strengths***

- Most of the region has adequate water supply and storage capacity.
- Water supply is adequate to support industrial development.

#### ***Weaknesses***

- Rural areas need water line upgrade to larger line size.
- Rural areas need more fire hydrants.
- Lack of water in un-served areas of the region.
- Additional water sources for future use.

### **Sewer**

#### ***Strengths***

- Wastewater sewers are primarily available in cities and towns.
- Wastewater treatment facility at Mallard Fox West Industrial Park

#### ***Weaknesses***

- The lack of wastewater treatment facilities in the rural portions of the region.

## **MORGAN COUNTY'S ECONOMIC DEVELOPMENT:**

### ***Strengths***

- Excellent location for markets and suppliers.
- Excellent workforce with a good work ethic, which is trainable and available.
- Access to additional untrained entry-level workforce.
- Excellent workforce development training available for new manufacturing facilities.
- Good prevailing wages.
- Access to high-tech workers from adjacent areas.
- Development of industrial park sites throughout the Region.
- A growing local governmental interest and participation in economic development.

### ***Weaknesses***

- Inadequate speculative buildings to attract a diversity of industries.
- Lack of a local program to provide small businesses with export assistance.
- Lack of a regional program to bring small rural areas up to prepared cities' status.
- Lack of small business incubators.

## **MORGAN COUNTY'S TOURISM, LEISURE, CULTURE & RECREATION:**

### ***Strengths***

- An abundance of recreation opportunities available.
- Soccer Tournaments in Decatur.
- Excellent tourism, museums, and cultural attractions.
- Good parks and recreation departments.
- Economic benefits of recreation.

### ***Weaknesses***

- Need for additional recreation facilities for rural portions of the county.
- Funding for recreation projects.

- More organized recreation and tourism on the river.
- Lack of funding for museums, cultural centers, and activities.
- Lack of the development of a Regional Recreation Plan.

## **MORGAN COUNTY'S EDUCATION AND WORKFORCE:**

### ***Strengths***

- A strong, educated, and trained workforce.
- Good work ethic.
- Proximity of the Region to educational institutions.
- Education outreach programs and night class offerings.
- Availability of skill training opportunities.
- Excellent training available for new manufacturing.
- Access to high-tech workers.
- Increasing education attainment levels region-wide.
- Good access to additional labor supply of untrained and entry-level workers.
- Strong collaboration between high schools, community colleges, and universities to meet workforce needs.
- Strong emphasis on workforce development in the community colleges.

### ***Weaknesses***

- The migration of educated young adults out of the area.
- Lack of comprehensive training in many rural high schools.
- The rural high school graduation rate should be increased.
- Lack of parent and student understanding of career opportunities in advanced manufacturing



## **MORGAN COUNTY'S QUALITY OF LIFE:**

### ***Strengths***

- Excellent health facilities are available throughout the Region.
- Low crime rate.
- Excellent rural and urban fire protection.

### ***Weaknesses***

Lack of coordination between agencies.

## **MORGAN COUNTY'S ENVIRONMENTAL & NATURAL RESOURCES:**

### ***Strengths***

- Abundant amount of prime farmland and forest.
- The aesthetics of the Region, for example the rolling topography, enhances the quality of life by leading to region-wide pride in cultural traditions.
- An adequate supply of energy is available.
- An adequate supply of water.
- Adequate supply of timber, minerals, sand, gravel, and other resources to support expansion of industry.

### ***Weaknesses***

- The sensitivity of the Tennessee River and its special considerations.
- Illegal dumping and groundwater pollution.
- Lack of programs to help prevent conversion of prime farmland to non-agricultural uses.
- The lack of proper land use management.
- The competition for use of forestland by agricultural and urban development.
- Lack of zoning in rural areas of the counties.

## **GOVERNMENT & FINANCE:**

### ***Strengths***

- Citizens' desire for good and effective government.
- Commitment to work with existing structure of local governments.

### ***Weaknesses***

- Lack of communication between Cities and Counties.
- Lack of effective and well-defined and measurable goals.
- Turf wars.
- Citizen's not willing to pay more for services.

### ***Opportunities***

- Maximize tourism potential through a comprehensive plan of advertising and joint cooperation of local governments.
- Growth in tourism at lakes throughout Alabama.
- Countywide Land Use Planning.
- Conference/Civic Facilities.
- Wet Counties/legalize sale of alcoholic beverages.
- Enhance existing recreation facilities to attract new industry.
- Upgrade water lines and systems in rural areas.
- Agriculture Center/Museum.
- Cleanup illegal dumps.
- Litter control.
- Construction of Speculative Buildings.
- Increase recreational opportunities for youths.
- Existing rail yard in Decatur could be utilized for regional distribution.

- Extend sewer along Highway 24 to Mallard Fox West Industrial Development Park and/or shopping center area (possible partners: East Lawrence and West Morgan water systems, Trinity).
- Broadband (internet).
- Develop and/or identify more grant programs (funding) for existing industries (retention).
- Develop stronger relationships with local representatives for funding local projects.
- Expand existing tech-prep programs in schools/colleges.
- Create a partnership between education and industry.
- Develop a unified legislative agenda.
- Plan a Comprehensive Tour of the Region as a tourist/visitor attraction.

### ***Threats***

- Maintaining existing industrial base.
- Lack of rural planning.
- Limited rural wastewater systems.
- Complacency in current educational systems.
- Lack of infrastructure, water upgrade in rural areas.
- Failure to upgrade and repair roads and bridges.
- Inadequate rural fire protection.
- Lack of Cooperation and Teamwork.
- Pollution (agriculture and industrial).
- Illegal dumps and litter
- Inability to support expanding automotive and aerospace industries and the emerging biotechnology industry with an available skilled workforce.

### **5.7.1 Population Growth Trends and the Impact on Vulnerability**

Census 2000 recorded a population of over 111 thousand residents in Morgan County. Overall, the county has experienced minimal growth from 2000 to 2008. The total population increased 4 percent for the July 2000 to July 2008 time period as presented in **Table 5.7-1**.

**Table 5.7-1 Morgan County's Population Growth from 2000-2008**

County	POPULATION ESTIMATES									CENSUS 2000
	July 1, 2008	July 1, 2007	July 1, 2006	July 1, 2005	July 1, 2004	July 1, 2003	July 1, 2002	July 1, 2001	July 1, 2000	April 1, 2000
Morgan County	115,959	114,789	113,875	112,660	111,993	112,125	111,287	111,434	111,183	111,064

Source: U. S. Census Bureau 2000/2008 Population Estimates

Morgan County is ranked number 19 in population among the 67 Alabama Counties as shown in the **Table 5.7-2**.

**Table 5.7-2 Geographical Rank of Morgan County**

Rank	Geographic Area	Population	Housing Units	Area in Square Miles			Density per Square Mile of Land Area	
				Total Area	Water Area	Land Area	Population	Housing Units
9	Morgan County	115,959	47,388	599	17	582	191	81

Source: U. S. Census Bureau 2008 Population Estimates and Easidemographics

**Population Density for Morgan County, Alabama in 2000**

Given the importance of population shifts over time, successful mitigation planning requires a look at future trends to assess future vulnerability. Population projections show that Morgan County is expected to increase in size by approximately 18.1 percent by the year 2025. The population projections for the county are presented in **Table 5.7-3**.

**Table 5.7-3 Morgan County 2000 Population and Future Population Projections**

County	Census 2000	Projections					Change 2000-2025	
		2005	2010	2015	2020	2025	Number	Percent
Morgan	111,064	115,944	120,367	124,358	127,957	131,112	20,048	18.1%

Source: U.S. Census Bureau and Center for Business and Economic Research, The University of Alabama, August 2001.

Note: Projections in this series are based on trends between the 1990 and 2000 censuses as noted in the State Plan.

Morgan County is exposed to some risk of property damage or loss of life during a natural hazard. 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 5.7-1** depicts the population density distributions of the urban and rural

subsections across the county. **Table 5.7-4** through **Table 5.7-8** depict the population affected by each hazard per jurisdiction.

**Table 5.7-4 Morgan County Population Vulnerable to Hazards as of 1/1/2010**

<b>Morgan County Population Vulnerable to Hazards</b>		
<b>Hazard</b>	<b>Total Population</b>	<b>Households Occupied and Vacant</b>
Flood	39,268	15,480
High Wind	117,804	46,439
Winter Storm/Snow & Ice/ Extreme Cold Temperature	117,804	46,439
Landslide/Land Subsidence/ Sinkhole	1,178	464
Earthquake	5,890	2,322
Drought/Extreme Heat Temperature	117,804	46,439
Hail	117,804	46,439
Wildfire	117,804	46,439
Lightning	117,804	46,439
Dam/Levee Failure	39,268	15,480

*Source: Easidemographics*

**Table 5.7-5 City of Decatur Population Vulnerable to Hazards as of 1/1/2010**

<b>Decatur's Population Vulnerable to Hazards</b>		
<b>Hazard</b>	<b>Total Population</b>	<b>Households Occupied and Vacant</b>
Flood	18,897	7,569
High Wind	56,691	22,708
Winter Storm/Snow & Ice/ Extreme Cold Temperature	56,691	22,708
Landslide/Land Subsidence/ Sinkhole	567	227
Earthquake	2,835	1,135
Drought/Extreme Heat Temperature	56,691	22,708
Hail	56,691	22,708
Wildfire	56,691	22,708
Extreme Temperatures	56,691	22,708
Lightning	56,691	22,708
Dam/Levee Failure	18,897	7,569

*Source: Easidemographics*

**Table 5.7-6 City of Hartselle Population Vulnerable to Hazards as of 1/1/2010**

<b>Hartselle's Population Vulnerable to Hazards</b>		
<b>Hazard</b>	<b>Total Population</b>	<b>Households Occupied and Vacant</b>
Flood	4,322	1,722
High Wind	12,965	5,165
Winter Storm/Snow & Ice/ Extreme Cold Temperature	12,965	5,165
Landslide/Land Subsidence/ Sinkhole	130	52
Earthquake	648	258
Drought/Extreme Heat Temperature	12,965	5,165
Hail	12,965	5,165
Wildfire	12,965	5,165
Lightning	12,965	5,165
Dam/Levee Failure	4,322	1,722

*Source: Easidemographics*

**Table 5.7-7 Town of Falkville Population Vulnerable to Hazards as of 1/1/2010**

<b>Falkville's Population Vulnerable to Hazards</b>		
<b>Hazard</b>	<b>Total Population</b>	<b>Households Occupied and Vacant</b>
Flood	445	70
High Wind	1,336	478
Winter Storm/Snow & Ice/ Extreme Cold Temperature	1,336	478
Landslide/Land Subsidence/ Sinkhole	13	5
Earthquake	67	24
Drought/Extreme Heat Temperature	1,336	478
Hail	1,336	478
Wildfire	1,336	478
Lightning	1,336	478
Dam/Levee Failure	445	70

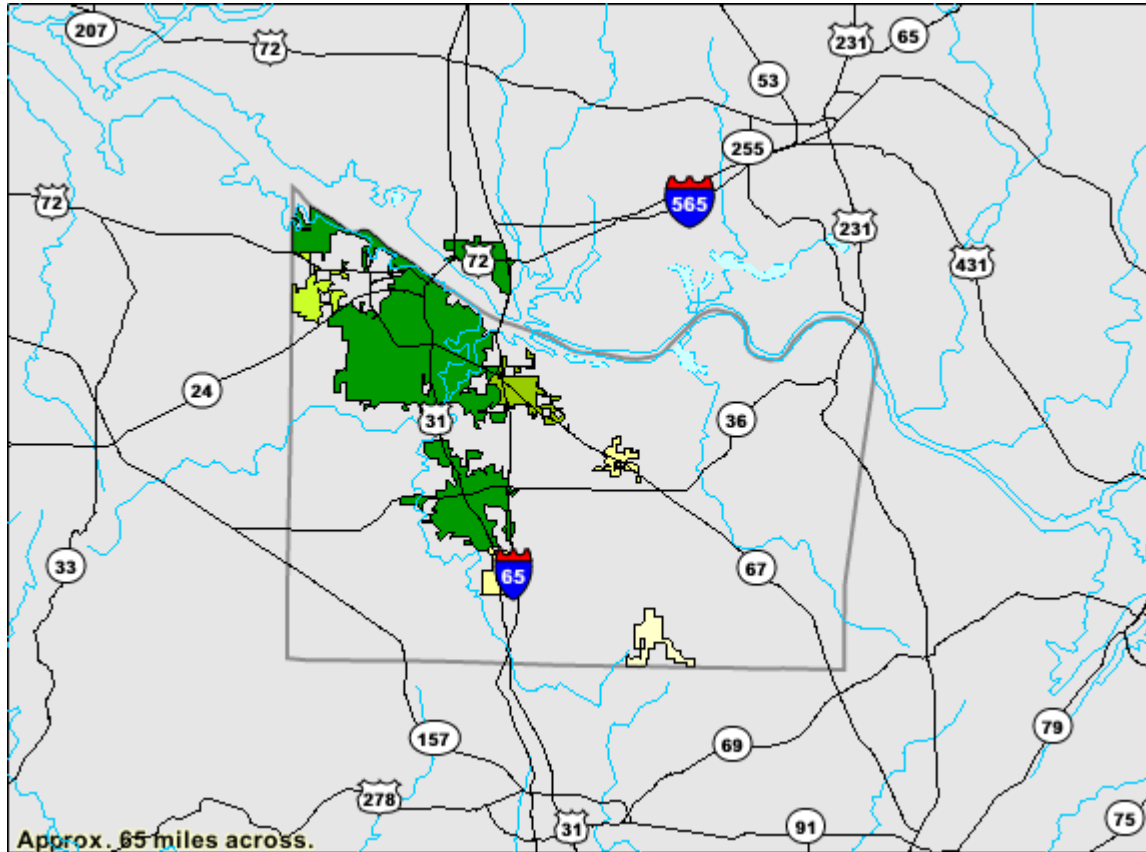
*Source: Easidemographics*

**Table 5.7-8 Town of Trinity Population Vulnerable to Hazards as of 1/1/2010**

<b>Trinity's Population Vulnerable to Hazards</b>		
<b>Hazard</b>	<b>Total Population</b>	<b>Households Occupied and Vacant</b>
Flood	796	300
High Wind	2,389	899
Winter Storm/Snow & Ice/ Extreme Cold Temperature	2,389	899
Landslide/Land Subsidence/ Sinkhole	24	9
Earthquake	120	45
Drought/Extreme Heat Temperature	2,389	899
Hail	2,389	899
Wildfire	2,389	899
Lightning	2,389	899
Dam/Levee Failure	796	300

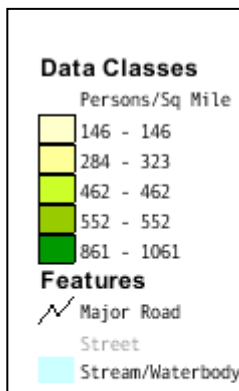
*Source: Easidemographics*

**Figure 5.7-1 Persons per Square Mile by Subsections of the County**



Source: U. S. Census Bureau 2000

Legend



Eva – 146 persons per square mile
Somerville -284 persons per square mile Falkville – 323 persons per square mile
Trinity - 462 persons per square mile
Priceville – 552 persons per square mile
Hartselle – 809 persons per square mile Decatur – 1,061 persons per square mile

### 5.7.2 Economic Development and Transportation Improvement Impacts on Vulnerability

Morgan County will continue to monitor development trends and adjust its mitigation responses accordingly. This plan update reflects the changes in population and growth patterns since the 2005 Plan, and future updates will address continuing changes over time.



## **Section 6 – Mitigation Strategy**

This section of the plan addresses requirements of Interim Final Rule (IFR) Section 201.6 (c) (3). A copy of the IFR is provided for reference in **Appendix B** of this document.

### **Contents of this Section**

- 6.1 Interim Final Rule Requirements for Mitigation Strategy
- 6.2 County Mitigation Strategy
- 6.3 County Hazard Mitigation Goals
- 6.4 Discussion of County Pre- and Post- Disaster Hazard Management Policies, Programs and Capabilities
- 6.5 Evaluation of County Laws, Regulations, Policies and Programs related to Hazard Mitigation and Development in Hazard Prone Areas
- 6.6 County Funding Capabilities for Hazard Mitigation Projects
- 6.7 General Description and Analysis of the Effectiveness of Local Mitigation Policies, Programs and Capabilities
- 6.8 Identification, Evaluation and Prioritization of Mitigation Actions
- 6.9 Identification of Funding Sources

### **Section 6 - What has been updated?**

- 6.1 Plan added “Interim Final Rule Requirements for Mitigation Strategy”

IFR language pertaining to plan updates was added

- 6.2 Plan added “County Mitigation Strategy”

Reaffirmed the Morgan County’s hazard mitigation strategy during 2010 plan update

- 6.3 Plan added “County Hazard Mitigation Goals”

Verified and refined the mitigation goals

Updated the planning process to reflect the efforts undertaken in 2010

- 6.4 Plan added “Discussion of County Pre- and Post- Disaster Hazard Management Programs”

- 6.5 “Evaluation of County Laws, Regulations, Policies and Programs related to Hazard Mitigation and Development in Hazard Prone Areas” was added to the Plan

- 6.6 “County Funding Capabilities for Hazard Mitigation Projects” was added to the Plan



6.7 “General Description and Analysis of the Effectiveness of Local Mitigation Policies, Programs and Capabilities” was added to the Plan

6.8 “Identification, Evaluation and Prioritization of Mitigation Actions” was added to the Plan

Mitigation Objectives and Actions were reviewed and completed, deleted, and deferred actions documented

Objectives and actions were refined based on additional input from the 2010 Process

New objectives and actions were added as a result of the 2010 plan update

Prioritization of the actions was re-evaluated

Provided a Mitigation Action Plan based on the revised objectives and actions

6.9 “Identification of Funding Sources” was added to the Plan

## **6.1 Interim Final Rule Requirements for Mitigation Strategy**

The Interim Final Rule (IFR) 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 Interim Final Rule (IFR) 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.”

## **6.2 County Mitigation Strategy**

During the update planning process in March of 2010, the Morgan County Hazard Mitigation Planning Committee (also referred to as the committee or MCHMPC) 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 Morgan County. Subsequent subsections of **Section 6** provide detailed descriptions of the county’s hazard mitigation goals, objectives, and implementation strategies.

### 6.3 County Hazard Mitigation Goals

The 2005 plan identified four goals supporting the Morgan County's overall mitigation strategy. During March of 2010, the committee met and reviewed the goals to assess if they were still valid. Additionally, questionnaires were sent to the committee to obtain detailed feedback on the pertinence and validity of the original goals. At the time of this update, all feedback received reaffirmed the applicability of the goals from the 2005 Plan to the county's updated mitigation strategy. It should be noted that comments were received stating that the plan should focus additional attention on man-made and technological hazards. However, because the IFR pertains only to natural hazards at this time, it was decided that the hazard mitigation plan's primary focus would remain natural hazards. Discussions pertaining to man-made and technological hazards would be tabled until future plan revisions when further information is available to the committee. The update process has afforded the county the opportunity to refine the wording of the goals to better communicate their intent. These refined goals are:

1. Establish a comprehensive countywide hazard mitigation system
2. Reduce Morgan County's risk from natural hazards
3. Reduce vulnerability of new and future development
4. Reduce Morgan County's vulnerability to natural hazards
5. Foster public support and acceptance of hazard mitigation

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**.

The Community Rating System (CRS) Program implemented by the Federal Emergency Management Agency (FEMA) through the National Flood Insurance Program (NFIP) allows policy holders within participating communities to receive a discount on NFIP policies. Any NFIP community may apply for inclusion in the CRS Program and be credited for a range of flood hazard mitigation activities that exceed NFIP minimum standards. Through the Insurance Services Office (ISO), a community applicant is graded based on criteria set forth in CRS guidelines for flood hazard mitigation. The grade assigned to each community results in a CRS classification. The CRS class determines the applicable insurance discount for the policy holders within the community. The CRS class rating is a scale of one through ten, with Class 1 communities receiving a 45 percent discount and Class 10 communities receiving no discount.

**Table 6.4-1** summarizes each CRS class and the applicable discount

**Table 6.4-1 CRS Class and Discount**

<b>CRS Class</b>	<b>Discount</b>	<b>CRS Class</b>	<b>Discount</b>
1	45%	6	20%
2	40%	7	15%
3	35%	8	10%
4	30%	9	5%
5	25%	10	0%

According to data compiled by FEMA through October 1, 2006, Alabama has 12 communities participating and three communities whose eligibility was rescinded for non-compliance with continuing program eligibility requirements. All remaining NFIP communities are deemed Class 10 (this includes Morgan County). Morgan County is a participant in the NFIP.

According to FEMA, each community must submit a recertification document by October 1 each year to maintain eligibility for the program. The recertification requirement includes documentation that mitigation program activities initially credited to the community have continued, in addition to documenting any new strategies implemented since the previous October 1. Any community that has received a Class 9 or better classification will revert to Class 10 on the following May 1 unless it submits the signed recertification worksheet by October 1 of each year. If the recertification does not include all the needed documentation, the community may lose enough points to cause a retrograde in its CRS classification. A repetitive loss community that fails to submit a copy of its annual outreach project or a community that fails to submit its annual progress report will revert to a Class 10.

**Post-Disaster Hazard Management Policies**

In May of 2004, the Morgan County Commission signed the updated Morgan County EMA Emergency Operations Plan. This plan 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. This plan recognizes the need for ongoing Emergency Management Planning by all jurisdictions of government within Morgan County.

This plan 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.

This plan is in accordance with existing federal, state, and local statutes. It has been concurred by the Morgan 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 Plan (NRP, now known as the NRF – National Response Framework). The NRP, 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, Morgan 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 will be undertaken by the MCEMA Director and those agencies and departments of the county having emergency assignments. The MCEMA director will insure that a list of all plan holders is maintained at the MCEMA Office and that updates are sent to each one of these individuals.

This plan 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.”

## **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, Morgan County actively pursues natural hazard mitigation opportunities, primarily through AEMA/FEMA grant programs (**Appendix G**) and technical assistance. The county, primarily through the MCEMA 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 Morgan County are established primarily at the local level. The Morgan County EMA manages the Morgan County Emergency Operations Plan aimed at post-disaster response and mitigation. Morgan 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 natural 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.

## **6.4.1 Discussion and Evaluation of County Pre- and Post-Disaster Hazard Management Capabilities**

### **Pre-Disaster Hazard Management Capabilities**

Morgan 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 over many years. 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 MCEMA capability.

### **Post-Disaster Hazard Management Capabilities**

The EOP, Support Annexes, includes continuity of operations.

## **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 MCEMA was established under the authority of Alabama Code – Section 31-9-10 and by resolution of the Morgan 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 6.4-2** identifies the NFIP participating communities in Morgan County.

**Table 6.4-2 Morgan County Communities Participating in the NFIP**

<b>Communities Participating in the National Flood Program</b>						
<b>CID</b>	<b>Community Name</b>	<b>Initial FHB Identified</b>	<b>Initial FIRM Identified</b>	<b>Current Eff. Map Date</b>	<b>Reg-Emer Date</b>	<b>Tribal</b>
010175#	Morgan County	03/11/77	07/16/81	12/16/05	03/01/91	No
010176#	City of Decatur (includes the City of Flint City)	05/24/74	09/05/79	12/16/05	09/05/79	No
010178#	City of Hartselle	05/10/74	07/17/78	12/16/05	07/17/78	No
010177#	Town of Falkville	05/24/74	01/03/79	12/16/05	01/03/79	No
010309#	Town of Trinity	06/25/76	11/24/78	12/16/05	11/24/78	No
Not a NFIP Member	Town of Priceville	(Priceville has started the process to join the NFIP)				
Not a NFIP Member	Town of Eva	(According to the County Engineer, Eva has no flood zones. The State NFIP Officer is sending a package to Eva to encourage them to become a member of the NFIP.)				
010363#	Town of Somerville	06/04/76	05/02/99	12/16/05	06/26/06	No
<i>Source: FEMA Community Status Book Report</i> <i>(E) = Indicates Entry in Emergency Program</i> <i>(M) = No Elevation Determined – All Zone A, C, and X</i>						

The MCEMA 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. MCEMA shall develop, in cooperation with other departments and agencies of the county, the necessary plans, rules and procedures for responding to these incidents/accidents. MCEMA will be responsible for ensuring that these plans, rules and procedures are implemented and carried out in Morgan County.

In 2005, the Morgan County EMA appointed a County Hazard Mitigation Planning Committee. The committee’s mission was 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. The committee was directed to develop the plan, and to assist in prioritizing and selecting of hazard and pre-disaster mitigation grant





program project applications. The committee was appointed for the duration of plan development in 2005, and essentially remains in place for the 2010 (five year) hazard mitigation plan revision.

### **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 commission 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.

### **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.

#### **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 MCEMA, 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 MCEMA to the AEMA/FEMA. The most active areas of grant use are as follows: Prevention – City of Falkville – Comprehensive Flood and Drainage Plan. Emergency Services Protection – One siren has been installed in Somerville. Structural Projects – Community Safe Rooms have been completed in Trinity, Somerville, and Danville. Another safe room is under construction in Somerville. Additional Community Safe Rooms are being applied for under the HMGP to include: 2 for the 3M Company in Decatur; 3 in Danville (VFD #1, VFD #2, Danville Punkin Center; and 5 for Nucor Steele. Other programs – Morgan County Emergency Operations Plan and the Morgan County Hazard Mitigation Plan.

#### **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 Morgan County, the County Commission has designated the Director of the MCEMA 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 MCEMA 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 Morgan County Multi-Hazard Mitigation Plan* 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 Morgan County EMA Staff and the Morgan County's Hazard Mitigation Planning Committee.

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, Morgan 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 Morgan County Hazard Mitigation Plan, Morgan County began pre- and post-disaster mitigations 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 with 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 presently working toward an approved 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 Morgan 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 MCEMA, 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 MCEMA 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 nonemergency 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.

## **6.7 General Description and Analysis of the Effectiveness of Local Mitigation Policies, Programs and Capabilities**

The county began the process of local mitigation plan development in 2004 through planning. As a result of this effort, the MCEMA is the central coordinating agency for local hazard mitigation planning. Planning funds have been awarded to the MCEMA 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 farmers 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 county have little to no home rule. Instead, most counties in the state (including Morgan 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 localities to perform local mitigation measures and implement mitigation projects vary significantly among local governments. As part of the 2010 county plan revision, a table summarizing local

capabilities has been developed and included in **Appendix G**. The summary table lists all municipalities of the county and notes various criteria for evaluating the capabilities of each of these localities, as follows:

- **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?

Another nationwide community preparedness program that Alabama communities participate in is the National Weather Service's (NWS) Storm Ready Program (SRP). 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 24hour 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 conducting emergency exercises.

Some benefits of being a Storm Ready community include decreased 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. Morgan County is a Storm Ready Community.

## **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 committee was reconvened in order to update the Morgan County Hazard Mitigation Plan. This process is discussed in more detail in **Section 4 – Planning Process**. While the representative individuals on the committee may have varied, agencies/organizations participating in the 2010 plan update have remained the same from the 2005 planning process. Additionally, agencies were provided lists of the actions and associated objectives identified in the 2005 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. This local plan review is discussed in greater detail in **Section 7.3**.

### **6.8.1 Identification and Evaluation of Mitigation Actions**

The process employed during the 2010 update of the County Hazard Mitigation Plan's mitigation actions was similar to that employed in 2005. 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 countywide level as well as from the standpoint of the organizations they represent. To accomplish this, the MCEMA developed a questionnaire based on the goals, objectives, and actions from the 2005 Plan and provided the document to the committee. This



questionnaire was sent to all members of the committee and the other contact organizations, with a request to respond within approximately forty-five days. The various organizations provided feedback as to whether the goals from the 2005 Plan were relevant in 2010. 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 2005 Plan. To accomplish this, another questionnaire was developed for each agency listed as a responsible agency in the 2005 Plan. The questionnaire 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 2010 update. The results of this input were compiled and included in the plan revision, currently under review by the committee. Thirdly, MCEMA 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 MCHMPC reviewed all mitigation measures, adjusted the priority based upon actions that were previously identified, and reevaluated 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 Morgan 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.

## **6.8.2 Mitigation Actions**

### **How Recent Events have Influenced Mitigation Actions**

Since the 2005 Plan was adopted, Morgan County was faced with a series of potential natural hazard threats. Morgan 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.

Since adoptions of the 2005 Plan, there have been 228 events in Morgan County as noted in **Table 6.8-1**.

**Table 6.8-1 Recent Disasters in Morgan County (1/1/2005 – 11/30/2009)**

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">Trinity</a>	02/21/2005	05:15 PM	Hail	1.00 in.	0	0	0	0
2 <a href="#">Decatur</a>	02/21/2005	05:30 PM	Hail	0.75 in.	0	0	0	0
3 <a href="#">Hartselle</a>	02/21/2005	06:10 PM	Hail	0.75 in.	0	0	0	0
4 <a href="#">Laceys Spg</a>	02/21/2005	06:35 PM	Hail	0.75 in.	0	0	0	0
5 <a href="#">Decatur</a>	04/30/2005	01:17 AM	Tstm Wind	50 kts.	0	0	0	0
6 <a href="#">Eva</a>	05/20/2005	12:18 PM	Tstm Wind	50 kts.	0	0	0	0
7 <a href="#">Somerville</a>	06/06/2005	12:50 PM	Tstm Wind	50 kts.	0	0	0	0
8 <a href="#">Decatur</a>	06/20/2005	05:20 PM	Hail	0.75 in.	0	0	0	0
9 <a href="#">Basham</a>	07/01/2005	04:20 PM	Tstm Wind	50 kts.	0	0	10K	0
10 <a href="#">Decatur</a>	07/01/2005	10:55 AM	Tstm Wind	50 kts.	0	0	0	0
11 <a href="#">ALZ001 - 001&gt;003 - 005&gt;010 - 016</a>	07/10/2005	06:00 PM	Tropical Storm	N/A	0	0	0	0
12 <a href="#">Decatur</a>	07/21/2005	02:50 PM	Tstm Wind	50 kts.	0	0	0	0
13 <a href="#">Decatur</a>	08/06/2005	03:08 AM	Tstm Wind	50 kts.	0	0	0	0
14 <a href="#">Decatur</a>	08/13/2005	02:40 PM	Hail	0.88 in.	0	0	0	0
15	08/29/2005	08:00	Tropical	N/A	0	0	0	0

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
<a href="#">ALZ001&gt;010-016</a>		PM	Storm					
16 <a href="#">Eva</a>	11/28/2005	02:23 PM	Tstm Wind	60 kts.	0	0	0	0
17 <a href="#">Trinity</a>	12/04/2005	01:12 AM	Tstm Wind	70 kts.	0	0	15K	0
18 <a href="#">Decatur</a>	12/04/2005	01:15 AM	Tstm Wind	60 kts.	0	0	0	0
19 <a href="#">Falkville</a>	12/04/2005	01:35 AM	Tstm Wind	60 kts.	0	0	0	0
20 <a href="#">Laceys Spg</a>	12/04/2005	01:35 AM	Tstm Wind	60 kts.	0	0	0	0
21 <a href="#">Eva</a>	03/09/2006	04:50 PM	Tstm Wind	80 kts.	0	0	5K	0
22 <a href="#">Decatur</a>	03/09/2006	05:10 PM	Tstm Wind	70 kts.	0	0	1K	0
23 <a href="#">Somerville</a>	03/09/2006	05:10 PM	Hail	1.75 in.	0	0	0	0
24 <a href="#">Hartselle</a>	04/03/2006	02:15 AM	Hail	0.75 in.	0	0	0	0
25 <a href="#">Trinity</a>	04/07/2006	09:09 PM	Hail	1.75 in.	0	0	0	0
26 <a href="#">Hartselle</a>	04/07/2006	09:10 PM	Hail	0.88 in.	0	0	0	0
27 <a href="#">Decatur</a>	04/07/2006	09:13 PM	Hail	1.75 in.	0	0	0	0
28 <a href="#">Decatur</a>	04/07/2006	09:15 PM	Hail	2.00 in.	0	0	20K	0
29 <a href="#">Decatur</a>	04/07/2006	09:16 PM	Tornado	F0	0	0	1K	0
30 <a href="#">Priceville</a>	04/07/2006	09:24 PM	Hail	1.75 in.	0	0	0	0

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
31 <a href="#">Danville</a>	04/07/2006	09:41 PM	Tornado	F1	0	0	80K	0
32 <a href="#">Danville</a>	04/07/2006	09:45 PM	Hail	1.75 in.	0	0	25K	0
33 <a href="#">Hartselle</a>	04/07/2006	09:53 PM	Hail	2.50 in.	0	0	40K	0
34 <a href="#">Laceys Spg</a>	04/07/2006	10:00 PM	Hail	1.75 in.	0	0	40K	0
35 <a href="#">Somerville</a>	04/07/2006	10:01 PM	Hail	1.75 in.	0	0	15K	0
36 <a href="#">Morgan City</a>	04/07/2006	10:19 PM	Hail	0.88 in.	0	0	0	0
37 <a href="#">Hulaco</a>	04/19/2006	01:35 PM	Hail	1.25 in.	0	0	0	0
38 <a href="#">Hartselle</a>	04/19/2006	11:01 PM	Hail	0.88 in.	0	0	0	0
39 <a href="#">Hartselle</a>	04/19/2006	11:24 PM	Hail	0.88 in.	0	0	0	0
40 <a href="#">Hartselle</a>	04/19/2006	11:24 PM	Hail	0.88 in.	0	0	0	0
41 <a href="#">Falkville</a>	04/20/2006	05:35 PM	Hail	1.75 in.	0	0	0	0
42 <a href="#">Morgan City</a>	04/20/2006	05:50 PM	Hail	0.88 in.	0	0	0	0
43 <a href="#">Somerville</a>	04/20/2006	05:55 PM	Hail	1.00 in.	0	0	0	0
44 <a href="#">Falkville</a>	04/21/2006	05:13 AM	Hail	0.88 in.	0	0	0	0
45 <a href="#">Somerville</a>	04/21/2006	05:23 AM	Hail	0.75 in.	0	0	0	0
46 <a href="#">Basham</a>	06/02/2006	03:00 PM	Lightning	N/A	0	0	200K	0

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
47 <a href="#">Decatur</a>	06/04/2006	03:25 PM	Tstm Wind	50 kts.	0	0	0	0
48 <a href="#">Priceville</a>	06/16/2006	01:40 PM	Dust Devil	N/A	0	0	0	0
49 <a href="#">Countywide</a>	07/19/2006	01:40 PM	Tstm Wind	50 kts.	0	0	0	0
50 <a href="#">Lacon</a>	07/19/2006	02:00 PM	Hail	0.75 in.	0	0	0	0
51 <a href="#">Decatur</a>	07/22/2006	07:30 AM	Lightning	N/A	0	0	0	0
52 <a href="#">Eva</a>	07/29/2006	12:50 PM	Tstm Wind	50 kts.	0	0	0	0
53 <a href="#">Decatur</a>	08/10/2006	12:59 PM	Tstm Wind	50 kts.	0	0	0	0
54 <a href="#">Hartselle</a>	08/20/2006	03:05 PM	Tstm Wind	50 kts.	0	0	5K	0
55 <a href="#">ALZ005&gt;007-009</a>	03/13/2007	00:00 AM	Drought	N/A	0	0	0K	0K
56 <a href="#">ALZ001&gt;010-016</a>	04/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
57 <a href="#">ALZ001&gt;007-016</a>	04/07/2007	03:00 AM	Frost/freeze	N/A	0	0	0K	0K
58 <a href="#">ALZ001&gt;007-016</a>	04/08/2007	00:00 AM	Frost/freeze	N/A	0	0	0K	0K
59 <a href="#">ALZ001&gt;010-016</a>	05/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
60 <a href="#">ALZ001&gt;010-016</a>	06/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
61 <a href="#">Decatur</a>	06/08/2007	15:10 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
62 <a href="#">Somerville</a>	06/15/2007	18:13 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
63 <a href="#">Trinity</a>	06/19/2007	12:00 PM	Tornado	F0	0	0	OK	OK
64 <a href="#">Trinity</a>	06/24/2007	15:00 PM	Thunderstorm Wind	52 kts.	0	0	OK	OK
65 <a href="#">Eva</a>	06/28/2007	15:27 PM	Hail	0.88 in.	0	0	OK	OK
66 <a href="#">ALZ001&gt;010-016</a>	07/01/2007	00:00 AM	Drought	N/A	0	0	OK	OK
67 <a href="#">Decatur</a>	07/01/2007	12:38 PM	Thunderstorm Wind	55 kts.	0	0	OK	OK
68 <a href="#">Hulaco</a>	07/01/2007	13:20 PM	Thunderstorm Wind	56 kts.	0	0	OK	OK
69 <a href="#">Trinity</a>	07/06/2007	13:55 PM	Flash Flood	N/A	0	0	OK	OK
70 <a href="#">Decatur</a>	07/20/2007	09:06 AM	Thunderstorm Wind	50 kts.	0	0	OK	OK
71 <a href="#">Echols Xrds</a>	07/25/2007	17:45 PM	Thunderstorm Wind	50 kts.	0	0	OK	OK
72 <a href="#">ALZ001&gt;010-016</a>	08/01/2007	00:00 AM	Drought	N/A	0	0	OK	OK
73 <a href="#">ALZ001&gt;010-016</a>	08/01/2007	00:00 AM	Heat	N/A	0	0	OK	OK
74 <a href="#">ALZ007</a>	08/09/2007	00:00 AM	Heat	N/A	1	0	OK	OK
75 <a href="#">ALZ007</a>	08/13/2007	00:00 AM	Heat	N/A	1	0	OK	OK

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
76 <a href="#">Basham</a>	08/17/2007	15:02 PM	Thunderstorm Wind	50 kts.	0	0	0K	0K
77 <a href="#">ALZ001&gt;010-016</a>	09/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
78 <a href="#">ALZ001&gt;010-016</a>	10/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
79 <a href="#">ALZ001&gt;010-016</a>	11/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
80 <a href="#">ALZ001&gt;010-016</a>	12/01/2007	00:00 AM	Drought	N/A	0	0	0K	0K
81 <a href="#">ALZ001&gt;010-016</a>	01/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
82 <a href="#">ALZ006&gt;008-016</a>	01/29/2008	20:00 PM	High Wind	43 kts.	0	0	10K	0K
83 <a href="#">ALZ001&gt;010-016</a>	02/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
84 <a href="#">Pumpkin Center</a>	02/06/2008	03:20 AM	Tornado	F2	0	0	0K	0K
85 <a href="#">Hartselle</a>	02/26/2008	01:55 AM	Thunderstorm Wind	50 kts.	0	0	5K	0K
86 <a href="#">ALZ001&gt;010-016</a>	03/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
87 <a href="#">ALZ001&gt;010-016</a>	04/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
88 <a href="#">Center</a>	04/11/2008	13:06	Tornado	F0	0	0	0K	0K

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
<a href="#">Grove</a>		PM						
89 <a href="#">ALZ001&gt;010 - 016</a>	04/15/2008	03:00 AM	Frost/freeze	N/A	0	0	0K	0K
90 <a href="#">ALZ001&gt;010 - 016</a>	04/16/2008	03:00 AM	Frost/freeze	N/A	0	0	0K	0K
91 <a href="#">ALZ001 - 004&gt;010 - 016</a>	05/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
92 <a href="#">Oak Ridge</a>	05/08/2008	13:15 PM	Tornado	F0	0	0	10K	0K
93 <a href="#">Leesdale</a>	05/10/2008	23:35 PM	Thunderstorm Wind	52 kts.	0	0	3K	0K
94 <a href="#">Somerville</a>	05/10/2008	23:42 PM	Thunderstorm Wind	52 kts.	0	0	5K	0K
95 <a href="#">Cole Spgs</a>	05/10/2008	23:56 PM	Thunderstorm Wind	52 kts.	0	0	3K	0K
96 <a href="#">ALZ004 - 006&gt;010 - 016</a>	06/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
97 <a href="#">Danville</a>	06/01/2008	15:10 PM	Hail	0.88 in.	0	0	0K	0K
98 <a href="#">Oakworth</a>	06/13/2008	18:00 PM	Flash Flood	N/A	0	0	0K	0K
99 <a href="#">ALZ004&gt;010 - 016</a>	07/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
100 <a href="#">Furney Xrds</a>	07/22/2008	12:38 PM	Thunderstorm Wind	65 kts.	0	0	6K	0K
101 <a href="#">Hartselle</a>	07/22/2008	12:50 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
102 <a href="#">Decatur</a>	07/22/2008	13:35	Thunderstorm	52	0	0	1K	0K



Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
		PM	Wind	kts.				
103 <a href="#">Trinity</a>	07/22/2008	13:38 PM	Hail	0.75 in.	0	0	0K	0K
104 <a href="#">Mt Tabor</a>	07/31/2008	14:20 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
105 <a href="#">Oden Ridge</a>	07/31/2008	14:42 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
106 <a href="#">ALZ004&gt;007 - 009&gt;010 - 016</a>	08/01/2008	00:00 AM	Drought	N/A	0	0	0K	0K
107 <a href="#">Huntsville Laceys Sp</a>	08/07/2008	10:57 AM	Thunderstorm Wind	52 kts.	0	0	1K	0K
108 <a href="#">Moulton Hgts</a>	12/09/2008	23:15 PM	Flash Flood	N/A	0	0	50K	0K
109 <a href="#">Huntsville Laceys Sp</a>	12/20/2008	18:30 PM	Thunderstorm Wind	56 kts.	0	0	4K	0K
110 <a href="#">Huntsville Laceys Sp</a>	01/06/2009	09:18 AM	Flood	N/A	0	0	100K	0K
111 <a href="#">Center Grove</a>	01/06/2009	20:26 PM	Flash Flood	N/A	0	0	0K	0K
112 <a href="#">ALZ007</a>	01/16/2009	03:00 AM	Cold/wind Chill	N/A	0	0	0K	0K
113 <a href="#">ALZ004 - 007</a>	02/11/2009	11:50 AM	High Wind	52 kts.	0	0	15K	0K
114 <a href="#">Center Grove</a>	02/27/2009	16:15 PM	Flash Flood	N/A	0	0	0K	0K
115 <a href="#">ALZ007</a>	03/01/2009	06:52 AM	Winter Weather	N/A	0	0	0K	0K
116 <a href="#">Center</a>	03/26/2009	05:00	Flash Flood	N/A	0	0	0K	0K

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
<a href="#">Grove</a>		AM						
117 <a href="#">Danville</a>	03/26/2009	05:00 AM	Flash Flood	N/A	0	0	0K	0K
118 <a href="#">Falkville</a>	03/26/2009	05:00 AM	Flash Flood	N/A	0	0	0K	0K
119 <a href="#">ALZ007</a>	03/28/2009	05:30 AM	Strong Wind	39 kts.	0	0	10K	0K
120 <a href="#">Austinville</a>	04/02/2009	15:39 PM	Thunderstorm Wind	56 kts.	0	0	6K	0K
121 <a href="#">Moulton Hgts</a>	04/02/2009	15:55 PM	Flash Flood	N/A	0	0	0K	0K
122 <a href="#">Furney Xrds</a>	04/02/2009	15:56 PM	Thunderstorm Wind	52 kts.	0	0	10K	0K
123 <a href="#">Huntsville Laceys Sp</a>	04/02/2009	16:26 PM	Tornado	F1	0	0	66K	0K
124 <a href="#">Brooksville</a>	04/02/2009	18:47 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
125 <a href="#">Somerville</a>	04/02/2009	18:50 PM	Thunderstorm Wind	56 kts.	0	0	16K	0K
126 <a href="#">ALZ007</a>	04/02/2009	19:57 PM	Strong Wind	39 kts.	0	0	7K	0K
127 <a href="#">Basham</a>	04/10/2009	13:00 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
128 <a href="#">Cedar Lake</a>	04/10/2009	13:00 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
129 <a href="#">Crowtown</a>	04/10/2009	13:01 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K
130 <a href="#">Fairview</a>	04/10/2009	13:01 PM	Thunderstorm Wind	56 kts.	0	0	15K	0K
131 <a href="#">Brooksville</a>	04/10/2009	13:02 PM	Thunderstorm Wind	52 kts.	0	0	0K	0K

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
132 <a href="#">Decatur</a>	04/10/2009	13:02 PM	Thunderstorm Wind	52 kts.	0	0	4K	0K
133 <a href="#">Decatur</a>	04/10/2009	13:02 PM	Thunderstorm Wind	52 kts.	0	0	6K	0K
134 <a href="#">Center Dale</a>	04/10/2009	13:05 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
135 <a href="#">Moulton Hgts</a>	04/10/2009	13:09 PM	Hail	2.75 in.	0	0	0K	0K
136 <a href="#">Oakworth</a>	04/10/2009	13:10 PM	Hail	1.00 in.	0	0	0K	0K
137 <a href="#">Fairview</a>	04/10/2009	13:12 PM	Hail	1.00 in.	0	0	0K	0K
138 <a href="#">Decatur</a>	04/10/2009	13:13 PM	Hail	4.25 in.	0	0	0K	0K
139 <a href="#">Griffin Addition</a>	04/10/2009	13:49 PM	Flash Flood	N/A	0	0	0K	0K
140 <a href="#">Penn</a>	04/10/2009	13:50 PM	Thunderstorm Wind	52 kts.	0	0	6K	0K
141 <a href="#">Massey</a>	04/10/2009	13:54 PM	Hail	1.75 in.	0	0	0K	0K
142 <a href="#">Morgan City</a>	04/10/2009	13:57 PM	Hail	2.75 in.	0	0	0K	0K
143 <a href="#">Wilhites</a>	04/10/2009	14:07 PM	Hail	1.75 in.	0	0	0K	0K
144 <a href="#">Leesdale</a>	04/10/2009	14:21 PM	Hail	0.75 in.	0	0	0K	0K
145 <a href="#">ALZ007</a>	04/12/2009	22:30 PM	Strong Wind	48 kts.	0	0	100K	0K
146 <a href="#">Pumpkin Center</a>	04/19/2009	17:43 PM	Tornado	F0	0	0	25K	0K
147 <a href="#">Oak Ridge</a>	04/19/2009	17:52 PM	Hail	1.75 in.	0	0	0K	0K

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
148 <a href="#">Brooksville</a>	04/19/2009	17:58 PM	Tornado	F0	1	0	20K	0K
149 <a href="#">Brooksville</a>	04/19/2009	17:59 PM	Thunderstorm Wind	56 kts.	1	0	41K	0K
150 <a href="#">Somerville</a>	04/19/2009	18:19 PM	Funnel Cloud	N/A	0	0	0K	0K
151 <a href="#">Huntsville</a> <a href="#">Laceys Sp</a>	04/19/2009	18:36 PM	Funnel Cloud	N/A	0	0	0K	0K
152 <a href="#">Falkville</a>	05/01/2009	12:45 PM	Lightning	N/A	0	0	25K	0K
153 <a href="#">Decatur</a>	05/01/2009	18:20 PM	Flash Flood	N/A	0	0	0K	0K
154 <a href="#">Trinity</a>	05/01/2009	18:49 PM	Hail	1.25 in.	0	0	0K	0K
155 <a href="#">Trinity</a>	05/01/2009	18:53 PM	Hail	0.88 in.	0	0	0K	0K
156 <a href="#">Morgan City</a>	05/01/2009	19:58 PM	Thunderstorm Wind	50 kts.	0	0	1K	0K
157 <a href="#">Danville</a>	05/01/2009	20:00 PM	Flash Flood	N/A	0	0	0K	0K
158 <a href="#">Falkville</a>	05/01/2009	20:35 PM	Flash Flood	N/A	0	0	0K	0K
159 <a href="#">Flint City</a>	05/01/2009	20:35 PM	Flash Flood	N/A	0	0	0K	0K
160 <a href="#">ALZ007</a>	05/01/2009	20:40 PM	Strong Wind	43 kts.	0	0	2K	0K
161 <a href="#">Center Dale</a>	05/01/2009	20:55 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
162 <a href="#">Oden Ridge</a>	05/02/2009	20:37 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
163 <a href="#">Decatur</a>	05/03/2009	13:40 PM	Flash Flood	N/A	0	0	0K	0K

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
164 <a href="#">Morgan City</a>	05/03/2009	14:33 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
165 <a href="#">Oak Ridge</a>	05/06/2009	04:31 AM	Thunderstorm Wind	56 kts.	0	0	6K	0K
166 <a href="#">Flint City</a>	05/06/2009	06:04 AM	Flash Flood	N/A	0	0	0K	0K
167 <a href="#">Pumpkin Center</a>	05/06/2009	07:27 AM	Tornado	F1	0	0	50K	0K
168 <a href="#">Oakworth</a>	05/06/2009	07:34 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
169 <a href="#">Oakworth</a>	05/06/2009	07:39 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
170 <a href="#">Oakworth</a>	05/06/2009	07:42 AM	Tornado	F0	0	0	50K	0K
171 <a href="#">Lacon</a>	05/06/2009	07:43 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
172 <a href="#">Oden Ridge</a>	05/06/2009	07:43 AM	Thunderstorm Wind	52 kts.	0	0	6K	0K
173 <a href="#">Lacon</a>	05/06/2009	07:48 AM	Thunderstorm Wind	50 kts.	0	0	1K	0K
174 <a href="#">Center Grove</a>	05/06/2009	07:57 AM	Thunderstorm Wind	50 kts.	0	0	2K	0K
175 <a href="#">Hartselle</a>	05/13/2009	07:00 AM	Lightning	N/A	0	0	2.0M	0K
176 <a href="#">Danville</a>	05/13/2009	09:00 AM	Flash Flood	N/A	0	0	0K	0K
177 <a href="#">Oakworth</a>	05/13/2009	09:00 AM	Flash Flood	N/A	0	0	0K	0K
178 <a href="#">Huntsville Laceys Sp</a>	05/15/2009	18:44 PM	Hail	1.75 in.	0	0	0K	0K
179 <a href="#">West Pt</a>	05/15/2009	19:15 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
180 <a href="#">Moulton Hgts</a>	05/27/2009	17:05 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
181 <a href="#">Decatur</a>	05/27/2009	17:15 PM	Flash Flood	N/A	0	0	0K	0K
182 <a href="#">Trinity</a>	06/10/2009	17:23 PM	Thunderstorm Wind	52 kts.	0	0	1K	0K
183 <a href="#">Pumpkin Center</a>	06/14/2009	09:48 AM	Thunderstorm Wind	52 kts.	0	0	10K	0K
184 <a href="#">Trinity</a>	06/15/2009	18:25 PM	Hail	3.50 in.	0	0	0K	0K
185 <a href="#">Trinity</a>	06/15/2009	18:26 PM	Hail	3.75 in.	0	0	0K	0K
186 <a href="#">Trinity</a>	06/15/2009	18:29 PM	Hail	1.25 in.	0	0	0K	0K
187 <a href="#">Griffin Addition</a>	06/15/2009	18:30 PM	Thunderstorm Wind	83 kts.	0	0	500K	0K
188 <a href="#">Moulton Hgts</a>	06/15/2009	18:31 PM	Hail	1.00 in.	0	0	0K	0K
189 <a href="#">Moulton Hgts</a>	06/15/2009	18:31 PM	Hail	2.75 in.	0	0	0K	0K
190 <a href="#">Decatur</a>	06/15/2009	18:33 PM	Hail	1.00 in.	0	0	0K	0K
191 <a href="#">Griffin Addition</a>	06/15/2009	18:34 PM	Hail	0.88 in.	0	0	0K	0K
192 <a href="#">Griffin Addition</a>	06/15/2009	18:34 PM	Hail	1.00 in.	0	0	0K	0K
193 <a href="#">Decatur</a>	06/15/2009	18:35 PM	Hail	1.75 in.	0	0	0K	0K
194 <a href="#">Oakworth</a>	06/15/2009	18:35 PM	Hail	2.75 in.	0	0	10K	0K
195 <a href="#">Oakworth</a>	06/15/2009	18:36 PM	Hail	1.75 in.	0	0	0K	0K

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
196 <a href="#">Hartselle</a>	06/15/2009	18:47 PM	Hail	1.00 in.	0	0	0K	0K
197 <a href="#">Somerville</a>	06/15/2009	18:50 PM	Hail	1.75 in.	0	0	0K	0K
198 <a href="#">Decatur</a>	06/15/2009	19:00 PM	Flash Flood	N/A	0	0	0K	0K
199 <a href="#">Hartselle</a>	06/15/2009	19:30 PM	Flash Flood	N/A	0	0	0K	0K
200 <a href="#">ALZ004&gt;007-016</a>	06/28/2009	10:00 AM	Excessive Heat	N/A	0	0	0K	0K
201 <a href="#">Morgan City</a>	06/28/2009	15:55 PM	Thunderstorm Wind	50 kts.	0	0	8K	0K
202 <a href="#">Union Hill</a>	06/28/2009	15:55 PM	Thunderstorm Wind	50 kts.	0	0	10K	0K
203 <a href="#">Griffin Addition</a>	07/05/2009	02:25 AM	Thunderstorm Wind	50 kts.	0	0	2K	0K
204 <a href="#">Basham</a>	07/12/2009	13:37 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
205 <a href="#">Pumpkin Center</a>	07/12/2009	13:39 PM	Thunderstorm Wind	50 kts.	0	0	2K	0K
206 <a href="#">Oakworth</a>	07/12/2009	13:48 PM	Thunderstorm Wind	50 kts.	0	0	5K	0K
207 <a href="#">Cole Spgs</a>	07/30/2009	17:50 PM	Thunderstorm Wind	56 kts.	0	0	30K	0K
208 <a href="#">Griffin Addition</a>	08/01/2009	16:45 PM	Flash Flood	N/A	0	0	0K	0K
209 <a href="#">Moulton Hgts</a>	08/01/2009	16:45 PM	Flash Flood	N/A	0	0	0K	0K
210 <a href="#">Pumpkin Center</a>	10/09/2009	14:50 PM	Thunderstorm Wind	52 kts.	0	0	5K	0K
211 <a href="#">Pumpkin Center</a>	10/09/2009	14:53 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K

Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
212 <a href="#">Pumpkin Center</a>	10/09/2009	14:53 PM	Thunderstorm Wind	52 kts.	0	0	7K	0K
213 <a href="#">Pumpkin Center</a>	10/09/2009	14:53 PM	Thunderstorm Wind	52 kts.	0	0	10K	0K
214 <a href="#">Hartselle</a>	10/09/2009	15:02 PM	Thunderstorm Wind	52 kts.	0	0	4K	0K
215 <a href="#">Leesdale</a>	10/09/2009	15:03 PM	Thunderstorm Wind	52 kts.	0	0	3K	0K
216 <a href="#">ALZ001&gt;007 - 009&gt;010 - 016</a>	10/19/2009	02:00 AM	Frost/freeze	N/A	0	0	0K	0K
217 <a href="#">ALZ007 - 016</a>	12/04/2009	23:00 PM	Winter Weather	N/A	0	0	0K	0K
218 <a href="#">Trinity</a>	12/08/2009	20:00 PM	Flash Flood	N/A	0	0	500K	0K
219 <a href="#">Oak Ridge</a>	12/09/2009	22:30 PM	Flood	N/A	0	0	1.0M	0K
220 <a href="#">ALZ005&gt;007</a>	12/24/2009	13:00 PM	High Wind	35 kts.	0	0	20K	0K
221 <a href="#">ALZ006 - 007</a>	01/07/2010	06:30 AM	Winter Weather	N/A	0	0	0K	0K
222 <a href="#">ALZ005&gt;007</a>	01/29/2010	08:30 AM	Winter Storm	N/A	0	0	0K	0K
223 <a href="#">ALZ005&gt;007</a>	01/29/2010	08:30 AM	Winter Weather	N/A	0	0	0K	0K
224 <a href="#">ALZ007 - 016</a>	02/12/2010	07:00 AM	Winter Weather	N/A	0	0	0K	0K
225 <a href="#">ALZ007</a>	02/15/2010	15:00 PM	Winter Weather	N/A	0	0	0K	0K
226 <a href="#">ALZ004&gt;007</a>	03/02/2010	04:00 AM	Heavy Snow	N/A	0	0	0K	0K
227	03/02/2010	04:00	Winter	N/A	0	0	0K	0K



Alabama								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
<a href="#">ALZ004&gt;007</a>		AM	Weather					
228 <a href="#">Penn</a>	03/25/2010	16:40 PM	Tornado	F1	0	0	50K	0K
TOTALS:					4	0	5.347M	0

Source: NOAA/NCDC Storm Events

These disasters/events played a significant role in shaping the hazard mitigation priorities within Morgan County over the last five years. Each disaster revealed strengths and weaknesses within the hazard mitigation program, and the county adjusted its subsequent mitigation actions to address these weaknesses accordingly.

### Mitigation Implementation (2005-2010)

Mitigation Measures are listed in **Table 6.8-2** highlighting the core group of mitigation actions (listed in **Tables 6.8-3 through 6.8-26**) pursued by the county and municipalities using HMGP funds, to include those from 2005 and for 2010. Mitigation Measures include those listed in the 2005 Plan, as well as new ones for the 2010 Revised Plan. Mitigation Actions are separated by Actions of 2005 Plan and Actions of 2010 Plan.

Legend for the Mitigation Measure # as listed in the following tables:

- 1<sup>st</sup> # = Type #:
- 1 for Prevention
  - 2 for Property Protection
  - 3 for Public Education and Awareness
  - 4 for Natural Resource Protection
  - 5 for Emergency Services Protection
  - 6 for Structural Projects
- 2<sup>nd</sup> # = Goal #:
- 1 for “Establish a comprehensive countywide hazard mitigation system”
  - 2 for “Reduce Morgan County’s risk from natural hazards”
  - 3 for “Reduce vulnerability of new and future development”
  - 4 for “Reduce Morgan County’s vulnerability to natural hazards”
  - 5 for “Foster public support and acceptance of hazard mitigation”
- 3<sup>rd</sup> # = Measures: The number of mitigation measures with the same type # and goal #

**Table 6.8-2 Mitigation Measures**

<b>Mitigation Measure #</b>	<b>Type</b>	<b>Goal</b>	<b>Mitigation Measure</b>
1.1.1	Prevention	Establish a comprehensive countywide hazard mitigation system	Identify areas in need of storm shelters – including local municipalities and rurally populated portions of the county.
1.1.2	Prevention	Establish a comprehensive countywide hazard mitigation system	Make application and/or commit/ continue to participate in the NFIP.
1.1.3	Prevention	Establish a comprehensive countywide hazard mitigation system	Submit new Floodplain data to FEMA to revise the regulatory Floodplain and Floodplain Maps.
2.1.1	Property Protection	Reduce county’s vulnerability to natural hazards	Mitigate flood prone areas – including Town Branch; downtown Hartselle; and Lacey Springs.
2.2.1	Property Protection	Reduce Morgan County’s risk from natural hazards	Drainage improvement projects to Oxmoor Lane; Lake Avenue; Southfield Drive; Old Highway 24; and Runneymeade Ave. S. W. and Leanne Street.
2.4.1	Property Protection	Reduce county’s vulnerability to natural hazards	Complete a comprehensive drainage study for the Town of Falkville. The west side of Falkville has been completed. The remaining portion of the study is ongoing.
2.4.2	Property Protection	Reduce county’s vulnerability to natural hazards	Identify existing grants to mitigate flood damaged equipment (as back-up equipment).
2.4.3	Property Protection	Reduce county’s vulnerability to natural hazards	Install 2 <sup>nd</sup> culvert under Central Parkway.
2.5.1	Property Protection	Foster public support and acceptance of hazard mitigation	Promote drainage improvements on local streets and develop drainage maintenance programs – Highway 31 S. W. and 2 <sup>nd</sup> Street.
3.1.1	Public Education and Awareness	Establish a comprehensive countywide hazard mitigation system	Develop and implement storm shelter program for municipal residents.
4.4.1	Natural Resources Protection	Reduce county’s vulnerability to natural hazards	Develop a series of retentions – Danville Road; Chapel Hill; Duncansby Drive; and Ashville Regional Retention.
5.2.2	Emergency Services Protection	Reduce Morgan County’s risk from natural hazards	Purchase/update emergency generators for post-disaster mitigation and conduct routine tests on backup generators for all critical facilities.
5.2.3	Emergency	Reduce Morgan County’s risk	Maintain tree control and clearing program

Mitigation Measure #	Type	Goal	Mitigation Measure
	Services Protection	from natural hazards	near power lines, property, and infrastructures to prevent disruption.
5.2.4	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	Purchase, install and test emergency warning sirens, as needed. Upgrade existing equipment as needed. This includes the Town of Eva and Falkville. One siren has been installed in Somerville.
5.2.5	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	Secure additional NOAA warning radios for rural areas of the county.
6.1.1	Structural Projects	Establish a comprehensive countywide hazard mitigation system	Construct additional storm shelters and safe rooms throughout Morgan County to include all municipalities. Community Safe Rooms/Shelters have been completed in Trinity, Somerville, and Danville. Another safe room is under construction in Somerville. Additional Community Safe Rooms are being applied for under the HMGP to include: 2 for the 3M Company in Decatur; 3 in Danville (VFD #1, VFD #2, Danville Punkin Center; and 5 for Nucor Steele.
6.1.2	Structural Projects	Establish a comprehensive countywide hazard mitigation system	Locate areas for construction of community storm shelters and safe rooms for local residents.

**Table 6.8-3 City of Decatur  
Completed/Ongoing Actions from the 2005 County Hazard Mitigation Plan**

City of Decatur				
Type	Goal	Completed/Ongoing Actions from 2005 Plan	Hazard Addressed	Status
Prevention	1	1.1.3 Submit new Floodplain data to FEMA to revise the regulatory Floodplain and Floodplain Maps.	Flood	Ongoing
Property Protection	2	2.2.1 Drainage improvement projects to Oxmoor Lane, Lake Avenue, Southfield Drive, and <u>Runneymeade Ave. S. W. and Leanne Street.</u>	Flood	Ongoing/ Underlined is completed
	4	2.4.3 Install 2 <sup>nd</sup> culvert under Central Parkway.	Flood	Ongoing
Natural	4	4.4.1 Develop a series of retentions –	Flood	Ongoing



<b>City of Decatur</b>				
<b>Type</b>	<b>Goal</b>	<b>Completed/Ongoing Actions from 2005 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Resource Protection		Danville Road; Chapel Hill; Duncansby Drive; and Ashville Regional Retention.		
Structural Projects	1	6.1.1 Provide adequate safe rooms and community shelters. The 3M Corporation has applied through the Morgan County Commission for 96 person and 42 person storm shelters (PN #20).	T, SS, H	Ongoing

**Table 6.8-4 City of Decatur  
New Actions from the 2010 County Hazard Mitigation Plan**

<b>City of Decatur</b>				
<b>Type</b>	<b>Goal</b>	<b>New Actions for 2010 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Prevention	1	1.1.2 Make application and/or commit/continue to participate in the NFIP.	Flood	2010-2015
Emergency Services Protection	2	5.2.2 Purchase/update emergency generators for post-disaster mitigation and conduct routine tests on backup generators for all critical facilities.	All	2010-2015
	2	5.2.4 Purchase, install and test emergency warning sirens, as needed. Upgrade existing equipment as needed.	All	2010-2015
Structural Projects	1	6.1.1 Provide adequate safe rooms and community shelters. This includes the 3M Company.	T, SS, H	2010-2015

**Table 6.8-5 City of Hartselle  
Completed/Ongoing Actions from the 2005 County Hazard Mitigation Plan**

<b>City of Hartselle</b>				
<b>Type</b>	<b>Goal</b>	<b>Completed/Ongoing Actions from 2005 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Property Protection	1	2.1.1 Mitigate flood prone areas along Town Branch and downtown Hartselle.	Flood	Ongoing
Public Education and Awareness	1	3.1.1 Develop and implement storm shelter program for municipal residents.	T, SS, H	Ongoing
Emergency Services Protection	2	5.2.4 Identify areas of need and install additional warning sirens.	All	Ongoing
Structural Projects	1	6.1.1 Provide adequate safe rooms and community shelters.	T, SS, H	Ongoing

**Table 6.8-6 City of Hartselle  
New Actions for the 2010 County Hazard Mitigation Plan**

<b>City of Hartselle</b>				
<b>Type</b>	<b>Goal</b>	<b>New Actions for 2010 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Prevention	1	1.1.2 Make application and/or commit/ continue to participate in the NFIP.	Flood	2010-2015
Emergency Services Protection	2	5.2.2 Purchase/update emergency generators for post-disaster mitigation and conduct routine tests on backup generators for all critical facilities.	All	2010-2015
	2	5.2.4 Purchase, install and test emergency warning sirens, as needed. Upgrade existing equipment as needed.	All	2010-2015
Structural Projects	1	6.1.1 Provide adequate safe rooms and community shelters.	T, SS, H	2010-2015

**Table 6.8-7 City of Falkville  
Completed/Ongoing Actions from the 2005 County Hazard Mitigation Plan**

<b>City of Falkville</b>				
<b>Type</b>	<b>Goal</b>	<b>Completed/Ongoing Actions from 2005 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Property Protection	4	2.4.1 Complete a comprehensive drainage study for the town area. <u>The City of Falkville has completed one-half of the city (on the west side) with a comprehensive flood and drainage plan and has begun working on some of the target areas. This plan also promotes drainage improvements on local streets.</u>	Flood	Ongoing/ Underlined is completed
	5	2.5.1 Promote drainage improvements on local streets and develop drainage maintenance programs – Highway 31 S. W. and 2 <sup>nd</sup> Street.	Flood	Ongoing (in early stages)
Emergency Services Protection	2	5.2.4 Identify areas of need and install additional warning sirens.	All	Ongoing

**Table 6.8-8 City of Falkville  
New Actions for the 2010 County Hazard Mitigation Plan**

<b>City of Falkville</b>				
<b>Type</b>	<b>Goal</b>	<b>New Actions for 2010 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Prevention	1	1.1.2 Make application and/or commit/continue to participate in the NFIP.	Flood	2010-2015
Emergency Services Protection	2	5.2.2 Purchase/update emergency generators for post-disaster mitigation and conduct routine tests on backup generators for all critical facilities.	All	2010-2015
	2	5.2.4 Purchase, install and test emergency warning sirens, as needed. Upgrade existing equipment as needed. At the present time, at least 2 warning sirens need to be added in the City of Falkville.	All	2010-2015
Structural Projects	1	6.1.1 Provide adequate safe rooms and community shelters. At the present time, there are 3 locations in the City of Falkville needing community shelters.	T, SS, H	2010-2015

**Table 6.8-9 Town of Trinity  
Completed/Ongoing Actions from the 2005 County Hazard Mitigation Plan**

<b>Town of Trinity</b>				
<b>Type</b>	<b>Goal</b>	<b>Completed/Ongoing Actions from 2005 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Property Protection	2	2.2.1 Drainage improvement project – Old Highway 24.	Flood	Completed
Structural Projects	1	6.1.2 Locate areas for construction, and construct community storm shelters for local residents. <u>A 96 person community storm shelter has been completed at 35 Preston Drive in Trinity.</u>	T, SS, H	Ongoing/ Completed

**Table 6.8-10 Town of Trinity  
New Actions for the 2010 County Hazard Mitigation Plan**

<b>Town of Trinity</b>				
<b>Type</b>	<b>Goal</b>	<b>New Actions for 2010 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Prevention	1	1.1.2 Make application and/or commit/continue to participate in the NFIP.	Flood	2010-2015
Emergency Services Protection	2	5.2.2 Purchase/update emergency generators for post-disaster mitigation and conduct routine tests on backup generators for all critical facilities.	All	2010-2015
	2	5.2.4 Purchase, install and test emergency warning sirens, as needed. Upgrade existing equipment as needed.	All	2010-2015
Structural Projects	1	6.1.1 Provide adequate safe rooms and community shelters.	T, SS, H	2010-2015

**Table 6.8-11 Morgan County  
Completed/Ongoing Actions from the 2005 County Hazard Mitigation Plan**

<b>Morgan County</b>				
<b>Type</b>	<b>Goal</b>	<b>Completed/Ongoing Actions from 2005 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Prevention	1	1.1.1 Identify areas in need of storm shelters – including local municipalities and rurally populated portions of the county.	T, SS, H	Ongoing
Property Protection	1 4	2.1.1 Mitigate flooding for the Lacey Springs Area. 2.4.2 Identify existing grants to mitigate flood damaged equipment (as back-up equipment).	Flood Flood	Ongoing Ongoing (project not started yet)
Emergency Services Protection	2  2  2	5.2.3 Maintain tree control and clearing program near power lines, property, and infrastructures to prevent disruption. 5.2.4 Identify areas of need and install additional warning sirens. This includes the Town of Eva. 5.2.5 Secure additional NOAA warning radios for rural areas of the county.	T, SS, H, WS  All  All	Ongoing  Ongoing (Grant Dependent) Ongoing
Structural Projects	1	6.1.1 Construct additional storm shelters throughout Morgan County to include municipalities.	T, SS, H	Ongoing

Prevention – City of Falkville – Comprehensive Flood and Drainage Plan. Emergency Services Protection – One siren has been installed at 1070 Barnett Chapel Road (Hartselle) in Somerville. Structural Projects – Community Safe Rooms have been completed in Trinity (35 Preston Drive), Somerville (192 Broad Street and Crosscreek Loop), and Danville (5798 Highway 36 West). Another safe room is under construction in Somerville. Additional Community Safe Rooms are being applied for under the HMGP to include: 2 for the 3M Company in Decatur; 3 in Danville (VFD #1, VFD #2, Danville Punkin Center; and 5 for Nucor Steele. Other programs – Morgan County Emergency Operations Plan and the Morgan County Hazard Mitigation Plan.

**Table 6.8-12 Morgan County  
New Actions for the 2010 County Hazard Mitigation Plan**

<b>Morgan County</b>				
<b>Type</b>	<b>Goal</b>	<b>New Actions for 2010 Plan</b>	<b>Hazard Addressed</b>	<b>Status</b>
Prevention	1	1.1.2 Make application and/or commit/continue to participate in the NFIP.	Flood	2010-2015
Emergency Services Protection	2	5.2.2 Purchase/update emergency generators for post-disaster mitigation and conduct routine tests on backup generators for all	All	2010-2015





Morgan County				
Type	Goal	New Actions for 2010 Plan	Hazard Addressed	Status
	2	critical facilities. 5.2.4 Purchase, install and test emergency warning sirens, as needed. Upgrade existing equipment as needed.	All	2010-2015
Structural Projects	1	6.1.1 Provide adequate safe rooms and community shelters. This includes Danville (VFD #1, #2, Punkin Center) and Nucor Steele.	T, SS, H	2010-2015

**Mitigation Successes in Morgan County**

All mitigation projects have contributed to the effectiveness of Morgan County’s recovery and mitigation. Morgan County continues working with the local communities to identify critical needs in the mapping update. At the end of the initial implementation of the state’s map modernization program, each county’s FIRMs will be converted to a common digital format, allowing for wider and easier access by individuals.

**Mitigation – 2010 and Beyond**

At this time, Morgan County has chosen not to delete any projects from 2005 for future consideration. **Table 6.8-2 through Table 6.8-12** indicates completed and/or ongoing, as well as new mitigation measures. New actions identified by the committee and others during the plan update process are included in the 2010 Plan Update. New actions and objectives were obtained by distributing a questionnaire to get feedback on existing objectives, and ideas for new ones, as well as, through site visits. The updated mitigation action plan showing all actions deferred from the 2005 Plan as well as new actions identified for the 2010 plan update are shown in **Tables 6.8-13 through 6.8-17**.



**Table 6.8-13 City of Decatur Mitigation Action Program**

<b>DECATUR MITIGATION ACTION PROGRAM</b>							
<b>Mitigation Measure #</b>	<b>Type</b>	<b>Goal</b>	<b>Priority</b>	<b>Lead Responsibility</b>	<b>Hazard (s)</b>	<b>Timeline</b>	<b>Possible Funding Source</b>
1.1.2	Prevention	Establish a comprehensive countywide hazard mitigation system	High	City Government/ EMA/NFIP	Flood	2010-2015	HMGP/ LOCAL/ NFIP
1.1.3	Prevention	Establish a comprehensive countywide hazard mitigation system	High	City Government/ EMA/NFIP	Flood	Ongoing	HMGP/ LOCAL/ NFIP
2.2.1	Property Protection	Reduce Morgan County's risk from natural hazards	Medium to High	City Government	Flood	Ongoing	HMGP/ EMPG/ LOCAL
2.4.3	Property Protection	Reduce Morgan County's vulnerability to natural hazards	Medium	City Government	Flood	Ongoing Runney-meade Ave. S.W. and Leanne Street are complete	HMGP/ EMPG/ LOCAL
4.4.1	Natural Resource Protection	Reduce Morgan County's vulnerability to natural hazards	Low	City Government	Flood	Ongoing	HMGP/ EMPG
5.2.2	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	High	City Government/ EMA	All	2010-2015	HMGP/ ADECA
5.2.4	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	High	City Government/ EMA	All	2010-2015	HMGP/ ADECA
6.1.1	Structural Projects	Establish a comprehensive countywide hazard mitigation system	High	City Government/ EMA	T, SS, H	2010-2015	HMGP/ ADECA

**Table 6.8-14 City of Hartselle Mitigation Action Program**

<b>HARTSELLE MITIGATION ACTION PROGRAM</b>							
<b>Mitigation Measure #</b>	<b>Type</b>	<b>Goal</b>	<b>Priority</b>	<b>Lead Responsibility</b>	<b>Hazard(s)</b>	<b>Timeline</b>	<b>Possible Funding Source</b>
1.1.2	Prevention	Establish a comprehensive countywide hazard mitigation system	High	City Government/EMA/NFIP	Flood	2010-2015	HMGP/LOCAL/NFIP
2.1.1	Property Protection	Reduce Morgan County's risk from natural hazards	Low	City Government/EMA/NFIP	Flood	Ongoing	HMGP/LOCAL/NFIP
3.1.1	Public Education and Awareness	Establish a comprehensive countywide hazard mitigation system	Medium	City Government/EMA	T, SS, H	Ongoing	HMGP/ADECA
5.2.2	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	High	City Government/EMA	All	2010-2015	HMGP/ADECA
5.2.4	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	*Low/High	City Government/EMA	All	*Ongoing/Verbiage revised for 2010 Plan Revision	HMGP/ADECA
6.1.1	Structural Projects	Establish a comprehensive countywide hazard mitigation system	High	City Government/EMA	T, SS, H	2010-2015	HMGP/ADECA

**Table 6.8-15 City of Falkville Mitigation Action Program**

<b>FALKVILLE MITIGATION ACTION PROGRAM</b>							
<b>Mitigation Measure #</b>	<b>Type</b>	<b>Goal</b>	<b>Priority</b>	<b>Lead Responsibility</b>	<b>Hazard(s)</b>	<b>Timeline</b>	<b>Possible Funding Source</b>
1.1.2	Prevention	Establish a comprehensive countywide hazard mitigation system	High	Town and County Government/EMA/NFIP	Flood	2010-2015	HMGP/LOCAL/NFIP
2.4.1	Property Protection	Reduce Morgan County's vulnerability to natural hazards	Medium	Town Government	Flood	Ongoing/Complete – for the west side of the city	HMGP/LOCAL
2.5.1	Property Protection	Foster public support and acceptance of hazard mitigation	Medium	Town Government	Flood	Ongoing	HMGP/LOCAL
5.2.2	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	High	Town and County Government/EMA	All	2010-2015	HMGP/ADECA
5.2.4	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	*Low/High	Town and County Government/EMA	All	*Ongoing/Verbiage revised for 2010 Plan Revision	HMGP/ADECA
6.1.1	Structural Projects	Establish a comprehensive countywide hazard mitigation system	High	Town Government/EMA	T, SS, H	2010-2015	HMGP/ADECA

**Table 6.8-16 Town of Trinity Mitigation Action Program**

<b>TRINITY MITIGATION ACTION PROGRAM</b>							
<b>Mitigation Measure #</b>	<b>Type</b>	<b>Goal</b>	<b>Priority</b>	<b>Lead Responsibility</b>	<b>Hazard(s)</b>	<b>Timeline</b>	<b>Possible Funding Source</b>
1.1.2	Prevention	Establish a comprehensive countywide hazard mitigation system	High	Town and County Government/EMA/NFIP	Flood	2010-2015	HMGP/LOCAL/NFIP
2.2.1	Property Protection	Reduce Morgan County's risk from natural hazards	Medium	Town Government	Flood	Ongoing	HMGP/EMPG/LOCAL
5.2.2	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	High	Town and County Government/EMA	All	2010-2015	HMGP/ADECA
5.2.4	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	*Low/ High	Town and County Government/EMA	All	*Ongoing/ Verbiage revised for 2010 Plan Revision	HMGP/ADECA
6.1.1	Structural Projects	Establish a comprehensive countywide hazard mitigation system	High	Town Government/EMA	T, SS, H	2010-2015	HMGP/ADECA
6.1.2	Structural Projects	Establish a comprehensive countywide hazard mitigation system	High	Town Government/EMA	T, SS, H	Ongoing	HMGP/ADECA

**Table 6.8-17 Morgan County Mitigation Action Program**

<b>MORGAN COUNTY MITIGATION ACTION PROGRAM</b>							
<b>Mitigation Measure #</b>	<b>Type</b>	<b>Goal</b>	<b>Priority</b>	<b>Lead Responsibility</b>	<b>Hazard (s)</b>	<b>Timeline</b>	<b>Possible Funding Source</b>
1.1.1	Prevention	Establish a comprehensive countywide hazard mitigation system	High	County Government/EMA	T, SS, H	Ongoing	HMGP/LOCAL
1.1.2	Prevention	Establish a comprehensive countywide hazard mitigation system	High	County Government/EMA/NFIP	Flood	2010-2015	HMGP/LOCAL/NFIP
2.1.1	Property Protection	Reduce Morgan County's risk from natural hazards	Low	County Government/EMA/NFIP	Flood	Ongoing	HMGP/LOCAL/NFIP
2.4.2	Property Protection	Reduce Morgan County's vulnerability to natural hazards	Medium	County Government	Flood	Ongoing	HMGP/LOCAL
5.2.2	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	High	Town and County Government/EMA	All	2010-2015	HMGP/ADECA
5.2.3	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	High	County Government/EMA/Local and Private Utilities	All	Ongoing	HMGP/LOCAL/DOT
5.2.4	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	*Low/High	Town and County Government/EMA	All	*Ongoing/Verbiage revised for 2010 Plan Revision	HMGP/ADECA
5.2.5	Emergency Services Protection	Reduce Morgan County's risk from natural hazards	High	EMA	All	Ongoing	HMGP/EMPG
6.1.1	Structural Projects	Establish a comprehensive countywide hazard mitigation system	High	Town Government/EMA	T, SS, H	2010-2015	HMGP/ADECA

## 6.9 Identification of Funding Sources

Because the county plan addresses a broad spectrum of mitigation issues there is a need for a variety of funding sources. Funding often comes from an assortment of sources, including the federal, state, and local governments in addition to private funding opportunities. As previously discussed, the large majority of funding used to implement activities in the mitigation strategy since approval of the initial plan has been obtained from AEMA/FEMA's HMGP program. This funding has gone towards an array of planning and non-planning projects (see **Section 6.8**).

### 6.9.1 Federal

Federal funding sources include funding programs available through FEMA, the USACE, HUD, the United States Department of Agriculture Natural Resources and Conservation (NRCS), and the National Oceanographic and Atmospheric Administration (NOAA). The following is a list of applicable federal assistance programs:

#### **Federal Emergency Management Agency (FEMA)**

*Hazard Mitigation Grant Program (HMGP)* Program authorized under Section 404 of the Robert T. Stafford Act, providing grants to local governments involved in long term hazard mitigation planning and measures following a presidentially declared disaster. The federal share of any project shall not exceed 75 percent of the total eligible program costs.

5 percent HMGP Initiative (existing source of funding) – Initiated by FEMA in 1996. This program/policy established that up to 5 percent of the total HMGP funds for open and future disaster declarations are made available for the county to use on hazard mitigation measures that are difficult to evaluate against traditional program cost-effectiveness criteria. Currently, all available 5 percent HMPG funds for the State of Alabama are being utilized to fund a statewide warning and communication project, resulting in enhanced warning, communication and response capabilities statewide.

7.5 percent Public Assistance Funding (existing source of funding) – Section 404 of the Robert T. Stafford Act was amended by the Hazard Mitigation and Relocation Assistance Act of 1993. Later, in 2003, as a result of the Consolidated Appropriations Resolution, the amount of available funding for mitigation projects became 7.5 percent of the public and individual assistance programs.

7 percent Planning Grants (existing source of funding) – For all Federal Disaster Declarations with open application periods on or after November 13, 1999, the Disaster Mitigation Act of 2000 authorizes grantees to use up to 7 percent of HMGP funds available to develop local or tribal government mitigation plans.

*Pre-Disaster Mitigation Grants (PDM)* (existing source of funding) Pre-Disaster Mitigation Grants focus primarily on planning and mitigation activities implemented prior to a disaster. All PDM applicants, if they have been identified through the NFIP as having a Special Flood Hazard

Area, must participate in the NFIP, to be eligible for funding. Grants are available for two types of actions; mitigation planning and mitigation projects.

*Disaster Resistant University Grants* (existing source of funding) The Federal Register states “FEMA will provide PDM funds to assist universities, through state and local governments, to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to facilities, research assets, students and faculty.”

*Flood Mitigation Assistance Program (FMA)* (existing source of funding) The National Flood Mitigation Fund provides grants to local jurisdictions on a 75/25 cost share basis, for planning and implementation of mitigation projects. Examples of mitigation projects include acquisition, elevation, relocation, flood-proofing, and technical assistance. The enabling legislation specifically excludes large scale structural flood control projects from receiving this type of funding.

*Severe Repetitive Loss (SRL) Grants* (existing source of funding) This relatively new grant program, established by the Flood Insurance Reform Act (FIRA) of 2004, provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the NFIP. Flood mitigation can include flood-proofing of historical properties and relocation, elevation, acquisition, or reconstruction of eligible residential properties. In order for a property to be eligible, a certain minimum number of claims must be filed over a prescribed period or the amount of claims must exceed the value of the property. Funding for FY 2004 through 2009 was set at \$40 million nationwide.

*Repetitive Flood Claims (RFC) Grants* (existing source of funding) Also established by FIRA, the RFC grant program provides funds for acquisition or relocation of repetitive flood loss residential properties that cannot meet the 25 percent match required under the Flood Mitigation Assistance program. Up to 100 percent funding is available for each property.

### **United States Army Corps of Engineers (USACE)**

The USACE provides several federal assistance programs applicable to hazard mitigation including:

*General Investigation Studies* (potential source of funding) These studies require local cost sharing of 50 percent. At the time of this plan revision, qualified projects can receive up to 75 percent federal funding.

*Continuing Authorities* (potential source of funding) This program allows the USACE to take action on water resource projects under a specific dollar amount. For these projects, a feasibility study would be performed. Local cost shares for these studies vary from 0 to 50 percent. Projects deemed cost-effective in which a federal interest is established could qualify for up to 75 percent federal funding. Specific Continuing Authorities programs applicable to hazard mitigation include:



Section 204 – For dredging associated with authorized navigation projects, protects, restores and creates aquatic and/or wetland habitats. Study costs include: Initial appraisal – 100 percent federal share; Feasibility Study – 65 federal share/35 Non-Federal Share Project costs include: If less than 35 percent, all necessary lands and relocations required for construction provided by non-federal source and cash contribution. Non-Federal entity operates and maintains the project.

Section 205 – General small flood drainage/control projects. Study costs include: First \$100,000 – 100 percent Federal Share; Any amount over \$100,000 – 50/50 Federal/Non-Federal Share. Project costs include: 35-50 percent of total project costs paid by Non-Federal – 5 percent in cash; \$7,000,000 maximum federal cost. Non-Federal entity operates and maintains the project.

Section 206 – Aquatic Ecosystem restoration and protection projects, including design, planning and construction. Study costs include: 65/35 Federal/Non-Federal Share. Project costs include: 35 percent of total project costs paid by Non-Federal; \$5,000,000 maximum federal costs. Non-Federal entity operates and maintains the project.

Section 208 – Waterway clearing and snagging projects. Study costs include: First \$40,000 – 100 percent Federal Share; Any amount over \$40,000 – 65 Federal Share/35 Non-Federal Share. Project costs include: 35 percent - 50 percent of total project costs paid by Non-Federal – 5 percent in cash; \$500,000 maximum federal costs. Non-Federal entity operates and maintains the project.

Section 107 – Small river and harbor improvement projects. Study costs include: First \$100,000 – 100 percent Federal Share; Any amount over \$100,000 – 50/50 Federal/Non-Federal Share. Project costs include: 10 percent of general navigation costs during construction paid by Non-Federal; 10 percent of general navigation costs over a 30 year period paid by Non-Federal; \$4,000,000 maximum federal costs.

Section 14 – Emergency stream bank and shoreline protection. Study costs include: First \$40,000 – 100 percent Federal Share; Any amount over \$40,000 – 65/35 Federal/Non-Federal Share. Project costs include: 35 percent of total project costs paid by Non-Federal – 5 percent in cash; 65 percent of total project costs paid by federal; \$1,000,000 maximum federal costs. Non-Federal entity operates and maintains the project.

Section 1135 – Environment restoration projects where a USACE project contributed to the deprivation of the environment. Study costs include: 75/25 Federal/Non-Federal Share. Project costs include: 25 percent of total project costs paid by Non-Federal; \$5,000,000 maximum federal costs; Non-Federal entity operates and maintains the project.

Floodplain Management Services – Education and planning services for flood hazards and floodplain management. Study costs include: 100 percent Cost Recovery from non-water resource agencies and private sector. 0 percent cost to state, regional, local governments and non-federal public agencies. Project costs include: Studies generally cost \$10,000 - \$25,000.

Planning Assistance to County – Comprehensive Plan development relating to the development, utilization, and conservation of water and related land resources. Study costs include: 50/50 Federal/Non-Federal Share. Project costs include: Federal Share generally \$25,000-\$75,000; \$500,000 maximum annual federal allotment per county/tribe.

*Congressional Authorization (Major Civil Works Projects)* (potential source of funding) Feasibility studies for major civil works projects undertaken by the USACE that indicate federal interests (benefit/cost ratio greater than 1:1) may be funded through Congressional Authorization of the proposed program.

### **United States Department of Housing and Urban Development**

HUD maintains several funding sources that can be used towards furthering mitigation including: *Community Development Block Grants (CDBG)* (existing source of funding) This program allows for the distribution of grant money for the development of viable communities, principally for low and moderate income communities and neighborhoods. Community development can be accomplished through housing, suitable living environments and the expansion of economic opportunities. Activities that are eligible for funding under state administered CDBG include, but are not limited to: acquisition of property for public purposes; construction of public facilities; and planning activities.

The Disaster Relief Initiative for Hurricane Katrina was a special Congressional appropriation through the CDBG to aid recovery efforts. An initial allocation of \$74 million was distributed to affected communities through the ADECA, and an additional \$21 million was added as a supplemental fund. This appropriation provided funds to aid disaster relief, long-term recovery efforts, and restoration of infrastructure in distressed areas of Alabama most affected by Hurricane Katrina.

*Section 312 Loan Program* (potential source of funding) This program provides funds for the rehabilitation of residential and non-residential properties, including flood repair and flood proofing.

*Rental Rehabilitation Program* (potential source of funding) Through this program, funds are made available for rehabilitation of rental properties including flood proofing and repair of flood damage.

### **United States Department of Agriculture – Natural Resource Conservation Service**

*Emergency Watershed Protection* (potential source of funding) In watersheds damaged by severe natural events, this program provides assistance to reduce hazards to life and property. If funds are available, NRCS can provide 100 percent of the cost of exigency situations and 80 percent of the cost of non-exigency situations.

### **Office of Coastal Resource Management (OCRM) under the National Oceanic and Atmospheric Administration (NOAA)**



*The Coastal Zone Management Program (CZMP)* (existing and potential sources of funding) This program is a partnership with states in which the federal government provides funding, technical assistance and oversight to ensure compliance with the Coastal Zone Management Act. Federal grants are provided on an equal cost-share basis with the County.

*Section 303* (potential source of funding) This program focuses on the protection of natural resources that mitigate wind and flooding impacts including beaches, dunes, and barrier islands. Federal funding is available.

*Section 305* (potential source of funding) States developing coastal programs are eligible to receive funding under this section of the Coastal Zone Management Program.

*Section 306* Funding is primarily provided through implementation grants to administer county programs, including staff salaries, equipment purchases, Public Education and Awareness, enhancement of public access and the undertaking of projects that monitor and/or enhance elements of the regulatory program.

*Section 309* This section provides detailed objectives calling for counties to prevent or significantly reduce threats in high hazard areas or manage development in other hazard areas. A portion of this section is the Coastal Zone Enhancement Program (CZEP).

Coastal Zone Enhancement Program – This program allows states to compete for additional funding by creating enhancements to the existing County Coastal Zone Management Program in eight priority areas including coastal hazard mitigation, wetlands protection, and the control of cumulative and secondary impacts of development.

#### **United States Economic Development Administration (EDA)**

*Public Work Grants* (potential source of funding) These grants are given to public and private non-profit organizations as well as to Indian Tribes for the building or expansion of public facilities that are essential to industrial and commercial growth.

*Technical Assistance Grants* (potential source of funding) Funding is made available through these grants to communities and firms for economic feasibility studies of resource development in the establishment of jobs. The funding also provides on-sight support for innovative economic development techniques.

*Planning Grants* (potential source of funding) Funding is available through planning grants help to pay for the expertise needed to plan, coordinate and implement comprehensive economic development programs.

*University Center Program Grants* (potential source of funding) These grants are awarded to colleges and universities to utilize available resources to provide technical assistance to clients and address the economic development problems and opportunities of their service area.



*Revolving Loan Fund (RLF) Grants* (potential source of funding) This funding is aimed at helping depressed areas overcome specific capital market gaps and to encourage greater private sector participation in economic development activities. In concert with private leaders, RLF grantees make fixed asset and/or working capital loans to area businesses.

*Economic Adjustment Program Grants* (potential source of funding) Assist county and local governments in solving recent and anticipated severe adjustment problems, resulting in abrupt and serious job losses and to help areas implement strategies to reverse and halt long-term economic deterioration, i.e. natural disasters and military installation closures.

## **6.9.2 State and Local Funding**

*Alabama Emergency Management Agency (AEMA)* (existing source of funding) AEMA receives state funds for efforts related to the administration and operations of the federal disaster funding programs at a county level, in addition to disaster response.

*Alabama Department of Economic and Community Affairs (ADECA)* (existing source of funding) The Office of Water Resources (OWR) currently administers the NFIP program and related CRS program for the State of Alabama. OWR receives funding from the state for the NFIP. Currently, the federal/local share split is 75 percent Federal/25 percent State. The State of Alabama provides the 25 percent match through cash or in-kind contributions. ADECA also administers the CDBG program. Funds from this program have been used as a local match for HMGP funds.

*Alabama Department of Conservation and Natural Resources (ADCNR), Coastal Zone Management Program (CZMP)* (existing source of funding) ADCNR receives funding from the State of Alabama for the administration and daily operations of the Coastal Zone Management Program. Local municipalities (counties and incorporated cities) actively participate in funding hazard mitigation projects. Local counties and cities provide local match funding for federal programs to fund hazard mitigation activities. For example, local municipalities provide the local match share for FEMA HMGP and PDM grants as well as for USACE Section 205 and 206 grants.

## Section 7 – Coordination of Local Planning

### Contents of this Section

- 7.1 IFR 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

### Section What has been updated?

- 7.1 Plan added “IFR Requirement for Coordination of Local Mitigation Planning” IFR languages pertaining to plan updates were added.
- 7.2 Plan added “State Process for Developing Local Mitigation Plans” Describes status of, and process for, developing local mitigation plans. Describes the process and timeframe for local mitigation plan approval and adoption.
- 7.3 Plan added “Process for Reviewing, Coordinating and Linking the State and Local Plans” Describes how local information was incorporated during initial plan development. Describes process for reviewing and incorporating all local plans into this update. Describes plans to further integrate, coordinate, and link the state and local plans.
- 7.4 Plan added “Criteria for Prioritizing Jurisdictions to Receive Funds Under Existing Programs.”

### 7.1 Interim Final Rule Requirements for Coordination of Local Mitigation Planning

The Interim Final Rule (IFR) Subsection 201.6 (c) (4) requires the local Hazard Mitigation Plan to include a section on the plan maintenance process that includes the following:

- (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.

### 7.2 Development and Update of Local Mitigation Plan

This section describes the ongoing 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 Morgan County Emergency Management Agency (MCEMA) made a concerted effort to assist with local plan development by providing:

- Local In-Kind (among MCHMPC members) Funding for plan development
- Coordination with the State and Federal Emergency Management Agency on local plan development and review issues

MCEMA oversaw the development of the local Hazard Mitigation plan through agreements with a contractor, Lee Helms Associates (LHA), L. L. C. LHA was chosen to assist in this process because of their established planning expertise, knowledge of local and regional issues within Alabama, and their rapport with local county and city representatives and stakeholders.

The purpose of the HMPC is to coordinate local mitigation planning efforts across the county. The committee exchanges information, knowledge and experiences regarding local plan development. The MCEMA actively participated in the local HMPC providing ongoing assistance to the consultant and attending meetings.

In addition to local in-kind funding, the MCEMA provided assistance to the consultant as well as the local participants. Prior to and during the revision of the local plan, the MCEMA conducted Hazard Mitigation Planning Committee Meetings. Representatives of Lee Helms Associates, L. L. C. attended a Mitigation Plan Review workshop in Clanton, Alabama at the AEMA.

In addition to assistance provided by the MCEMA, the AEMA provided a review process and timeframe for draft local plan development. The state will review the county plan for applicability to the IFR 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 IFR 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 MCEMA works to improve the county’s risk assessments and strengthen their mitigation strategies. **Table 7.2-1**, below, summarizes local efforts to update their plans.

**Table 7.2-1 Status of Local Hazard Mitigation Plan Revision**

Alabama Association of Regional Councils			Responsible Entity for Local Plan Revision
Region	Council Name/ County Name	Status of Funding as of 2008	
11	North-Central Alabama Regional Council of Governments/Morgan County	1789 HMGP Funds Applied For	Lee Helms Associates, L. L. C.

**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 MCEMA 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. 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 has been developed and approved by FEMA; therefore, the county plan is mirrored after the state plan.

#### **Local Questionnaire**

The local plan questionnaire was developed and distributed to all committee attendees at the March 12, 2010 meeting. Responses were received and used to acquire an understanding of local risk assessments and local mitigation strategies and actions. To accomplish this, 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.

#### **Evaluation of Local Plans**

The results were utilized as the basis for the countywide hazard identification and risk analysis, as well as the development of the countywide mitigation goals, strategy, and actions. This ensured that the county plan was reflective of additional local plans.

#### **Coordination with AMCHMPC**

As discussed in **Section 7.2**, a large majority of the plan was developed through the Hazard Mitigation Planning Committee and the consultant. The consultant and the MCEMA was included as part of the committee 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. The consultant also facilitated coordination 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 above noted process, the MCEMA 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

### **7.3.2 Review and Incorporation of Local Plan Information into the State Plan Update Hazard Identification and Profiles**

MCEMA reviewed the hazard identification and profile sections of the present hazard mitigation plan. The range of hazards identified in the present plan varies slightly. An initial review was conducted to identify all hazards mentioned in the local plan. These included:

- Flood
- Tornado
- Thunderstorms and High Wind
- Hurricanes/Coastal Storms
- Winter Storms/Freezes
- Landslides
- Land Subsidence
- Earthquake
- Drought
- Temperature Extremes
- Lightning
- Hailstorms

Coastal storms were combined with hurricanes; therefore, coastal storms were removed from local plans accordingly. The local plan was reviewed again to determine which hazards are identified, profiled, and have the potential to impact the county. The results of this review are summarized in **Table 7.3-1** below which shows the hazards that impact the county.

**Table 7.3-1 Local Hazard Identification and Profiles**

County	FL	TOR	HW	HU	WS	LS	S&S	EQ	DR	HAIL	WF	ET	LT	DF
Morgan	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Notes: **FL**=Flood; **TOR**=Tornadoes; **HW**=High Wind and Windstorms; **HU**=Hurricane; **WS**=Winter Storms; **LS**=Landslides; **S&S**=Subsidence and Sinkholes; **EQ**=Earthquake; **DR**=Drought; **HAIL**=Hail; **WF**=Wildfire; **ET**=Extreme Temperatures; **LT**=Lightning; **DF**=Dam Failure

**Potential Loss Estimates**

MCEMA conducted an initial review (using the information from the National Climatic Data Center and the Probability of Hazard formula )of the loss estimates contained in the local plan to identify common elements that could be extracted and incorporated into this plan update. The results of this review are summarized in **Table 7.3-2** below. All figures were converted to dollar losses per year.

**Table 7.3-2  
Projected Annual Loss Estimates**

County	Floods	Hurricane	Tornadoes	Thunderstorms/ High Winds
Morgan	\$65,556	\$110,000,000	\$7,838,444	\$970,235

*Source: NCDC/Probability of Hazard Formula*



## **Mitigation Goals and Actions**

Lastly, MCEMA 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:

1. Establish a comprehensive countywide hazard mitigation system
2. Reduce Morgan County's risk from natural hazards
3. Reduce vulnerability of new and future development
4. Reduce Morgan County's vulnerability to natural hazards
5. Foster public support and acceptance of hazard mitigation

Goals 1-5 mirror Goals 1-5 of the State Plan. The State Plan has Goal 6 – “Establish interagency hazard mitigation cooperation” that Morgan's Plan does not include.

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.

### **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 IFR 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.

## **7.4 Criteria for Prioritizing Jurisdictions to Receive Funds under Existing Programs**

### **Background**

IFR 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 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 this Plan is to identify the areas within the county with the highest risk of damage from natural hazards. As described in detail in the Risk Assessment (**Section 5**), jurisdictions, mostly those with the greatest populations and numbers of structures (especially critical facilities) are at the greatest risk.

Although the 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.

#### **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.

#### **7.4.3 Most Intense Development Pressure**

As mentioned earlier in this section, at the time the initial version of this Plan developed in 2005, the county 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.

#### **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 MCHMPC 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.

#### **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.

## Section 8 – Plan Maintenance

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

### Contents of this Section

- 8.1 Interim 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

### Section What has been updated?

- 8.1 Section has been added
- 8.2 This section was added to reflect lessons learned regarding the plan maintenance and update process in the last five years
- 8.3 This section has been added to reflect how the MCEMA currently monitors mitigation projects
- 8.4 Section has been added
- 8.5 This section has been added to reflect the restructured annual plan evaluation process described in **Section 8.2**.

### 8.1 Interim Final Rule Requirements for Plan Maintenance Process

The Interim Final Rule (IFR) 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 IFR 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.”

## **8.2 Method for Monitoring, Evaluating and Updating the Plan**

### **8.2.1 Background**

The Morgan County Emergency Management Agency (MCEMA) is responsible for maintaining the local Hazard Mitigation Plan, including all monitoring, evaluation, and updating activities. As part of this plan update process, the MCEMA reviewed the strategy detailed in the 2005 Plan for monitoring, evaluating, and updating the plan and compared it to the plan maintenance activities that actually occurred since plan adoption in 2005.

The 2005 Plan calls for MCEMA to initiate an annual review of the county plan by the Morgan County Hazard Mitigation Planning Committee (MCHMPC). The MCHMPC 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 MCEMA and Morgan County in their efforts to maintain the plan. This section of the plan describes the method by which the MCEMA will accomplish this task.

### **8.2.2 Method for Monitoring the Plan**

Regular plan monitoring will be achieved through MCEMA’s efforts to track mitigation activities. These activities are described in **Sections 8.3** through **8.5** below. The MCEMA Director is the responsible person for the review of the plan to include monitoring, evaluating, and updating of the plan, reconvening the committee only if additional information is available or the EMA Director requires assistance. The annual review of the plan will take place in June of each year. 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 An annual monitoring report is to be prepared once a year by the MCEMA. The monitoring report will indicate progress made toward implementing the activities and mitigation measures contained in the annual work program as well as changing conditions in the county that may affect adjustments to the work program. For each item, a statement will be made regarding whether it has been accomplished and, if not, why it has not and what can be done to accomplish it in the future. If it is determined that an activity cannot or should not be accomplished, then that also will be stated. The annual monitoring report and the annual work program may be consolidated into a single report.

### **8.2.3 System for Evaluating the Plan**

The MCEMA will conduct an annual evaluation of the plan, reconvening the committee only if additional information is available or the EMA Director requires assistance. The MCEMA Director will document the annual evaluation and note the findings. The evaluation will consider several basic factors including:



1. Changes in the level of risk to the county and its citizens
2. Changes in laws, policies, or regulations at the local or state level
3. Changes in state or local agencies or their procedures that will affect how mitigation programs or funds are administered
4. Significant changes in funding sources or capabilities
5. Changes in the composition of the Hazard Mitigation Committee
6. Progress on mitigation actions (including project closeouts) and new mitigation actions that the county is considering
7. Major changes to the multi-jurisdictional hazard mitigation plan

Additionally, as described separately in **Section 7.2**, MCEMA 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 will oversee and approve all revisions to the plan. Conditions which might warrant revisions to this plan 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 offices, submit written comments, and present comments at a public meeting. The Committee 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.

#### **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 risks 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, MCEMA will notify the HMPC that the agency is initiating an interim plan update, and



describe the circumstances that created the need for the update. MCEMA will determine if the full committee should be consulted regarding the potential changes. If it is determined that the committee should be involved, the nature of the involvement will be at the discretion of MCEMA.

When interim updates are completed, MCEMA will advise all HMPC 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 will be required, and that the plan will be formally readopted by the commission. Based on the 2010 deadline for this plan update, AEMA anticipates that the submission date for the next plan update will be 2015. Between 6 and 12 months prior to 2015, MCEMA will initiate the plan update process by contacting committee 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 for consideration and approval.

## **8.3 System for Monitoring Mitigation Measures and Project Closeouts**

The MCEMA 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 MCEMA and AEMA monitor throughout the development and execution of the activity.
- Every calendar quarter, MCEMA 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.

### **8.3.2 Monitoring Project Closeouts**

Mitigation project closeouts occur in the following sequence. These procedures were established in accordance with FEMA HMGP guidelines as set out in the HMGP Desk Reference and the State of Alabama HMGP Administrative Plan.

- Subgrantee indicates in a quarterly project progress report that a mitigation project is 100 percent complete.

- AEMA reconciles FEMA SmartLink 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.

#### **8.4 System for Reviewing Progress on Achieving Goals**

In order to track progress on achieving the goals identified in this plan, MCEMA 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.

#### **8.5 System for Reviewing Progress on Activities and Projects in the Local Mitigation Strategy**

As part of the annual evaluation, MCEMA 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, MCEMA will initiate a more detailed review and evaluation of all activities and projects noted in the mitigation strategy. MCEMA will report its findings to the committee 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**.

## Section 9 - APPENDICES



**Appendix A - Disaster Mitigation Act of 2000  
(106-390-October 30, 2000)**

114 STAT. 1552 PUBLIC LAW 106–390—OCT. 30, 2000  
Public Law 106–390  
106th Congress

An Act

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,*

**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

#### SEC. 101 FINDINGS AND PURPOSE

(a) FINDINGS.—Congress finds that— 42 USC 5133 note. 42 USC 5121 note. Disaster Mitigation Act of 2000. Oct. 30, 2000 [H.R. 707]

PUBLIC LAW 106–390—OCT. 30, 2000 114 STAT. 1553

(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

(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

(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
- (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
- (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**

“(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 President. 42 USC 5133. 114 STAT. 1554 PUBLIC LAW 106–390—OCT. 30, 2000 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.—

“(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 President.

PUBLIC LAW 106-390—OCT. 30, 2000 114 STAT. 1555

“(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.

“(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.

114 STAT. 1556 PUBLIC LAW 106–390—OCT. 30, 2000

“(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 interestbearing 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) MULTHAZARD ADVISORY MAPS.—

“(1) DEFINITION OF MULTHAZARD ADVISORY MAP.—In this subsection, the term ‘multihazard advisory map’ means a map on which hazard data concerning each type of natural disaster is identified simultaneously for the purpose of showing areas of hazard overlap.

“(2) DEVELOPMENT OF MAPS.—In consultation with States, local governments, and appropriate Federal agencies, the President shall develop multihazard advisory maps for areas, in not fewer than five States, that are subject to commonly recurring natural hazards (including flooding, hurricanes and severe winds, and seismic events).

“(3) USE OF TECHNOLOGY.—In developing multihazard advisory maps under this subsection, the President shall use, to the maximum extent practicable, the most cost-effective and efficient technology available.

“(4) USE OF MAPS.—

“(A) ADVISORY NATURE.—The multihazard advisory maps shall be considered to be advisory and shall not require the development of any new policy by, or impose any new policy on, any government or private entity.

“(B) AVAILABILITY OF MAPS.—The multihazard advisory maps shall be made available to the appropriate State and local governments for the purposes of—

“(i) informing the general public about the risks of natural hazards in the areas described in paragraph(2);

“(ii) supporting the activities described in subsection (e); and

“(iii) other public uses.

“(l) REPORT ON FEDERAL AND STATE ADMINISTRATION.—Not later than 18 months after the date of the enactment of this section, the President, in consultation with State and local governments, shall submit to Congress a report evaluating efforts to implement this section and recommending a process for transferring greater authority and responsibility for administering the assistance program established under this section to capable States.

“(m) TERMINATION OF AUTHORITY.—The authority provided by this section terminates December 31, 2003.”.

(b) CONFORMING AMENDMENT.—Title II of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5131 et seq.) is amended by striking the title heading and inserting the following:

**“TITLE II—DISASTER PREPAREDNESS AND MITIGATION ASSISTANCE”. SEC. 103. INTERAGENCY TASK FORCE.**

Title II of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5131 et seq.) (as amended by section 102(a)) is amended by adding at the end the following:

**“SEC. 204. INTERAGENCY TASK FORCE.**

“(a) IN GENERAL.—The President shall establish a Federal interagency task force for the purpose of coordinating the implementation of predisaster hazard mitigation programs administered by the Federal Government. 42 USC 5134. Deadline.President.

114 STAT. 1558 PUBLIC LAW 106–390—OCT. 30, 2000

“(b) CHAIRPERSON.—The Director of the Federal Emergency Management Agency shall serve as the chairperson of the task force.

“(c) MEMBERSHIP.—The membership of the task force shall include representatives of—

“(1) relevant Federal agencies;

“(2) State and local government organizations (including Indian tribes); and

“(3) the American Red Cross.”.

**SEC. 104. MITIGATION PLANNING; MINIMUM STANDARDS FOR PUBLIC AND PRIVATE STRUCTURES.**

(a) IN GENERAL.—Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) is amended by adding at the end the following:

**“SEC. 322. MITIGATION PLANNING.**

“(a) REQUIREMENT OF MITIGATION PLAN.—As a condition of receipt of an increased Federal share for hazard mitigation measures under subsection (e), a State, local, or tribal



government shall develop and submit for approval to the President a mitigation plan that outlines processes for identifying the natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government.

“(b) LOCAL AND TRIBAL PLANS.—Each mitigation plan developed by a local or tribal government shall—

“(1) describe actions to mitigate hazards, risks, and vulnerabilities identified under the plan; and

“(2) establish a strategy to implement those actions.

“(c) STATE PLANS.—The State process of development of a mitigation plan under this section shall—

“(1) identify the natural hazards, risks, and vulnerabilities of areas in the State;

“(2) support development of local mitigation plans;

“(3) provide for technical assistance to local and tribal governments for mitigation planning; and

“(4) identify and prioritize mitigation actions that the State will support, as resources become available.

“(d) FUNDING.—

“(1) IN GENERAL.—Federal contributions under section 404 may be used to fund the development and updating of mitigation plans under this section.

“(2) MAXIMUM FEDERAL CONTRIBUTION.—With respect to any mitigation plan, a State, local, or tribal government may use an amount of Federal contributions under section 404 not

to exceed 7 percent of the amount of such contributions available to the government as of a date determined by the government.

“(e) INCREASED FEDERAL SHARE FOR HAZARD MITIGATION MEASURES.—

“(1) IN GENERAL.—If, at the time of the declaration of a major disaster, a State has in effect an approved mitigation plan under this section, the President may increase to 20 percent, with respect to the major disaster, the maximum percentage specified in the last sentence of section 404(a).

“(2) FACTORS FOR CONSIDERATION.—In determining whether to increase the maximum percentage under paragraph (1), the President shall consider whether the State has established— President. 42 USC 5165.

PUBLIC LAW 106–390—OCT. 30, 2000 114 STAT. 1559

“(A) eligibility criteria for property acquisition and other types of mitigation measures;

“(B) requirements for cost effectiveness that are related to the eligibility criteria;

“(C) a system of priorities that is related to the eligibility criteria; and

“(D) a process by which an assessment of the effectiveness of a mitigation action may be carried out after the mitigation action is complete.

### “SEC. 323. MINIMUM STANDARDS FOR PUBLIC AND PRIVATE STRUCTURES.

“(a) IN GENERAL.—As a condition of receipt of a disaster loan or grant under this Act—



“(1) the recipient shall carry out any repair or construction to be financed with the loan or grant in accordance with applicable standards of safety, decency, and sanitation and in conformity with applicable codes, specifications, and standards; and

“(2) the President may require safe land use and construction practices, after adequate consultation with appropriate State and local government officials.

“(b) EVIDENCE OF COMPLIANCE.—A recipient of a disaster loan or grant under this Act shall provide such evidence of compliance with this section as the President may require by regulation.”.

(b) LOSSES FROM STRAIGHT LINE WINDS.—The President shall increase the maximum percentage specified in the last sentence of section 404(a) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170c(a)) from 15 percent to 20 percent with respect to any major disaster that is in the State of Minnesota and for which assistance is being provided as of the date of the enactment of this Act, except that additional assistance provided under this subsection shall not exceed \$6,000,000. The mitigation measures assisted under this subsection shall be related to losses in the State of Minnesota from straight line winds.

(c) CONFORMING AMENDMENTS.—

(1) Section 404(a) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170c(a)) is amended—

(A) in the second sentence, by striking “section 409” and inserting “section 322”; and

(B) in the third sentence, by striking “The total” and inserting “Subject to section 322, the total”.

(2) Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5176) is repealed.

## **TITLE II—STREAMLINING AND COST REDUCTION**

### **SEC. 201. TECHNICAL AMENDMENTS.**

Section 311 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5154) is amended in subsections (a)(1), (b), and (c) by striking “section 803 of the Public Works and Economic Development Act of 1965” each place it appears President. 42 USC 5165a. 114 STAT. 1560 PUBLIC LAW 106–390—OCT. 30, 2000 and inserting “section 209(c)(2) of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3149(c)(2))”.

### **SEC. 202. MANAGEMENT COSTS.**

(a) IN GENERAL.—Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) (as amended by section 104(a)) is amended by adding at the end the following:

#### **“SEC. 324. MANAGEMENT COSTS.**

“(a) DEFINITION OF MANAGEMENT COST.—In this section, the term ‘management cost’ includes any indirect cost, any administrative expense, and any other expense not directly chargeable to a specific project under a major disaster, emergency, or disaster preparedness or mitigation activity or measure.

“(b) ESTABLISHMENT OF MANAGEMENT COST RATES.—Notwithstanding any other provision of law (including any administrative rule or guidance), the President shall by



regulation establish management cost rates, for grantees and subgrantees, that shall be used to determine contributions under this Act for management costs.

“(c) REVIEW.—The President shall review the management cost rates established under subsection (b) not later than 3 years after the date of establishment of the rates and periodically thereafter.”.

(b) APPLICABILITY.—

(1) IN GENERAL.—Subject to paragraph (2), subsections (a) and (b) of section 324 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (as added by subsection (a)) shall apply to major disasters declared under that Act on or after the date of the enactment of this Act.

(2) INTERIM AUTHORITY.—Until the date on which the President establishes the management cost rates under section 324 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (as added by subsection (a)), section 406(f ) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172(f )) (as in effect on the day before the date of the enactment of this Act) shall be used to establish management cost rates.

### **SEC. 203. PUBLIC NOTICE, COMMENT, AND CONSULTATION REQUIREMENTS.**

Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) (as amended by section 202(a)) is amended by adding at the end the following:

### **“SEC. 325. PUBLIC NOTICE, COMMENT, AND CONSULTATION REQUIREMENTS.**

“(a) PUBLIC NOTICE AND COMMENT CONCERNING NEW OR MODIFIED POLICIES.—

“(1) IN GENERAL.—The President shall provide for public notice and opportunity for comment before adopting any new or modified policy that—

“(A) governs implementation of the public assistance program administered by the Federal Emergency Management Agency under this Act; and “(B) could result in a significant reduction of assistance under the program. President. 42 USC 5165c. 42 USC 5165b note. Deadline. Regulations. 42 USC 5165b.

PUBLIC LAW 106–390—OCT. 30, 2000 114 STAT. 1561

“(2) APPLICATION.—Any policy adopted under paragraph (1) shall apply only to a major disaster or emergency declared on or after the date on which the policy is adopted.

“(b) CONSULTATION CONCERNING INTERIM POLICIES.—

“(1) IN GENERAL.—Before adopting any interim policy under the public assistance program to address specific conditions that relate to a major disaster or emergency that has been declared under this Act, the President, to the maximum extent practicable, shall solicit the views and recommendations of grantees and subgrantees with respect to the major disaster or emergency concerning the potential interim policy, if the interim policy is likely—

“(A) to result in a significant reduction of assistance to applicants for the assistance with respect to the major disaster or emergency; or



“(B) to change the terms of a written agreement to which the Federal Government is a party concerning the declaration of the major disaster or emergency.

“(2) NO LEGAL RIGHT OF ACTION.—Nothing in this subsection confers a legal right of action on any party.

“(c) PUBLIC ACCESS.—The President shall promote public access to policies governing the implementation of the public assistance program.”.

## **SEC. 204. STATE ADMINISTRATION OF HAZARD MITIGATION GRANT PROGRAM.**

Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170c) is amended by adding at the end the following:

“(c) PROGRAM ADMINISTRATION BY STATES.—

“(1) IN GENERAL.—A State desiring to administer the hazard mitigation grant program established by this section with respect to hazard mitigation assistance in the State may submit to the President an application for the delegation of the authority to administer the program.

“(2) CRITERIA.—The President, in consultation and coordination with States and local governments, shall establish criteria for the approval of applications submitted under paragraph

(1). The criteria shall include, at a minimum—

“(A) the demonstrated ability of the State to manage the grant program under this section;

“(B) there being in effect an approved mitigation plan under section 322; and

“(C) a demonstrated commitment to mitigation activities.

“(3) APPROVAL.—The President shall approve an application submitted under paragraph (1) that meets the criteria established under paragraph (2).

“(4) WITHDRAWAL OF APPROVAL.—If, after approving an application of a State submitted under paragraph (1), the President determines that the State is not administering the hazard

mitigation grant program established by this section in a manner satisfactory to the President, the President shall withdraw the approval.

“(5) AUDITS.—The President shall provide for periodic audits of the hazard mitigation grant programs administered by States under this subsection.”. President.

114 STAT. 1562 PUBLIC LAW 106–390—OCT. 30, 2000

## **SEC. 205. ASSISTANCE TO REPAIR, RESTORE, RECONSTRUCT, OR REPLACE DAMAGED FACILITIES.**

(a) CONTRIBUTIONS.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (a) and inserting the following:

“(a) CONTRIBUTIONS.—

“(1) IN GENERAL.—The President may make contributions—



“(A) to a State or local government for the repair, restoration, reconstruction, or replacement of a public facility damaged or destroyed by a major disaster and for associated expenses incurred by the government; and

“(B) subject to paragraph (3), to a person that owns or operates a private nonprofit facility damaged or destroyed by a major disaster for the repair, restoration, reconstruction, or replacement of the facility and for associated expenses incurred by the person.

“(2) ASSOCIATED EXPENSES.—For the purposes of this section, associated expenses shall include—

“(A) the costs of mobilizing and employing the National Guard for performance of eligible work;

“(B) the costs of using prison labor to perform eligible work, including wages actually paid, transportation to a worksite, and extraordinary costs of guards, food, and lodging; and

“(C) base and overtime wages for the employees and extra hires of a State, local government, or person described in paragraph (1) that perform eligible work, plus fringe benefits on such wages to the extent that such benefits were being paid before the major disaster.

“(3) CONDITIONS FOR ASSISTANCE TO PRIVATE NONPROFIT FACILITIES.—

“(A) IN GENERAL.—The President may make contributions to a private nonprofit facility under paragraph (1)(B) only if—

“(i) the facility provides critical services (as defined by the President) in the event of a major disaster; or

“(ii) the owner or operator of the facility—

“(I) has applied for a disaster loan under section 7(b) of the Small Business Act (15 U.S.C.

636(b)); and

“(II)(aa) has been determined to be ineligible for such a loan; or

“(bb) has obtained such a loan in the maximum amount for which the Small Business Administration determines the facility is eligible.

“(B) DEFINITION OF CRITICAL SERVICES.—In this paragraph, the term ‘critical services’ includes power, water (including water provided by an irrigation organization or facility), sewer, wastewater treatment, communications, and emergency medical care.

“(4) NOTIFICATION TO CONGRESS.—Before making any contribution under this section in an amount greater than \$20,000,000, the President shall notify—

“(A) the Committee on Environment and Public Works of the Senate; PUBLIC LAW 106–390—OCT. 30, 2000 114 STAT. 1563

“(B) the Committee on Transportation and Infrastructure of the House of Representatives;

“(C) the Committee on Appropriations of the Senate; and

“(D) the Committee on Appropriations of the House of Representatives.”.

(b) FEDERAL SHARE.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (b) and inserting the following:

“(b) FEDERAL SHARE.—





“(1) MINIMUM FEDERAL SHARE.—Except as provided in paragraph (2), the Federal share of assistance under this section shall be not less than 75 percent of the eligible cost of repair,

restoration, reconstruction, or replacement carried out under this section.

“(2) REDUCED FEDERAL SHARE.—The President shall promulgate regulations to reduce the Federal share of assistance under this section to not less than 25 percent in the case of the repair, restoration, reconstruction, or replacement of any eligible public facility or private nonprofit facility following an event associated with a major disaster—

“(A) that has been damaged, on more than one occasion within the preceding 10-year period, by the same type of event; and

“(B) the owner of which has failed to implement appropriate mitigation measures to address the hazard that caused the damage to the facility.”.

(c) LARGE IN-LIEU CONTRIBUTIONS.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (c) and inserting the following:

“(c) LARGE IN-LIEU CONTRIBUTIONS.—

“(1) FOR PUBLIC FACILITIES.—

“(A) IN GENERAL.—In any case in which a State or local government determines that the public welfare would not best be served by repairing, restoring, reconstructing, or replacing any public facility owned or controlled by the State or local government, the State or local government may elect to receive, in lieu of a contribution under subsection (a)(1)(A), a contribution in an amount equal to 75 percent of the Federal share of the Federal estimate

of the cost of repairing, restoring, reconstructing, or replacing the facility and of management expenses.

“(B) AREAS WITH UNSTABLE SOIL.—In any case in which a State or local government determines that the public welfare would not best be served by repairing, restoring, reconstructing, or replacing any public facility owned or controlled by the State or local government because soil instability in the disaster area makes repair, restoration, reconstruction, or replacement infeasible, the State or local government may elect to receive, in lieu of a contribution under subsection (a)(1)(A), a contribution in an amount equal to 90 percent of the Federal share of the Federal estimate of the cost of repairing, restoring, reconstructing, for replacing the facility and of management expenses.

“(C) USE OF FUNDS.—Funds contributed to a State or local government under this paragraph may be used— President. Regulations.

114 STAT. 1564 PUBLIC LAW 106–390—OCT. 30, 2000

“(i) to repair, restore, or expand other selected public facilities;

“(ii) to construct new facilities; or

“(iii) to fund hazard mitigation measures that the State or local government determines to be necessary to meet a need for governmental services and functions in the area affected by the major disaster.

“(D) LIMITATIONS.—Funds made available to a State or local government under this paragraph may not be used for—



“(i) any public facility located in a regulatory floodway (as defined in section 59.1 of title 44, Code of Federal Regulations (or a successor regulation)); or

“(ii) any uninsured public facility located in a special flood hazard area identified by the Director of the Federal Emergency Management Agency under the National Flood Insurance Act of 1968 (42 U.S.C. 4001 et seq.).

“(2) FOR PRIVATE NONPROFIT FACILITIES.—

“(A) IN GENERAL.—In any case in which a person that owns or operates a private nonprofit facility determines that the public welfare would not best be served by repairing, restoring, reconstructing, or replacing the facility, the person may elect to receive, in lieu of a contribution under subsection (a)(1)(B), a contribution in an amount equal to 75 percent of the Federal share of the Federal estimate of the cost of repairing, restoring, reconstructing, or replacing the facility and of management expenses.

“(B) USE OF FUNDS.—Funds contributed to a person under this paragraph may be used—

“(i) to repair, restore, or expand other selected private nonprofit facilities owned or operated by the person;

“(ii) to construct new private nonprofit facilities to be owned or operated by the person; or

“(iii) to fund hazard mitigation measures that the person determines to be necessary to meet a need for the person’s services and functions in the area affected by the major disaster.

“(C) LIMITATIONS.—Funds made available to a person under this paragraph may not be used for—

“(i) any private nonprofit facility located in a regulatory floodway (as defined in section 59.1 of title 44, Code of Federal Regulations (or a successor regulation)); or

“(ii) any uninsured private nonprofit facility located in a special flood hazard area identified by the Director of the Federal Emergency Management Agency under the National Flood Insurance Act of 1968 (42 U.S.C. 4001 et seq.).”

(d) ELIGIBLE COST.—

(1) IN GENERAL.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (e) and inserting the following:

“(e) ELIGIBLE COST.—

PUBLIC LAW 106–390—OCT. 30, 2000 114 STAT. 1565

“(1) DETERMINATION.—

“(A) IN GENERAL.—For the purposes of this section, the President shall estimate the eligible cost of repairing, restoring, reconstructing, or replacing a public facility or private nonprofit facility—

“(i) on the basis of the design of the facility as the facility existed immediately before the major disaster; and

“(ii) in conformity with codes, specifications, and standards (including floodplain management and hazard mitigation criteria required by the President or under the Coastal Barrier Resources Act (16 U.S.C. 3501 et seq.)) applicable at the time at which the disaster occurred.

“(B) COST ESTIMATION PROCEDURES.—

“(i) IN GENERAL.—Subject to paragraph (2), the President shall use the cost estimation procedures established under paragraph (3) to determine the eligible cost under this subsection.



“(ii) APPLICABILITY.—The procedures specified in this paragraph and paragraph (2) shall apply only to projects the eligible cost of which is equal to or greater than the amount specified in section 422.

“(2) MODIFICATION OF ELIGIBLE COST.—

“(A) ACTUAL COST GREATER THAN CEILING PERCENTAGE OF ESTIMATED COST.—In any case in which the actual cost of repairing, restoring, reconstructing, or replacing a facility under this section is greater than the ceiling percentage established under paragraph (3) of the cost estimated under paragraph (1), the President may determine that the eligible cost includes a portion of the actual cost of the repair, restoration, reconstruction, or replacement that exceeds the cost estimated under paragraph (1).

“(B) ACTUAL COST LESS THAN ESTIMATED COST.—

“(i) GREATER THAN OR EQUAL TO FLOOR PERCENTAGE OF ESTIMATED COST.—In any case in which the actual cost of repairing, restoring, reconstructing, or replacing a facility under this section is less than 100 percent of the cost estimated under paragraph (1), but is greater than or equal to the floor percentage established under paragraph (3) of the cost estimated under paragraph (1), the State or local government or person receiving funds under this section shall use the excess funds to carry out cost-effective activities that reduce the risk of future damage, hardship, or suffering from a major disaster.

“(ii) LESS THAN FLOOR PERCENTAGE OF ESTIMATED COST.—In any case in which the actual cost of repairing, restoring, reconstructing, or replacing a facility under this section is less than the floor percentage established under paragraph (3) of the cost estimated under paragraph (1), the State or local government or person receiving assistance under this section shall reimburse the President in the amount of the difference.

“(C) NO EFFECT ON APPEALS PROCESS.—Nothing in this paragraph affects any right of appeal under section 423.

114 STAT. 1566 PUBLIC LAW 106-390—OCT. 30, 2000

“(3) EXPERT PANEL.—

“(A) ESTABLISHMENT.—Not later than 18 months after the date of the enactment of this paragraph, the President, acting through the Director of the Federal Emergency Management Agency, shall establish an expert panel, which shall include representatives from the construction industry and State and local government.

“(B) DUTIES.—The expert panel shall develop recommendations concerning—

“(i) procedures for estimating the cost of repairing, restoring, reconstructing, or replacing a facility consistent with industry practices; and

“(ii) the ceiling and floor percentages referred to in paragraph (2).

“(C) REGULATIONS.—Taking into account the recommendations of the expert panel under subparagraph

(B), the President shall promulgate regulations that establish—

“(i) cost estimation procedures described in subparagraph (B)(i); and

“(ii) the ceiling and floor percentages referred to in paragraph (2).

“(D) REVIEW BY PRESIDENT.—Not later than 2 years after the date of promulgation of regulations under subparagraph (C) and periodically thereafter, the President shall review the cost estimation procedures and the ceiling and floor percentages established under this paragraph.



“(E) REPORT TO CONGRESS.—Not later than 1 year after the date of promulgation of regulations under subparagraph

(C), 3 years after that date, and at the end of each 2-year period thereafter, the expert panel shall submit to Congress a report on the appropriateness of the cost estimation procedures.

“(4) SPECIAL RULE.—In any case in which the facility being repaired, restored, reconstructed, or replaced under this section was under construction on the date of the major disaster, the cost of repairing, restoring, reconstructing, or replacing the facility shall include, for the purposes of this section, only those costs that, under the contract for the construction, are the owner’s responsibility and not the contractor’s responsibility.”

(2) EFFECTIVE DATE.—The amendment made by paragraph (1) takes effect on the date of the enactment of this Act and applies to funds appropriated after the date of the enactment of this Act, except that paragraph (1) of section 406(e) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (as amended by paragraph (1)) takes effect on the date on which the cost estimation procedures established under paragraph

(3) of that section take effect.

(e) CONFORMING AMENDMENT.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (f).

## **SEC. 206. FEDERAL ASSISTANCE TO INDIVIDUALS AND HOUSEHOLDS.**

(a) IN GENERAL.—Section 408 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5174) is amended to read as follows: 42 USC 5172 note. Deadline. President.

PUBLIC LAW 106–390—OCT. 30, 2000 114 STAT. 1567

## **“SEC. 408. FEDERAL ASSISTANCE TO INDIVIDUALS AND HOUSEHOLDS.**

“(a) IN GENERAL.—

“(1) PROVISION OF ASSISTANCE.—In accordance with this section, the President, in consultation with the Governor of a State, may provide financial assistance, and, if necessary, direct services, to individuals and households in the State who, as a direct result of a major disaster, have necessary expenses and serious needs in cases in which the individuals and households are unable to meet such expenses or needs through other means.

“(2) RELATIONSHIP TO OTHER ASSISTANCE.—Under paragraph (1), an individual or household shall not be denied assistance under paragraph (1), (3), or (4) of subsection (c) solely on the basis that the individual or household has not applied for or received any loan or other financial assistance from the Small Business Administration or any other Federal agency.

“(b) HOUSING ASSISTANCE.—

“(1) ELIGIBILITY.—The President may provide financial or other assistance under this section to individuals and households to respond to the disaster-related housing needs of individuals and households who are displaced from their predisaster primary residences or whose predisaster primary residences are rendered uninhabitable as a result of damage caused by a major disaster.

“(2) DETERMINATION OF APPROPRIATE TYPES OF ASSISTANCE.—

“(A) IN GENERAL.—The President shall determine appropriate types of housing assistance to be provided under this section to individuals and households described in subsection (a)(1) based on considerations of cost effectiveness, convenience to the individuals and households, and



such other factors as the President may consider appropriate.

“(B) MULTIPLE TYPES OF ASSISTANCE.—One or more types of housing assistance may be made available under this section, based on the suitability and availability of the types of assistance, to meet the needs of individuals and households in the particular disaster situation.

“(c) TYPES OF HOUSING ASSISTANCE.—

“(1) TEMPORARY HOUSING.—

“(A) FINANCIAL ASSISTANCE.—

“(i) IN GENERAL.—The President may provide financial assistance to individuals or households to rent alternate housing accommodations, existing rental units, manufactured housing, recreational vehicles, or other readily fabricated dwellings.

“(ii) AMOUNT.—The amount of assistance under clause (i) shall be based on the fair market rent for the accommodation provided plus the cost of any transportation, utility hookups, or unit installation not provided directly by the President.

“(B) DIRECT ASSISTANCE.—

“(i) IN GENERAL.—The President may provide temporary housing units, acquired by purchase or lease, directly to individuals or households who, because of a lack of available housing resources, would be unable President.

114 STAT. 1568 PUBLIC LAW 106–390—OCT. 30, 2000 to make use of the assistance provided under subparagraph (A).

“(ii) PERIOD OF ASSISTANCE.—The President may not provide direct assistance under clause (i) with respect to a major disaster after the end of the 18- month period beginning on the date of the declaration of the major disaster by the President, except that the President may extend that period if the President determines that due to extraordinary circumstances an extension would be in the public interest.

“(iii) COLLECTION OF RENTAL CHARGES.—After the end of the 18-month period referred to in clause (ii), the President may charge fair market rent for each temporary housing unit provided.

“(2) REPAIRS.—

“(A) IN GENERAL.—The President may provide financial assistance for—

“(i) the repair of owner-occupied private residences, utilities, and residential infrastructure (such as a private access route) damaged by a major disaster to a safe and sanitary living or functioning condition; and

“(ii) eligible hazard mitigation measures that reduce the likelihood of future damage to such residences, utilities, or infrastructure.

“(B) RELATIONSHIP TO OTHER ASSISTANCE.—A recipient of assistance provided under this paragraph shall not be required to show that the assistance can be met through other means, except insurance proceeds.

“(C) MAXIMUM AMOUNT OF ASSISTANCE.—The amount of assistance provided to a household under this paragraph shall not exceed \$5,000, as adjusted annually to reflect changes in the Consumer Price Index for All Urban Consumers published by the Department of Labor.

“(3) REPLACEMENT.—

“(A) IN GENERAL.—The President may provide financial assistance for the replacement of owner-occupied private residences damaged by a major disaster.



“(B) MAXIMUM AMOUNT OF ASSISTANCE.—The amount of assistance provided to a household under this paragraph shall not exceed \$10,000, as adjusted annually to reflect changes in the Consumer Price Index for All Urban Consumers published by the Department of Labor.

“(C) APPLICABILITY OF FLOOD INSURANCE REQUIREMENT.— With respect to assistance provided under this paragraph, the President may not waive any provision of Federal law requiring the purchase of flood insurance as a condition of the receipt of Federal disaster assistance.

“(4) PERMANENT HOUSING CONSTRUCTION.—The President may provide financial assistance or direct assistance to individuals or households to construct permanent housing in insular areas outside the continental United States and in other remote locations in cases in which—

“(A) no alternative housing resources are available; and

PUBLIC LAW 106–390—OCT. 30, 2000 114 STAT. 1569

“(B) the types of temporary housing assistance described in paragraph (1) are unavailable, infeasible, or not cost-effective.

“(d) TERMS AND CONDITIONS RELATING TO HOUSING ASSISTANCE.—

“(1) SITES.—

“(A) IN GENERAL.—Any readily fabricated dwelling provided under this section shall, whenever practicable, be located on a site that—

“(i) is complete with utilities; and

“(ii) is provided by the State or local government, by the owner of the site, or by the occupant who was displaced by the major disaster.

“(B) SITES PROVIDED BY THE PRESIDENT.—A readily fabricated dwelling may be located on a site provided by the President if the President determines that such a site would be more economical or accessible.

“(2) DISPOSAL OF UNITS.—

“(A) SALE TO OCCUPANTS.—

“(i) IN GENERAL.—Notwithstanding any other provision of law, a temporary housing unit purchased under this section by the President for the purpose of housing disaster victims may be sold directly to the individual or household who is occupying the unit if the individual or household lacks permanent housing.

“(ii) SALE PRICE.—A sale of a temporary housing unit under clause (i) shall be at a price that is fair and equitable.

“(iii) DEPOSIT OF PROCEEDS.—Notwithstanding any other provision of law, the proceeds of a sale under clause (i) shall be deposited in the appropriate Disaster Relief Fund account.

“(iv) HAZARD AND FLOOD INSURANCE.—A sale of a temporary housing unit under clause (i) shall be made on the condition that the individual or household purchasing the housing unit agrees to obtain and maintain hazard and flood insurance on the housing unit.

“(v) USE OF GSA SERVICES.—The President may use the services of the General Services Administration to accomplish a sale under clause (i).

“(B) OTHER METHODS OF DISPOSAL.—If not disposed of under subparagraph (A), a temporary housing unit purchased under this section by the President for the purpose of housing disaster victims—

“(i) may be sold to any person; or



“(ii) may be sold, transferred, donated, or otherwise made available directly to a State or other governmental entity or to a voluntary organization for the sole purpose of providing temporary housing to disaster victims in major disasters and emergencies if, as a condition of the sale, transfer, or donation, the State, other governmental agency, or voluntary organization agrees—

“(I) to comply with the nondiscrimination provisions of section 308; and

“(II) to obtain and maintain hazard and flood insurance on the housing unit.

114 STAT. 1570 PUBLIC LAW 106-390—OCT. 30, 2000

“(e) FINANCIAL ASSISTANCE TO ADDRESS OTHER NEEDS.—

“(1) MEDICAL, DENTAL, AND FUNERAL EXPENSES.—The President, in consultation with the Governor of a State, may provide financial assistance under this section to an individual or household in the State who is adversely affected by a major disaster to meet disaster-related medical, dental, and funeral expenses.

“(2) PERSONAL PROPERTY, TRANSPORTATION, AND OTHER EXPENSES.—The President, in consultation with the Governor of a State, may provide financial assistance under this section to an individual or household described in paragraph (1) to address personal property, transportation, and other necessary expenses or serious needs resulting from the major disaster.

“(f) STATE ROLE.—

“(1) FINANCIAL ASSISTANCE TO ADDRESS OTHER NEEDS.—

“(A) GRANT TO STATE.—Subject to subsection (g), a Governor may request a grant from the President to provide financial assistance to individuals and households in the State under subsection (e).

“(B) ADMINISTRATIVE COSTS.—A State that receives a grant under subparagraph (A) may expend not more than 5 percent of the amount of the grant for the administrative costs of providing financial assistance to individuals and households in the State under subsection (e).

“(2) ACCESS TO RECORDS.—In providing assistance to individuals and households under this section, the President shall provide for the substantial and ongoing involvement of the States in which the individuals and households are located, including by providing to the States access to the electronic records of individuals and households receiving assistance under this section in order for the States to make available any additional State and local assistance to the individuals and households.

“(g) COST SHARING.—

“(1) FEDERAL SHARE.—Except as provided in paragraph (2), the Federal share of the costs eligible to be paid using assistance provided under this section shall be 100 percent.

“(2) FINANCIAL ASSISTANCE TO ADDRESS OTHER NEEDS.— In the case of financial assistance provided under subsection (e)—

“(A) the Federal share shall be 75 percent; and

“(B) the non-Federal share shall be paid from funds made available by the State.

“(h) MAXIMUM AMOUNT OF ASSISTANCE.—

“(1) IN GENERAL.—No individual or household shall receive financial assistance greater than \$25,000 under this section with respect to a single major disaster.

“(2) ADJUSTMENT OF LIMIT.—The limit established under paragraph (1) shall be adjusted annually to reflect changes in the Consumer Price Index for All Urban Consumers published by the Department of Labor.



“(i) RULES AND REGULATIONS.—The President shall prescribe rules and regulations to carry out this section, including criteria, standards, and procedures for determining eligibility for assistance.”.

(b) CONFORMING AMENDMENT.—Section 502(a)(6) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5192(a)(6)) is amended by striking “temporary housing”. President.

PUBLIC LAW 106–390—OCT. 30, 2000 114 STAT. 1571

(c) ELIMINATION OF INDIVIDUAL AND FAMILY GRANT PROGRAMS.— Section 411 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5178) is repealed.

(d) EFFECTIVE DATE.—The amendments made by this section take effect 18 months after the date of the enactment of this Act.

#### **SEC. 207. COMMUNITY DISASTER LOANS.**

Section 417 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5184) is amended—

(1) by striking “(a) The President” and inserting the following:

“(a) IN GENERAL.—The President”;

(2) by striking “The amount” and inserting the following:

“(b) AMOUNT.—The amount”;

(3) by striking “Repayment” and inserting the following:

“(c) REPAYMENT.—

“(1) CANCELLATION.—Repayment”;

(4) by striking “(b) Any loans” and inserting the following:

“(d) EFFECT ON OTHER ASSISTANCE.—Any loans”;

(5) in subsection (b) (as designated by paragraph (2))—

(A) by striking “and shall” and inserting “shall”; and

(B) by inserting before the period at the end the following: “, and shall not exceed \$5,000,000”;

and

(6) in subsection (c) (as designated by paragraph (3)), by adding at the end the following:

“(2) CONDITION ON CONTINUING ELIGIBILITY.—A local government shall not be eligible for further assistance under this section during any period in which the local government is in arrears with respect to a required repayment of a loan under this section.”.

#### **SEC. 208. REPORT ON STATE MANAGEMENT OF SMALL DISASTERS INITIATIVE.**

Not later than 3 years after the date of the enactment of this Act, the President shall submit to Congress a report describing the results of the State Management of Small Disasters Initiative, including—

(1) identification of any administrative or financial benefits of the initiative; and

(2) recommendations concerning the conditions, if any, under which States should be allowed the option to administer parts of the assistance program under section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172).

#### **SEC. 209. STUDY REGARDING COST REDUCTION.**





Not later than 3 years after the date of the enactment of this Act, the Director of the Congressional Budget Office shall complete a study estimating the reduction in Federal disaster assistance that has resulted and is likely to result from the enactment of this Act. Deadline.

42 USC 5121 note. Deadline. 42 USC 5121 note. 42 USC 5174 note.

114 STAT. 1572 PUBLIC LAW 106-390—OCT. 30, 2000

**TITLE III—MISCELLANEOUS**

**SEC. 301. TECHNICAL CORRECTION OF SHORT TITLE.**

The first section of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 note) is amended to read as follows:

**“SECTION 1. SHORT TITLE.**

“This Act may be cited as the ‘Robert T. Stafford Disaster Relief and Emergency Assistance Act’.”.

**SEC. 302. DEFINITIONS.**

Section 102 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5122) is amended— (1) in each of paragraphs (3) and (4), by striking “the Northern” and all that follows through “Pacific Islands” and inserting “and the Commonwealth of the Northern Mariana Islands”;

(2) by striking paragraph (6) and inserting the following:

“(6) LOCAL GOVERNMENT.—The term ‘local government’ means—

“(A) a county, municipality, city, town, township, local public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government;

“(B) an Indian tribe or authorized tribal organization, or Alaska Native village or organization; and

“(C) a rural community, unincorporated town or village, or other public entity, for which an application for assistance is made by a State or political subdivision of a State.”; and

(3) in paragraph (9), by inserting “irrigation,” after “utility,”.

**SEC. 303. FIRE MANAGEMENT ASSISTANCE.**

(a) IN GENERAL.—Section 420 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5187) is amended to read as

**“SEC. 420. FIRE MANAGEMENT ASSISTANCE.**

“(a) IN GENERAL.—The President is authorized to provide assistance, including grants, equipment, supplies, and personnel, to any State or local government for the mitigation, management, and control of any fire on public or private forest land or grassland that threatens such destruction as would constitute a major disaster.

“(b) COORDINATION WITH STATE AND TRIBAL DEPARTMENTS OF FORESTRY.—In providing assistance under this section, the President shall coordinate with State and tribal departments of forestry.



“(c) ESSENTIAL ASSISTANCE.—In providing assistance under this section, the President may use the authority provided under section 403. President.

PUBLIC LAW 106–390—OCT. 30, 2000 114 STAT. 1573

“(d) RULES AND REGULATIONS.—The President shall prescribe such rules and regulations as are necessary to carry out this section.”.

(b) EFFECTIVE DATE.—The amendment made by subsection (a) takes effect 1 year after the date of the enactment of this Act.

#### **SEC. 304. DISASTER GRANT CLOSEOUT PROCEDURES.**

Title VII of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5101 et seq.) is amended by adding at the end the following:

#### **“SEC. 705. DISASTER GRANT CLOSEOUT PROCEDURES.**

“(a) STATUTE OF LIMITATIONS.—

“(1) IN GENERAL.—Except as provided in paragraph (2), no administrative action to recover any payment made to a State or local government for disaster or emergency assistance under this Act shall be initiated in any forum after the date that is 3 years after the date of transmission of the final expenditure report for the disaster or emergency.

“(2) FRAUD EXCEPTION.—The limitation under paragraph (1) shall apply unless there is evidence of civil or criminal fraud.

“(b) REBUTTAL OF PRESUMPTION OF RECORD MAINTENANCE.—

“(1) IN GENERAL.—In any dispute arising under this section after the date that is 3 years after the date of transmission of the final expenditure report for the disaster or emergency, there shall be a presumption that accounting records were maintained that adequately identify the source and application of funds provided for financially assisted activities.

“(2) AFFIRMATIVE EVIDENCE.—The presumption described in paragraph (1) may be rebutted only on production of affirmative evidence that the State or local government did not maintain documentation described in that paragraph.

“(3) INABILITY TO PRODUCE DOCUMENTATION.—The inability of the Federal, State, or local government to produce source documentation supporting expenditure reports later than 3 years after the date of transmission of the final expenditure report shall not constitute evidence to rebut the presumption described in paragraph (1).

“(4) RIGHT OF ACCESS.—The period during which the Federal, State, or local government has the right to access source documentation shall not be limited to the required 3-year retention period referred to in paragraph (3), but shall last as long as the records are maintained.

“(c) BINDING NATURE OF GRANT REQUIREMENTS.—A State or local government shall not be liable for reimbursement or any other penalty for any payment made under this Act if—

“(1) the payment was authorized by an approved agreement specifying the costs;

“(2) the costs were reasonable; and

“(3) the purpose of the grant was accomplished.”.

#### **SEC. 305. PUBLIC SAFETY OFFICER BENEFITS FOR CERTAIN FEDERAL AND STATE EMPLOYEES.**



(a) IN GENERAL.—Section 1204 of the Omnibus Crime Control and Safe Streets Act of 1968 (42 U.S.C. 3796b) is amended by striking paragraph (7) and inserting the following: “(7) ‘public safety officer’ means— 42 USC 5205. 42 USC 5187 note. President.

114 STAT. 1574 PUBLIC LAW 106–390—OCT. 30, 2000

“(A) an individual serving a public agency in an official capacity, with or without compensation, as a law enforcement officer, as a firefighter, or as a member of a rescue squad or ambulance crew;

“(B) an employee of the Federal Emergency Management Agency who is performing official duties of the Agency in an area, if those official duties—

“(i) are related to a major disaster or emergency that has been, or is later, declared to exist with respect to the area under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.); and

“(ii) are determined by the Director of the Federal Emergency Management Agency to be hazardous duties; or

“(C) an employee of a State, local, or tribal emergency management or civil defense agency who is performing official duties in cooperation with the Federal Emergency Management Agency in an area, if those official duties—

“(i) are related to a major disaster or emergency that has been, or is later, declared to exist with respect to the area under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.); and

“(ii) are determined by the head of the agency to be hazardous duties.”.

(b) EFFECTIVE DATE.—The amendment made by subsection (a) applies only to employees described in subparagraphs (B) and (C) of section 1204(7) of the Omnibus Crime Control and Safe Streets Act of 1968 (as amended by subsection (a)) who are injured or who die in the line of duty on or after the date of the enactment of this Act.

### **SEC. 306. BUY AMERICAN.**

(a) COMPLIANCE WITH BUY AMERICAN ACT.—No funds authorized to be appropriated under this Act or any amendment made by this Act may be expended by an entity unless the entity, in expending the funds, complies with the Buy American Act (41 U.S.C. 10a et seq.).

(b) DEBARMENT OF PERSONS CONVICTED OF FRAUDULENT USE OF “MADE IN AMERICA” LABELS.—

(1) IN GENERAL.—If the Director of the Federal Emergency Management Agency determines that a person has been convicted of intentionally affixing a label bearing a “Made in America” inscription to any product sold in or shipped to the United States that is not made in America, the Director shall determine, not later than 90 days after determining that the person has been so convicted, whether the person should be debarred from contracting under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.).

(2) DEFINITION OF DEBAR.—In this subsection, the term “debar” has the meaning given the term in section 2393(c) of title 10, United States Code.

### **SEC. 307. TREATMENT OF CERTAIN REAL PROPERTY.**

(a) IN GENERAL.—Notwithstanding the National Flood Insurance Act of 1968 (42 U.S.C. 4001 et seq.), the Flood Disaster Deadline. 42 USC 5206. 42 USC 3796b note.



PUBLIC LAW 106-390—OCT. 30, 2000 114 STAT. 1575

Protection Act of 1973 (42 U.S.C. 4002 et seq.), or any other provision of law, or any flood risk zone identified, delineated, or established under any such law (by flood insurance rate map or otherwise), the real property described in subsection (b) shall not be considered to be, or to have been, located in any area having special flood hazards (including any floodway or floodplain).

(b) REAL PROPERTY.—The real property described in this subsection is all land and improvements on the land located in the Maple Terrace Subdivisions in the City of Sycamore, DeKalb County, Illinois, including—

- (1) Maple Terrace Phase I;
- (2) Maple Terrace Phase II;
- (3) Maple Terrace Phase III Unit 1;
- (4) Maple Terrace Phase III Unit 2;
- (5) Maple Terrace Phase III Unit 3;
- (6) Maple Terrace Phase IV Unit 1;
- (7) Maple Terrace Phase IV Unit 2; and
- (8) Maple Terrace Phase IV Unit 3.

(c) REVISION OF FLOOD INSURANCE RATE LOT MAPS.—As soon as practicable after the date of the enactment of this Act, the Director of the Federal Emergency Management Agency shall revise the appropriate flood insurance rate lot maps of the agency to reflect the treatment under subsection (a) of the real property described in subsection (b).

### **SEC. 308. STUDY OF PARTICIPATION BY INDIAN TRIBES IN EMERGENCY MANAGEMENT.**

(a) DEFINITION OF INDIAN TRIBE.—In this section, the term “Indian tribe” has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b).

(b) STUDY.—

(1) IN GENERAL.—The Director of the Federal Emergency Management Agency shall conduct a study of participation by Indian tribes in emergency management.

(2) REQUIRED ELEMENTS.—The study shall— (A) survey participation by Indian tribes in training, predisaster and postdisaster mitigation, disaster preparedness, and disaster recovery programs at the Federal and State levels; and

(B) review and assess the capacity of Indian tribes to participate in cost-shared emergency management programs and to participate in the management of the programs.

(3) CONSULTATION.—In conducting the study, the Director shall consult with Indian tribes.

(c) REPORT.—Not later than 1 year after the date of the enactment of this Act, the Director shall submit a report on the study under subsection (b) to—

- (1) the Committee on Environment and Public Works of the Senate;
- (2) the Committee on Transportation and Infrastructure of the House of Representatives;
- (3) the Committee on Appropriations of the Senate; and Deadline. 42 USC 5121 note.

114 STAT. 1576 PUBLIC LAW 106-390—OCT. 30, 2000



LEGISLATIVE HISTORY—H.R. 707 (S. 1691): HOUSE REPORTS: No. 106–40 (Comm. on Transportation and Infrastructure). SENATE REPORTS: No. 106–295 accompanying S. 1691 (Comm. on Environment and Public Works).

CONGRESSIONAL RECORD:

Vol. 145 (1999): Mar. 4, considered and passed House.

Vol. 146 (2000): July 19, considered and passed Senate, amended.

Oct. 3, House concurred in Senate amendment with an amendment.

Oct. 5, Senate concurred in House amendment with an amendment.

Oct. 10, House concurred in Senate amendment. ® (4) the Committee on Appropriations of the House of Representatives. Approved October 30, 2000.



## APPENDIX B – INTERIM FINAL RULE (44 CFR PART 201)

### Title 44: Emergency Management and Assistance

#### PART 201—MITIGATION PLANNING

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##### Section Contents

[§ 201.1 Purpose.](#)

[§ 201.2 Definitions.](#)

[§ 201.3 Responsibilities.](#)

[§ 201.4 Standard State Mitigation Plans.](#)

[§ 201.5 Enhanced State Mitigation Plans.](#)

[§ 201.6 Local Mitigation Plans.](#)

[§ 201.7 Tribal Mitigation Plans.](#)

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**Authority:** Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 through 5206; 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.

**Source:** 67 FR 8848, Feb. 26, 2002, unless otherwise noted.

##### § 201.1 Purpose.

(a) The purpose of this part is to provide information on the policies and procedures for mitigation planning as required by the provisions of section 322 of the Stafford Act, 42 U.S.C. 5165.

(b) The purpose of mitigation planning is for State, local, and Indian tribal 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.

##### § 201.2 Definitions.

*Administrator* means the head of the Federal Emergency Management Agency, or his/her designated representative, appointed under section 503 of the Post-Katrina



Emergency Management Reform Act of 2006 (Pub. L. 109–295). The term also refers to the Director as discussed in part 2 of this chapter.

*Flood Mitigation Assistance (FMA)* means the program authorized by section 1366 of the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4104c, and implemented at parts 78 and 79.

*Grantee* means the government to which a grant is awarded, which is accountable for the use of the funds provided. The grantee is the entire legal entity even if only a particular component of the entity is designated in the grant award document. Generally, the State is the grantee. However, after a declaration, an Indian tribal government may choose to be a grantee, or may act as a subgrantee under the State. An Indian tribal government acting as grantee will assume the responsibilities of a “state”, as described in this part, for the purposes of administering the grant.

*Hazard mitigation* means any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

*Hazard Mitigation Grant Program (HMGP)* means the program authorized under section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5170c, and implemented at part 206, subpart N of this chapter.

*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 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 government* is any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.

*Managing State* means a State to which FEMA has delegated the authority to administer and manage the HMGP under the criteria established by FEMA pursuant to 42 U.S.C. 5170c(c). FEMA may also delegate authority to tribal governments to administer and manage the HMGP as a Managing State.



*Pre-Disaster Mitigation Program (PDM)* means the program authorized under section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5133.

*Regional Director* is a director of a regional office of FEMA, or his/her designated representative.

*Repetitive Flood Claims (RFC)* program means the program authorized under section 1323 of the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4011, which provides funding to reduce flood damages to individual properties for which 1 or more claim payments for losses have been made under flood insurance coverage and that will result in the greatest savings to the National Flood Insurance Program (NFIP) in the shortest period of time.

*Severe Repetitive Loss (SRL)* program means the program authorized under section 1361(a) of the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4102a, and implemented at part 79 of this chapter.

*Severe Repetitive Loss properties* are defined as single or multifamily residential properties that are covered under an NFIP flood insurance policy and:

(1) That have incurred flood-related damage for which 4 or more separate claims payments have been made, with the amount of each claim (including building and contents payments) exceeding \$5,000, and with the cumulative amount of such claims payments exceeding \$20,000; or

(2) For which at least 2 separate claims payments (building payments only) have been made under such coverage, with cumulative amount of such claims exceeding the market value of the property.

(3) In both instances, at least 2 of the claims must be within 10 years of each other, and claims made within 10 days of each other will be counted as 1 claim.

*Small and impoverished communities* means a community of 3,000 or fewer individuals that is identified by the State as a rural community, and is not a remote area within the corporate boundaries of a larger city; is economically disadvantaged, by having an average per capita annual income of residents not exceeding 80 percent of national, per capita income, based on best available data; the local unemployment rate exceeds by one percentage point or more, the most recently reported, average yearly national unemployment rate; and any other factors identified in the State Plan in which the community is located.





*The Stafford Act* refers to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93–288, as amended (42 U.S.C. 5121–5206).

*State* is any State of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.

*State Hazard Mitigation Officer* is the official representative of State government who is the primary point of contact with FEMA, other Federal agencies, and local governments in mitigation planning and implementation of mitigation programs and activities required under the Stafford Act.

*Subgrantee* means the government or other legal entity to which a subgrant is awarded and which is accountable to the grantee for the use of the funds provided. Subgrantees can be a State agency, local government, private non-profit organizations, or Indian tribal government. Indian tribal governments acting as a subgrantee are accountable to the State grantee.

[67 FR 8848, Feb. 26, 2002, as amended at 72 FR 61747, Oct. 31, 2007]

### **§ 201.3 Responsibilities.**

(a) *General.* This section identifies the key responsibilities of FEMA, States, and local/tribal governments in carrying out section 322 of the Stafford Act, 42 U.S.C. 5165.

(b) *FEMA.* The key responsibilities of the Regional Director are to:

- (1) Oversee all FEMA related pre- and post-disaster hazard mitigation programs and activities;
- (2) Provide technical assistance and training to State, local, and Indian tribal governments regarding the mitigation planning process;
- (3) Review and approve all Standard and Enhanced State Mitigation Plans;
- (4) Review and approve all local mitigation plans, unless that authority has been delegated to the State in accordance with §201.6(d);
- (5) Conduct reviews, at least once every three years, of State mitigation activities, plans, and programs to ensure that mitigation commitments are fulfilled, and when necessary, take action, including recovery of funds or denial of future funds, if mitigation commitments are not fulfilled.



(c) *State*. The key responsibilities of the State are to coordinate all State and local activities relating to hazard evaluation and mitigation and to:

(1) Prepare and submit to FEMA a Standard State Mitigation Plan following the criteria established in §201.4 as a condition of receiving non-emergency Stafford Act assistance and FEMA mitigation grants. In addition, a State 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 Flood Mitigation Assistance (FMA) and Severe Repetitive Loss (SRL) programs, pursuant to §79.4(c)(2) of this chapter.

(2) In order to be considered for the 20 percent HMGP funding, prepare and submit an Enhanced State Mitigation Plan in accordance with §201.5, which must be reviewed and updated, if necessary, every three years from the date of the approval of the previous plan.

(3) At a minimum, review and update the Standard State Mitigation Plan every 3 years from the date of the approval of the previous plan in order to continue program eligibility.

(4) Make available the use of up to the 7 percent of HMGP funding for planning in accordance with §206.434.

(5) Provide technical assistance and training to local governments to assist them in applying for HMGP planning grants, and in developing local mitigation plans.

(6) For Managing States that have been approved under the criteria established by FEMA pursuant to 42 U.S.C. 5170c(c), review and approve local mitigation plans in accordance with §201.6(d).

(7) If necessary, submit a request from the Governor to the Director of FEMA, requesting an extension to the plan deadline in accordance with §201.4(a)(2).

(d) *Local governments*. The key responsibilities of local governments are to:

(1) Prepare and adopt a jurisdiction-wide natural hazard mitigation plan as a condition of receiving project grant funds under the HMGP, in accordance with §201.6.

(2) At a minimum, review and update the local mitigation plan every 5 years from date of plan approval of the previous plan in order to continue program eligibility.



(e) *Indian tribal governments.* The key responsibilities of the Indian tribal government are to coordinate all tribal activities relating to hazard evaluation and mitigation and to:

(1) Prepare and submit to FEMA a Tribal Mitigation Plan following the criteria established in §201.7 as a condition of receiving non-emergency Stafford Act assistance as a grantee. This plan will also allow Indian tribal governments to apply through the State, as a subgrantee, for any FEMA mitigation project grant. Indian tribal governments with a plan approved by FEMA on or before October 1, 2008 under §201.4 or §201.6 will also meet this planning requirement. All Tribal Mitigation Plans approved after that date must follow the criteria identified in §201.7. In addition, an Indian tribal government 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.

(2) Review and update the Tribal Mitigation Plan at least every 5 years from the date of approval of the previous plan in order to continue program eligibility.

(3) In order to be considered for the increased HMGP funding, the Tribal Mitigation Plan must meet the Enhanced State Mitigation Plan criteria identified in §201.5. The plan must be reviewed and updated at least every 3 years from the date of approval of the previous plan.

[67 FR 8848, Feb. 26, 2002, as amended at 67 FR 61515, Oct. 1, 2002; 69 FR 55096, Sept. 13, 2004; 72 FR 61748, Oct. 31, 2007]

#### **§ 201.4 Standard State Mitigation Plans.**

(a) *Plan requirement.* States must have an approved Standard State Mitigation Plans meeting the requirements of this section as a condition of receiving non-emergency Stafford Act assistance and FEMA mitigation grants. Emergency assistance provided under 42 U.S.C. 5170a, 5170b, 5173, 5174, 5177, 5179, 5180, 5182, 5183, 5184, 5192 will not be affected. Mitigation planning grants provided through the Pre-disaster Mitigation (PDM) program, authorized under section 203 of the Stafford Act, 42 U.S.C. 5133, will also continue to be available. The 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.

(b) *Planning process.* An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups, and be



integrated to the extent possible with other ongoing State planning efforts as well as other FEMA mitigation programs and initiatives.

(c) *Plan content.* To be effective the plan must include the following elements:

(1) Description of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.

(2) *Risk assessments* that provide the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the State and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments. The risk assessment shall include the following:

(i) An overview of the type and location of all natural hazards that can affect the State, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate;

(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;

(iii) An overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessments as well as the State risk assessment. The State shall estimate the potential dollar losses to State owned or operated buildings, infrastructure, and critical facilities located in the identified hazard areas.

(3) A *Mitigation Strategy* that provides the State's blueprint for reducing the losses identified in the risk assessment. This section shall include:

(i) A description of State goals to guide the selection of activities to mitigate and reduce potential losses.



(ii) A discussion of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; a discussion of State funding capabilities for hazard mitigation projects; and a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.

(iii) An identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy. This section should be linked to local plans, where specific local actions and projects are identified.

(iv) Identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities.

(v) A State may request the reduced cost share authorized under §79.4(c)(2) of this chapter for the FMA and SRL programs, if it has an approved State Mitigation Plan meeting the requirements of this section that also identifies specific actions the State has taken to reduce the number of repetitive loss properties (which must include severe repetitive loss properties), and specifies how the State intends to reduce the number of such repetitive loss properties. In addition, the plan must describe the strategy the State has to ensure that local jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties, including the development of local mitigation plans.

(4) A section on the *Coordination of Local Mitigation Planning* that includes the following:

(i) A description of the State process to support, through funding and technical assistance, the development of local mitigation plans.

(ii) A description of the State process and timeframe by which the local plans will be reviewed, coordinated, and linked to the State Mitigation Plan.

(iii) Criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures. Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to



which benefits are maximized according to a cost benefit review of proposed projects and their associated costs.

(5) A *Plan Maintenance Process* that includes:

(i) An established method and schedule for monitoring, evaluating, and updating the plan.

(ii) A system for monitoring implementation of mitigation measures and project closeouts.

(iii) A system for reviewing progress on achieving goals as well as activities and projects identified in the Mitigation Strategy.

(6) A *Plan Adoption Process*. The plan must be formally adopted by the State prior to submittal to us for final review and approval.

(7) *Assurances*. The plan must include assurances that the State will comply with all applicable 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) of this chapter. The State will amend its plan whenever necessary to reflect changes in State or Federal statutes and regulations as required in 44 CFR 13.11(d) of this chapter.

(d) *Review and updates*. Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities and resubmitted for approval to the appropriate Regional Director every three years. The Regional review will be completed within 45 days after receipt from the State, whenever possible. We also encourage a State to review its plan in the post-disaster timeframe to reflect changing priorities, but it is not required.

[67 FR 8848, Feb. 26, 2002, as amended at 67 FR 61515, Oct. 1, 2002; 69 FR 55096, Sept. 13, 2004; 72 FR 61565, 61738, Oct. 31, 2007]

## **§ 201.5 Enhanced State Mitigation Plans.**

(a) A State with a FEMA approved Enhanced State Mitigation Plan at the time of a disaster declaration is eligible to receive increased funds under the HMGP, based on twenty percent of the total estimated eligible Stafford Act disaster assistance. The Enhanced State Mitigation Plan must demonstrate that a State has developed a comprehensive mitigation program, that the State effectively uses available mitigation funding, and that it is capable of managing the increased funding. In order for the State



to be eligible for the 20 percent HMGP funding, FEMA must have approved the plan within three years prior to the disaster declaration.

(b) Enhanced State Mitigation Plans must include all elements of the Standard State Mitigation Plan identified in §201.4, as well as document the following:

(1) Demonstration that the plan is integrated to the extent practicable with other State and/or regional planning initiatives (comprehensive, growth management, economic development, capital improvement, land development, and/or emergency management plans) and FEMA mitigation programs and initiatives that provide guidance to State and regional agencies.

(2) Documentation of the State's project implementation capability, identifying and demonstrating the ability to implement the plan, including:

(i) Established eligibility criteria for multi-hazard mitigation measures.

(ii) A system to determine the cost effectiveness of mitigation measures, consistent with OMB Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs, and to rank the measures according to the State's eligibility criteria.

(iii) Demonstration that the State has the capability to effectively manage the HMGP as well as other mitigation grant programs, including a record of the following:

(A) Meeting HMGP and other mitigation grant application timeframes and submitting complete, technically feasible, and eligible project applications with appropriate supporting documentation;

(B) Preparing and submitting accurate environmental reviews and benefit-cost analyses;

(C) Submitting complete and accurate quarterly progress and financial reports on time; and

(D) Completing HMGP and other mitigation grant projects within established performance periods, including financial reconciliation.

(iv) A system and strategy by which the State will conduct an assessment of the completed mitigation actions and include a record of the effectiveness (actual cost avoidance) of each mitigation action.



(3) Demonstration that the State effectively uses existing mitigation programs to achieve its mitigation goals.

(4) Demonstration that the State is committed to a comprehensive state mitigation program, which might include any of the following:

(i) A commitment to support local mitigation planning by providing workshops and training, State planning grants, or coordinated capability development of local officials, including Emergency Management and Floodplain Management certifications.

(ii) A statewide program of hazard mitigation through the development of legislative initiatives, mitigation councils, formation of public/private partnerships, and/or other executive actions that promote hazard mitigation.

(iii) The State provides a portion of the non-Federal match for HMGP and/or other mitigation projects.

(iv) To the extent allowed by State law, the State requires or encourages local governments to use a current version of a nationally applicable model building code or standard that addresses natural hazards as a basis for design and construction of State sponsored mitigation projects.

(v) A comprehensive, multi-year plan to mitigate the risks posed to existing buildings that have been identified as necessary for post-disaster response and recovery operations.

(vi) A comprehensive description of how the State integrates mitigation into its post-disaster recovery operations.

(c) *Review and updates.*

(1) A State must review and revise its plan to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities, and resubmit it for approval to the appropriate Regional Director every three years. The Regional review will be completed within 45 days after receipt from the State, whenever possible.

(2) In order for a State to be eligible for the 20 percent HMGP funding, the Enhanced State Mitigation plan must be approved by FEMA within the three years prior to the current major disaster declaration.





## § 201.6 Local Mitigation Plans.

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.

### (a) *Plan requirements.*

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

(2) Plans prepared for the FMA program, described at part 79 of this chapter, need only address these requirements as they relate to flood hazards in order to be eligible for FMA project grants. However, these plans must be clearly identified as being flood mitigation plans, and they will not meet the eligibility criteria for other mitigation grant programs, unless flooding is the only natural hazard the jurisdiction faces.

(3) Regional Directors may grant an exception to the plan requirement in extraordinary circumstances, such as in a small and impoverished community, when justification is provided. In these cases, a plan will be completed within 12 months of the award of the project grant. If a plan is not provided within this timeframe, the project grant will be terminated, and any costs incurred after notice of grant's termination will not be reimbursed by FEMA.

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

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

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;



(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

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

(1) 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.

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

(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;

(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.

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

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

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

(iii) An action plan describing how the actions identified in paragraph (c)(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.

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

(4) A *plan maintenance process* that includes:

(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

(iii) Discussion on how the community will continue public participation in the plan maintenance process.

(5) *Documentation* that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County



Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

(d) *Plan review.*

(1) Plans must be submitted to the State Hazard Mitigation Officer (SHMO) for initial review and coordination. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval. Where the State point of contact for the FMA program is different from the SHMO, the SHMO will be responsible for coordinating the local plan reviews between the FMA point of contact and FEMA.

(2) The Regional review will be completed within 45 days after receipt from the State, whenever possible.

(3) 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.

(4) Managing States that have been approved under the criteria established by FEMA pursuant to 42 U.S.C. 5170c(c) will be delegated approval authority for local mitigation plans, and the review will be based on the criteria in this part. 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.

[67 FR 8848, Feb. 26, 2002, as amended at 67 FR 61515, Oct. 1, 2002; 68 FR 61370, Oct. 28, 2003; 69 FR 55096, Sept. 13, 2004; 72 FR 61748, Oct. 31, 2007]

### **§ 201.7 Tribal Mitigation Plans.**

The Indian Tribal Mitigation Plan is the representation of the Indian tribal government'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.

(a) *Plan requirement.*

(1) Indian tribal governments applying to FEMA as a grantee must have an approved Tribal Mitigation Plan meeting the requirements of this section as a condition of receiving non-emergency Stafford Act assistance and FEMA mitigation grants. Emergency assistance provided under 42 U.S.C. 5170a, 5170b, 5173, 5174, 5177, 5179, 5180, 5182, 5183, 5184, 5192 will not be affected. Mitigation planning grants



provided through the PDM program, authorized under section 203 of the Stafford Act, 42 U.S.C. 5133, will also continue to be available.

(2) An Indian tribal government 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. The Administrator, at his discretion may require a local 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.

(4) Multi-jurisdictional plans ( e.g. county-wide or watershed plans) may be accepted, as appropriate, as long as the Indian tribal government has participated in the process and has officially adopted the plan. Indian tribal governments must address all the elements identified in this section to ensure eligibility as a grantee or as a subgrantee.

(b) An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other tribal agencies, appropriate Federal agencies, adjacent jurisdictions, interested groups, and be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA mitigation programs and initiatives.

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

(1) 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. This shall include:

(i) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval, including a description of how the Indian tribal government defined “public;”

(ii) As appropriate, an opportunity for neighboring communities, tribal and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process;



(iii) Review and incorporation, if appropriate, of existing plans, studies, and reports; and

(iv) Be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives.

(2) A *risk assessment* that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Tribal risk assessments must provide sufficient information to enable the Indian tribal government to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:

(i) A description of the type, location, and extent of all natural hazards that can affect the tribal planning area. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

(ii) A description of the Indian tribal government'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 tribe. 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;

(C) A general description of land uses and development trends within the tribal planning area so that mitigation options can be considered in future land use decisions; and

(D) Cultural and sacred sites that are significant, even if they cannot be valued in monetary terms.

(3) A *mitigation strategy* that provides the Indian tribal government's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:

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



(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

(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 Indian tribal government.

(iv) A discussion of the Indian tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: An evaluation of tribal laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; and a discussion of tribal funding capabilities for hazard mitigation projects.

(v) Identification of current and potential sources of Federal, tribal, or private funding to implement mitigation activities.

(vi) An Indian tribal government 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 identify 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.

(4) A *plan maintenance process* that includes:

(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan.

(ii) A system for monitoring implementation of mitigation measures and project closeouts.

(iii) A process by which the Indian tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate.

(iv) Discussion on how the Indian tribal government will continue public participation in the plan maintenance process.



(v) A system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy.

(5) *Plan Adoption Process.* The plan must be formally adopted by the governing body of the Indian tribal government prior to submittal to FEMA for final review and approval.

(6) *Assurances.* The plan must include assurances that the Indian tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with §13.11(c) of this chapter. The Indian tribal government will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes as required in §13.11(d) of this chapter.

(d) *Plan review and updates.*

(1) Plans must be submitted to the appropriate FEMA Regional Office for formal review and approval. Indian tribal governments who would like the option of being a subgrantee under the State must also submit their plan to the State Hazard Mitigation Officer for review and coordination.

(2) The Regional review will be completed within 45 days after receipt from the Indian tribal government, whenever possible.

(3) Indian tribal governments must review and revise their 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 non-emergency Stafford Act assistance and FEMA mitigation grant funding, with the exception of the Repetitive Flood Claims program.

[72 FR 61749, Oct. 31, 2007]





## **Appendix C - Composition of Morgan County Hazard Mitigation Planning Committee (MCHMPC)**

The Morgan County EMA directed the following individuals and agencies to serve as members of the Hazard Mitigation Planning Committee:

- AL Department of Public Health, EP Social Worker
- American Red Cross, Director of Emergency Services
- City of Decatur, Public Works
- City of Decatur, Superintendent
- Decatur Fire Department
- Decatur Fire Marshall
- Decatur Police Department
- Decatur Public Works and Engineering
- Decatur Safety Coordinator
- Falkville Public Safety
- Hartselle City Schools
- Hartselle Department of Development
- Hartselle Fire Department
- Hartselle Medical Center
- Hartselle Police Department
- Joe Wheeler EMC
- Lee Helms Associates, L. L. C.
- Morgan County 911
- Morgan County Commission (also representing the Towns of Eva and Somerville)
- Morgan County EMA/Homeland Security
- Morgan County EMS
- Morgan County Sheriff's Office
- Parkway Medical Center
- Priceville Police Department
- The City of Decatur, Mayor or Representative
- The City of Hartselle, Mayor or Representative
- The Town of Falkville, Mayor or Representative
- The Town of Priceville, Mayor or Chief Clerk
- The Town of Trinity, Building Inspector
- The Town of Trinity, Mayor or Representative
- The Town of Trinity, Water and Street Supervisor

The Morgan County Hazard Mitigation Planning Committee appointed members for the entire five-year planning cycle of the 2010 Natural Hazards Mitigation Plan.

The following agencies helped provide information in regards to the hazard profiles, vulnerability assessments, potential losses, land use and development trends, and mapping data:



Federal:

National Weather Service  
United States Geological Survey – Alabama District

State:

Alabama Associations of Regional Councils  
Alabama Department of Public Health  
Alabama Emergency Management Agency  
Alabama Forestry Commission  
Geological Survey of Alabama

Regional:

Morgan County EMA/HS POC  
Morgan County Engineer  
Morgan County EMS  
Morgan County 911  
Morgan County Fire Marshall  
North Alabama Regional Council of Governments



## Appendix D - APPROVAL & IMPLEMENTATION

The purpose of hazard mitigation is to implement action 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 Morgan County Commission or Director of the Morgan County Emergency Management Agency.

The Morgan County Multi-Hazard 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 Morgan County, and was developed in a joint and cooperative venture by members of the Morgan County Hazard Mitigation Planning Committee.

Morgan 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. Morgan 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 MCEMA will review and if necessary, update the plan 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 the Director of the Morgan 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 Morgan County, Alabama.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Eddie Hicks, Director  
Morgan County Emergency Management Agency



**City of Decatur**

**2010 Morgan County Multi-Hazard Mitigation Plan**

**Resolution of Adoption**

**WHEREAS**, the Morgan County Multi-Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and

**WHEREAS**, the City of Decatur participated in the preparation of a multi-jurisdictional plan, Morgan County Multi-Hazard Mitigation Plan; and

**WHEREAS**, the City of Decatur is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

**WHEREAS**, the City of Decatur has reviewed the plan and affirms that the plan will be updated no less than every five years.

**NOW THEREFORE, BE IT RESOLVED** by the City Council that the City of Decatur adopts the Morgan County Multi-Hazard Mitigation Plan, and resolves to execute the actions in the plan.

ADOPTED, this \_\_\_\_\_ day of \_\_\_\_\_, 2010 at the meeting of the City Council.

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\_\_\_\_\_  
Mayor, City of Decatur



**City of Hartselle**

**2010 Morgan County Multi-Hazard Mitigation Plan**

**Resolution of Adoption**

**WHEREAS**, the Morgan County Multi-Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and

**WHEREAS**, the City of Hartselle participated in the preparation of a multi-jurisdictional plan, Morgan County Multi-Hazard Mitigation Plan; and

**WHEREAS**, the City of Hartselle is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

**WHEREAS**, the City of Hartselle has reviewed the plan and affirms that the plan will be updated no less than every five years.

**NOW THEREFORE, BE IT RESOLVED** by the City Council that the City of Hartselle adopts the Morgan County Multi-Hazard Mitigation Plan, and resolves to execute the actions in the plan.

ADOPTED, this \_\_\_\_\_ day of \_\_\_\_\_, 2010 at the meeting of the City Council.

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\_\_\_\_\_  
Mayor, City of Hartselle



**Town of Falkville**

**2010 Morgan County Multi-Hazard Mitigation Plan**

**Resolution of Adoption**

**WHEREAS**, the Morgan County Multi-Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and

**WHEREAS**, the Town of Falkville participated in the preparation of a multi-jurisdictional plan, Morgan County Multi-Hazard Mitigation Plan; and

**WHEREAS**, the Town of Falkville is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

**WHEREAS**, the Town of Falkville has reviewed the plan and affirms that the plan will be updated no less than every five years.

**NOW THEREFORE, BE IT RESOLVED** by the Town Council that the Town of Falkville adopts the Morgan County Multi-Hazard Mitigation Plan, and resolves to execute the actions in the plan.

ADOPTED, this \_\_\_\_\_ day of \_\_\_\_\_, 2010 at the meeting of the Town Council.

\_\_\_\_\_  
Mayor, Town of Falkville



**Town of Trinity**

**2010 Morgan County Multi-Hazard Mitigation Plan**

**Resolution of Adoption**

**WHEREAS**, the Morgan County Multi-Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and

**WHEREAS**, the Town of Trinity participated in the preparation of a multi-jurisdictional plan, Morgan County Multi-Hazard Mitigation Plan; and

**WHEREAS**, the Town of Trinity is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

**WHEREAS**, the Town of Trinity has reviewed the plan and affirms that the plan will be updated no less than every five years.

**NOW THEREFORE, BE IT RESOLVED** by the Town Council that the Town of Trinity adopts the Morgan County Multi-Hazard Mitigation Plan, and resolves to execute the actions in the plan.

ADOPTED, this \_\_\_\_\_ day of \_\_\_\_\_, 2010 at the meeting of the Town Council.

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Mayor, Town of Trinity



**County of Morgan**

**2010 Morgan County Multi-Hazard Mitigation Plan**

**Resolution of Adoption**

**WHEREAS**, the Morgan County Multi-Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and

**WHEREAS**, the County of Morgan participated in the preparation of a multi-jurisdictional plan, Morgan County Multi-Hazard Mitigation Plan; and

**WHEREAS**, the County of Morgan is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the plan and the actions in the plan; and

**WHEREAS**, the County of Morgan has reviewed the plan and affirms that the plan will be updated no less than every five years.

**NOW THEREFORE, BE IT RESOLVED** by the County Commission that the County of Morgan adopts the Morgan County Multi-Hazard Mitigation Plan, and resolves to execute the actions in the plan.

ADOPTED, this \_\_\_\_\_ day of \_\_\_\_\_, 2010 at the meeting of the County Commission.

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Chairman, Morgan County Commission





## Appendix E - 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
IFR	Interim Final Rule
MCEMA	Morgan County Emergency Management Agency
MCHMPC	Morgan County Hazard Mitigation Planning Committee
MMP	Map Modernization Program
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 than 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.

**Floodproofing**

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 from a thunderstorm to the ground.

**Tropical Cyclone**

A generic term for 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.



## Appendix F - Overview of FEMA Mitigation Grant Programs

### GRANT PROGRAM COMPARISON Mitigation Division Grant Programs

During FY 2007, FEMA will offer five hazard mitigation assistance programs – the Hazard Mitigation Grant Program, the Pre-Disaster Mitigation program, the Flood Mitigation Assistance program, the Severe Repetitive Loss pilot program and the Repetitive Flood Claims program. Although all five programs have unique statutory authorities, program requirements and triggers for funding, all of the programs also have the common goal of providing funds to states and local communities to reduce the loss of life and property from future natural hazard events. The information below will help explain the similarities and differences among the grant programs.

**(Hazard Mitigation Grant Program – HMGP; Flood Mitigation Assistance – FMA; Pre-Disaster Mitigation – PDM; Repetitive Flood Claims – RFC; and Severe Repetitive Loss – SRL Pilot Program)**

#### Authorities

HMGP - Authorized by §404 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 U.S.C. 5170c

FMA - Section 1366 of the National Flood Insurance Act of 1968 (NFIA, or “the Act”); 42 USC 4104c, as amended by the National Flood Insurance Reform Act of 1994 (NFIRA), Public Law 103-325; and the FIRA 2004, Public Law 108- 264.

PDM - Authorized by §203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 U.S.C. 5133

RFC - Section 1323 of the Act, 42 U.S.C. 4030, as amended by the FIRA 2004, Public Law 108-264.

SRL - Section 1361A of the Act, 42 U.S.C. 4102a, as amended by the FIRA 2004, Public Law 108-264.

#### Purpose

HMGP - To provide funds to states, territories, Indian Tribal governments, and communities to significantly reduce or permanently eliminate future risk to lives and property from natural hazards. HMGP funds projects in accordance with priorities identified in state, tribal or local hazard mitigation plans, and enables mitigation measures to be implemented during the recovery from a disaster.

FMA - To implement cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP).



PDM - To provide funds to states, territories, Indian Tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.

RFC - To reduce or eliminate the long-term risk of flood damage to structures insured under the National Flood Insurance Program (NFIP) that have had one or more claim payment(s) for flood damages.

SRL - To reduce or eliminate the long-term risk of flood damage to severe repetitive loss residential properties and the associated drain on the National Flood Insurance Fund (NFIF) from such properties.

### **FY 2007 Priorities**

HMGP - HMGP priorities are set by the state under each disaster declaration that includes authorized HMGP assistance.

FMA - Mitigation activities that reduce or eliminate the long-term risk of flood damage to insured properties.

PDM - Provide funds to states, territories, Indian Tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.

RFC - Acquisition of insured properties that have had one or more NFIP claims.

SRL - Mitigation activities that reduce or eliminate the long-term risk of flood damage to severe repetitive loss properties.

### **Applicant Eligibility**

HMGP - (Grantee) State emergency management agencies or a similar state office (i.e., the office that has primary emergency management or floodplain management responsibility), the District of Columbia, the U.S. Virgin Islands, American Samoa, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, and federally recognized Indian Tribal governments. Each State, Territory, or Tribal government shall designate one agency to serve as the Grantee for the program.

FMA - State emergency management agencies or a similar state office (i.e., the office that has primary emergency management or floodplain management responsibility), the District of Columbia, the U.S. Virgin Islands, American Samoa, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, and Federally recognized Indian Tribal governments. Each state, territory, or tribal government shall designate one agency to serve as the Applicant for the program.



PDM - State emergency management agencies or a similar state office (i.e., the office that has emergency management responsibility) of the state, the District of Columbia, the U.S. Virgin Islands, the Commonwealth of Puerto Rico, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands, as well as federally recognized Indian Tribal governments.

RFC - Same as FMA, but only those states or communities that cannot meet the requirements of the FMA program for either cost share or capacity to manage the activities.

SRL - Same as FMA.

### **Sub-Applicant Eligibility**

HMGP - (Applicant/Sub-grantee) state and local governments, certain private non-profit organizations or institutions. Indian Tribes or authorized tribal organizations, and Alaska native villages or organizations. Individuals or businesses may not apply directly to the state or FEMA, but eligible local governments or private non-profit organizations may apply on their behalf.

FMA - State-level agencies, federally recognized Indian Tribal governments, and local communities (to include state-recognized Indian Tribes, authorized Indian Tribal organizations, and Alaska Native villages) are eligible to apply to the Applicant for assistance. Private individuals and private non-profit (PNP) organizations are not eligible sub-applicants. However, a relevant state agency or local government may apply to the Applicant for assistance to mitigate private or private non-profit (PNP) structures.

PDM - State-level agencies including state institutions (e.g., state hospital or university); federally recognized Indian Tribal governments; local governments, including state recognized Indian Tribes, authorized Indian Tribal organizations, and Alaska Native villages; public colleges and universities; and Indian Tribal colleges and universities. Private non-profit (PNP) organizations and private colleges and universities are not eligible Sub-applicants; however, an eligible, relevant state agency or local government may apply to the Applicant as the Sub-applicant for assistance to benefit the private entity.

RFC - Same as FMA, but only those states or communities that cannot meet the requirements of the Flood Mitigation Assistance (FMA) program for either cost share or capacity to manage the activities.

SRL – Same as FMA.

### **Eligible Project Grants**

HMGP - The HMGP can be used to fund projects to protect either public or private property, as long as the project fits within state and local government mitigation strategies to address areas of risk, and complies with program guidelines.



**Examples of projects include:**

- Acquiring and relocating structures from hazard-prone areas
- Retrofitting structures to protect them from floods, high winds, earthquakes, or other natural hazards
- Constructing certain types of minor and localized flood control projects
- Constructing safe rooms inside schools or other buildings in tornado-prone areas

**FMA - Project grants are available for:**

- Acquisition, structure demolition, or structure relocation with the property deed restricted for open space uses in perpetuity
- Elevation of structures
- Dry flood-proofing of nonresidential structures
- Minor structural flood control activities

*All properties must be insured at the time of application.*

**PDM - Project grants are available for:**

- Voluntary acquisition of real property (i.e. structures and land, where necessary) for open space conversion
- Relocation of public or private structures
- Elevation of existing public or private structures to avoid flooding
- Structural and non-structural retrofitting (e.g., storm shutters, hurricane clips, bracing systems) of existing public or private structures to meet/exceed applicable building codes
- Construction of safe rooms (tornado and severe wind shelters) for public and private structures that meet requirements in FEMA 320 and FEMA 361
- Hydrologic and Hydraulic studies/analyses, engineering studies and drainage studies for the purpose of project design and feasibility determination directly related to the proposed project
- Vegetation management for natural dune restoration, wildfire, or snow avalanche
- Protective measures for utilities (e.g. electricity, gas); water and sanitary sewer systems and/or infrastructure (e.g. roads and bridges)



- Storm water management projects (e.g., culverts, retention basins) to reduce or eliminate long-term risk from flood hazards
- Localized flood control projects (certain ring levees, bank stabilization, floodwall systems) that are designed specifically to protect critical facilities and that do not constitute a section of a larger flood control system

**RFC - Project grants are available for:**

- Acquisition, structure demolition, or structure relocation with the property deed restricted for open space uses in perpetuity.

*All properties must be insured at the time of application.*

**SRL - Project grants for flood mitigation activities such as:**

- Acquisition, structure demolition, or structure relocation with the property deed restricted for open space uses in perpetuity;
- Elevation of structures
- Dry flood-proofing of historic structures
- Minor physical localized flood control projects
- Mitigation Reconstruction (Demolition and rebuilding of structures)

*All properties must be insured at the time of application.*

**Eligible Planning Grants Planning**

**HMGP Planning grants are available for:**

- Developing state, local, or tribal mitigation plans
- Funding is available for up to 7% of total state grant

**FMA Planning grants are available for:**

Flood mitigation planning activities.

**PDM Planning grants are available for:**

- New Plan development
- Plan upgrades
- Comprehensive Plan Revisions



## **RFC Planning grants are not available**

## **SRL Planning grants are not available**

### **Eligible Management Costs**

HMGP - The HMGP provides three categories of "direct administrative costs:" state management, grantee administrative and sub-grantee administrative.

FMA - Management Costs (also known as Technical Assistance Grants) allowed to support planning and project activities. See FY 2007 Program Guidance.

PDM - Management costs are available to support the planning and project sub-applications; Grantees up to 10%, Sub-grantees up to 5%.

RFC - Same as FMA, except only available for project activities. Grantees up to 10%, Sub-grantees up to 5%.

SRL - Management costs available to support project sub-applications. Grantees up to 10%, Sub-grantees up to 5%.

### **Planning Requirements**

HMGP - Applicants must have a FEMA approved local mitigation plan in accordance with 44 C.F.R. Parts 201.6 and 206.434(b) to be eligible to receive project grant funding under the HMGP. All activities submitted for consideration must be consistent with the grantee's state/tribal standard or enhanced hazard mitigation plan and the Applicant's tribal/local/university hazard mitigation plan for the local jurisdiction in which the activity is located.

FMA - Local Flood Mitigation Plan meeting 44 CFR Part 78.5 required prior to award as condition of receiving project grants. There is no state plan requirement.

PDM - In order to receive project grants, all Applicants **MUST** have a FEMA approved state/tribal standard or enhanced hazard mitigation plan in accordance with 44 CFR Part 201 by the application deadline. In addition, all Sub-applicants **MUST** have a FEMA approved hazard mitigation plan in accordance with 44 CFR Part 201 to be eligible to receive project grant funding under the PDM program. PDM planning grants will continue to be available to Applicants and Sub-applicants that do not have a FEMA-approved hazard mitigation plan to enable them to meet the planning requirements.

RFC - State/Tribal Standard or Enhanced Hazard Mitigation Plan approved by FEMA in accordance with 44 C.F.R. Part 201 required by application deadline. There is no local plan requirement.



SRL - State/Tribal Standard or Enhanced Hazard Mitigation Plan approved by FEMA in accordance with 44 C.F.R. Part 201 required by application deadline. Local plan requirements will be addressed in Regulations.

### **Application Process**

HMGP - The primary responsibility for selecting and administering mitigation activities resides with the state. The state sets mitigation priorities and selects project applications that are developed and submitted by local jurisdictions. Although individuals may not apply directly to the state for assistance, local governments may sponsor an application on their behalf. After its eligibility review, the state forwards applications consistent with state mitigation planning objectives to FEMA for review and approval.

FMA - Applicants must apply electronically via FEMA's eGrants application, available at <https://portal.fema.gov>. Sub-applicants apply directly to the state, tribal, or territory applicant, who reviews and prioritizes sub-applications. The Applicant submits the grant application with sub-applications to FEMA for review and approval.

PDM - Applicants must apply electronically via FEMA's eGrants application, available at <https://portal.fema.gov>. Sub-applicants apply directly to the state, tribal, or territory applicant, who reviews and prioritizes sub-applications. The Applicant submits the grant application with sub-applications to FEMA for review and approval.

RFC - Applicants must apply using paper OMB and FEMA forms, including the eGrants project sub-application, available at [www.fema.gov/government/grant/rfc](http://www.fema.gov/government/grant/rfc) or [www.grants.gov](http://www.grants.gov). Sub-applicants apply directly to the state, tribal, or territory applicant, who reviews and prioritizes sub-applications. The Applicant submits the grant application with sub-applications to FEMA for review and approval.

SRL – To be described in Regulations.

### **FY 2007 Available Funds**

HMGP - Federal funding under the HMGP is available following a major disaster declaration, if requested by the Governor. As of October 4, 2006, if a state has a FEMA-approved *Standard* State Mitigation Plan, HMGP funds are available based on up to 15% for amounts not more than \$2 Billion of the total of Public and Individual Assistance funds authorized for the disaster; up to 10% for amounts of \$2 Billion to not more than \$10 Billion; 7.5% for amounts of \$10 Billion to not more than \$35.333 Billion. If a state has a FEMA-approved *Enhanced* Mitigation Plan, HMGP funds are available based on up to 20% of the total of Public and Individual Assistance funds authorized for the disaster.

FMA - \$31 million

PDM - \$100 Million



RFC - \$10 million

SRL - FEMA is combining the \$40 million FY 2006 and \$40 million FY 2007 funds for a total of \$80 million available.

### **Cost-Share Requirements**

HMGP - HMGP grant funds may be used to pay up to 75 % of the eligible project costs. The non-federal match does not need to be cash; in-kind services or materials may be used.

FMA - Up to 75% federal, with a minimum of 25% non-federal match required. Of the total non-federal share, not more than one-half may be provided from in-kind contributions. Reduced match (10% non-federal) allowed for states with approved state mitigation plans meeting the hazard mitigation planning requirements under section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5165) that specifies how the state reduces the number of repetitive loss properties.

PDM - Up to 75% federal with a minimum of 25% non-federal match required. Small, impoverished communities may be eligible for up to a 90% federal cost-share.

RFC - Up to 100% federal (no non-federal match requirement).

SRL - Up to 75% federal with a minimum of 25% non-federal match required. Reduced match (10% non-federal) allowed for states with approved state mitigation plans meeting the hazard mitigation planning requirements under section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5165) that specifies how the State reduces the number of repetitive loss properties.

### **Distribution of Funds**

HMGP - The HMGP is administered by the state. The mitigation planning and application development process begins at the local level. States prioritize local applications and select projects for funding.

FMA - Allocations to eligible Applicants (state or territory) based on the number of NFIP-insured properties and the number of repetitive loss properties in each state or territory. Set-aside amount reserved for Indian Tribal governments or communities that cannot apply through the state or territory.

PDM - PDM grants are awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation(s) of funds.

RFC - Awarded nationally without reference to state allocations, quotas, or other formula-based allocation(s) of funds. Grants will be awarded in the order of the greatest savings to the NFIF. In 2007 this will be demonstrated by the verified benefit-cost analysis of submitted projects.





SRL - Allocations to eligible applicants (state or territory) based on the number of severe repetitive loss properties in each state or territory. Set-aside amount (10%) reserved for communities that receive little or no assistance under the allocation formula.

### **Application Deadline**

HMGP - Generally, applications (FMA; PDM; RFC) must be submitted to the state for consideration within 12 months following a disaster declaration. SRL - To be determined.

### **Application Review**

HMGP –

- Eligibility and Completeness Review, Mitigation Planning requirement
- Technical Review: including Benefit Cost Analysis (BCA), Engineering Feasibility, for Project Ranking
- Environmental and Historic Preservation Reviews

FMA -

- Eligibility and Completeness Review, Mitigation Planning requirement
- Technical Review: including Benefit Cost Analysis (BCA), for Project and Property Ranking
- Environmental and Historic Preservation Reviews

PDM –

- Eligibility and Completeness Review, including Applicant/Sub-Applicant eligibility, Benefit Cost Analysis (BCA), and Mitigation Planning requirements
- National Ranking, FEMA will score all eligible planning and project sub-applications on the basis of predetermined, objective, quantitative factors to calculate a National Ranking Score.
- National Evaluation—National panels chaired by FEMA and composed of representatives from FEMA Headquarters and Regions, other federal agencies, states, federally-recognized Indian Tribal governments, Territories, and local governments convene to evaluate planning and project sub-applications on the basis of additional pre-determined qualitative factors.
- Technical Review—FEMA conducts technical reviews for Benefit Cost and Engineering Feasibility on the highest scoring project sub-applications representing approximately 150% of available funding.

RFC –

- Eligibility and Completeness Review, Mitigation Planning requirement
- Technical Review: including Benefit Cost Analysis (BCA), for Project and Property Ranking
- Environmental and Historic Preservation Reviews

SRL -

- Eligibility and Completeness Review, Mitigation Planning requirement
- Technical Review: including Benefit Cost Analysis (BCA), for Project and Property Ranking
- Environmental and Historic Preservation Reviews



**Deadline to Award Funding**

HMGP - Generally, HMGP funding must be obligated at the state within 24 months of a disaster declaration. Obligated grant funds must be utilized within the period of performance for the grant award.

FMA - See Program Guidance.

PDM - Available until expended.

RFC - See Program Guidance.

SRL - To be determined.



## APPENDIX G – Table of Local Capabilities

### KEY:

(NOTE: Data collection in progress)

<b>JURISDICTION:</b>	Decatur (includes the City of Flint)
<b>TYPE:</b>	City
<b>COUNTY:</b>	Morgan
<b>REGN:</b>	Region 11 – North-Central AL Regional Council of Governments
<b>HMP:</b>	2005 Hazard Mitigation Plan Approved by FEMA and Adopted by jurisdictions; 2010 Plan Revision in Progress
<b>NFIP:</b>	Member of the National Flood Insurance Program (includes Flint City)
<b>CRS:</b>	Community Rating System (CRS) Program class 10 (class 10 assigned to communities not in CRS or dropped from CRS)
<b>ZONE:</b>	Zoning ordinance adopted
<b>SUB REG:</b>	Subdivision regulations adopted
<b>BLDG CODE:</b>	Building and technical codes adopted
<b>BCEGS:</b>	Building Code Effectiveness Grade Schedule rating assigned by ISO
<b>PPC:</b>	Property Protection Classification rating assigned by ISO
<b>COMP PLAN:</b>	A comprehensive plan to guide the community's long-term (10- to 25-year) growth and development has been adopted within the last five years or its preparation or update is in progress
<b>CIP:</b>	A mid-range (5- to 6-year) capital improvement plan or program guides the jurisdiction's annual capital improvements budget
<b>MIT PROJ EXP:</b>	1 Note: The level of experience the community has in successfully implementing mitigation projects funded through one of FEMA's mitigation grant programs (0 = no experience, 1 = limited experience, 2 = moderate experience, 3 = significant experience)
<b>PLNR:</b>	The jurisdiction employs one or more, full-time professional planners on staff
<b>ENGR:</b>	The jurisdiction employs one or more, full-time professional engineers on staff
<b>CFM:</b>	The jurisdiction employs one or more, full-time Certified Floodplain Managers on staff
<b>BLDG INSP:</b>	The jurisdiction employs one or more, full-time building inspectors on staff
<b>CAPAB RATING:</b>	2 Note: The community's overall capabilities to carry out mitigation activities, based on the above criteria (1 = very limited capabilities, 2 = limited capabilities, 3 = moderate capabilities, 4 = substantial capabilities, 5 = very substantial capabilities)



**JURISDICTION:** Hartselle  
**TYPE:** City  
**COUNTY:** Morgan  
**REGN:** Region 11 – North-Central AL Regional Council of Governments  
**HMP:** 2005 Hazard Mitigation Plan Approved by FEMA and Adopted by jurisdictions; 2010 Plan Revision in Progress  
**NFIP:** Member of the National Flood Insurance Program  
**CRS:** Community Rating System (CRS) Program class 10 (class 10 assigned to communities not in CRS or dropped from CRS)  
**ZONE:** Zoning ordinance adopted  
**SUB REG:** Subdivision regulations adopted  
**BLDG CODE:** Building and technical codes adopted  
**BCEGS:** Building Code Effectiveness Grade Schedule rating assigned by ISO  
**PPC:** Property Protection Classification rating assigned by ISO  
**COMP PLAN:** A comprehensive plan to guide the community’s long-term (10- to 25-year) growth and development has been adopted within the last five years or its preparation or update is in progress  
**CIP:** A mid-range (5- to 6-year) capital improvement plan or program guides the jurisdiction’s annual capital improvements budget  
**MIT PROJ EXP:** 1  
 Note: The level of experience the community has in successfully implementing mitigation projects funded through one of FEMA’s mitigation grant programs (0 = no experience, 1 = limited experience, 2 = moderate experience, 3 = significant experience)  
**PLNR:** The jurisdiction employs one or more, full-time professional planners on staff  
**ENGR:** The jurisdiction employs one or more, full-time professional engineers on staff  
**CFM:** The jurisdiction employs one or more, full-time Certified Floodplain Managers on staff  
**BLDG INSP:** The jurisdiction employs one or more, full-time building inspectors on staff  
**CAPAB RATING:** 2  
 Note: The community’s overall capabilities to carry out mitigation activities, based on the above criteria (1 = very limited capabilities, 2 = limited capabilities, 3 = moderate capabilities, 4 = substantial capabilities, 5 = very substantial capabilities)



**JURISDICTION:** Falkville  
**TYPE:** Town  
**COUNTY:** Morgan  
**REGN:** Region 11 – North-Central AL Regional Council of Governments  
**HMP:** 2005 Hazard Mitigation Plan Approved by FEMA and Adopted by jurisdictions; 2010 Plan Revision in Progress  
**NFIP:** Member of the National Flood Insurance Program  
**CRS:** Community Rating System (CRS) Program class 10 (class 10 assigned to communities not in CRS or dropped from CRS)  
**ZONE:** Zoning ordinance adopted  
**SUB REG:** Subdivision regulations adopted  
**BLDG CODE:** Building and technical codes adopted  
**BCEGS:** Building Code Effectiveness Grade Schedule rating assigned by ISO  
**PPC:** Property Protection Classification rating assigned by ISO  
**COMP PLAN:** A comprehensive plan to guide the community’s long-term (10- to 25-year) growth and development has been adopted within the last five years or its preparation or update is in progress  
**CIP:** ?A mid-range (5- to 6-year) capital improvement plan or program guides the jurisdiction’s annual capital improvements budget  
**MIT PROJ EXP:** 1  
 Note: The level of experience the community has in successfully implementing mitigation projects funded through one of FEMA’s mitigation grant programs (0 = no experience, 1 = limited experience, 2 = moderate experience, 3 = significant experience)  
**PLNR:** The jurisdiction has one or more, full-time professional planners on retainer  
**ENGR:** The jurisdiction has one or more, full-time professional engineers on retainer  
**CFM:** The jurisdiction does not employ one or more, full-time Certified Floodplain Managers on staff  
**BLDG INSP:** The jurisdiction employs one or more, part-time building inspectors on staff  
**CAPAB RATING:** 2  
 Note: The community’s overall capabilities to carry out mitigation activities, based on the above criteria (1 = very limited capabilities, 2 = limited capabilities, 3 = moderate capabilities, 4 = substantial capabilities, 5 = very substantial capabilities)



<b>JURISDICTION:</b>	Trinity
<b>TYPE:</b>	Town
<b>COUNTY:</b>	Morgan
<b>REGN:</b>	Region 11 – North-Central AL Regional Council of Governments
<b>HMP:</b>	2005 Hazard Mitigation Plan Approved by FEMA and Adopted by jurisdictions; 2010 Plan Revision in Progress
<b>NFIP:</b>	Member of the National Flood Insurance Program
<b>CRS:</b>	Community Rating System (CRS) Program class 10 (class 10 assigned to communities not in CRS or dropped from CRS)
<b>ZONE:</b>	Zoning ordinance adopted
<b>SUB REG:</b>	Subdivision regulations adopted
<b>BLDG CODE:</b>	Building and technical codes adopted
<b>BCEGS:</b>	Building Code Effectiveness Grade Schedule rating assigned by ISO
<b>PPC:</b>	Property Protection Classification rating assigned by ISO
<b>COMP PLAN:</b>	A comprehensive plan to guide the community’s long-term (10- to 25-year) growth and development has been adopted within the last five years or its preparation or update is in progress
<b>CIP:</b>	A mid-range (5- to 6-year) capital improvement plan or program guides the jurisdiction’s annual capital improvements budget
<b>MIT PROJ EXP:</b>	1 Note: The level of experience the community has in successfully implementing mitigation projects funded through one of FEMA’s mitigation grant programs (0 = no experience, 1 = limited experience, 2 = moderate experience, 3 = significant experience)
<b>PLNR:</b>	The jurisdiction employs one or more, full-time professional planners on staff
<b>ENGR:</b>	The jurisdiction employs one or more, full-time professional engineers on staff
<b>CFM:</b>	The jurisdiction employs one or more, full-time Certified Floodplain Managers on staff
<b>BLDG INSP:</b>	The jurisdiction employs one or more, full-time building inspectors on staff
<b>CAPAB RATING:</b>	2 Note: The community’s overall capabilities to carry out mitigation activities, based on the above criteria (1 = very limited capabilities, 2 = limited capabilities, 3 = moderate capabilities, 4 = substantial capabilities, 5 = very substantial capabilities)



**JURISDICTION:** Morgan (covers the Towns of Eva, Priceville, and Somerville)

**TYPE:** County

**COUNTY:** Morgan

**REGN:** Region 11 – North-Central AL Regional Council of Governments

**HMP:** 2005 Hazard Mitigation Plan Approved by FEMA and Adopted by jurisdictions; 2009 Plan Revision in Progress

**NFIP:** Not a Member of the National Flood Insurance Program

**CRS:** Community Rating System (CRS) Program class 10 (class 10 assigned to communities not in CRS or dropped from CRS)

**ZONE:** Zoning ordinance adopted by town limits (not applicable to the Police Jurisdiction)

**SUB REG:** Subdivision regulations adopted

**BLDG CODE:** Building and technical codes adopted

**BCEGS:** Building Code Effectiveness Grade Schedule rating assigned by ISO

**PPC:** Property Protection Classification rating assigned by ISO

**COMP PLAN:** A comprehensive plan to guide the community’s long-term (10- to 25-year) growth and development has been adopted within the last five years or its preparation or update is in progress

**CIP:** A mid-range (5- to 6-year) capital improvement plan or program guides the jurisdiction’s annual capital improvements budget

**MIT PROJ EXP:** 1  
 Note: The level of experience the community has in successfully implementing mitigation projects funded through one of FEMA’s mitigation grant programs (0 = no experience, 1 = limited experience, 2 = moderate experience, 3 = significant experience)

**PLNR:** The jurisdiction employs one or more, full-time professional planners on staff

**ENGR:** The jurisdiction employs one or more, full-time professional engineers on staff

**CFM:** The jurisdiction employs one or more, full-time Certified Floodplain Managers on staff

**BLDG INSP:** The jurisdiction employs one or more, full-time building inspectors on staff

**CAPAB RATING:** 2  
 Note: The community’s overall capabilities to carry out mitigation activities, based on the above criteria (1 = very limited capabilities, 2 = limited capabilities, 3 = moderate capabilities, 4 = substantial capabilities, 5 = very substantial capabilities)



## **Appendix I – Meeting Notes**

**Date:** March 12, 2010

**Subject: Initiation Meeting for the Local Hazard Mitigation Plan**

### **BACKGROUND**

On March 12, 2010, representatives of the Morgan County Emergency Management Agency [MCEMA] and Lee Helms Associates, L. L. C. held an initial meeting at 9 a.m. at the Morgan County EMA EOC, 302 Lee St. in Decatur to begin the process of revising the Natural Hazards Mitigation Plan of 2005.

### **Attendees:**

The meeting was attended by the following people:

Billy Peebles, Priceville P. D., Chief  
Charlie Johnson, Decatur Fire-Rescue, Fire Chief  
Chris S. Free, Falkville Public Safety, Chief  
Darwin Clark, Decatur Fire, Fire Marshall  
Don Stanford, City of Decatur, Mayor  
Dwight Tankersley, City of Hartselle, Mayor  
Eddie Hicks, Athens - Morgan Co. EMA Director  
Emily Johnson, City of Decatur, Safety Coordinator  
Franklin Parham, City of Decatur, Superintendent  
Howard E. Battles, Captain/Homeland Officer  
Jason Bowling, Town of Trinity, Building Inspector  
Jeff Holt, Joe Wheeler EMC, Operations Manager  
Jeff O. Johnson, City of Hartselle, Director, Dept. of Development  
Jerry Reeves, Hartselle City School, Director  
Julia Chenault, City of Decatur, Public Works Coordinator  
Kelly Armor, 911 Operations Manager  
Lee Helms, Lee Helms Associates, L. L. C.  
Linda Johnson, ARC Director of Emergency Services  
Mark Petersohn, Decatur, Director of Public Works/Engineer  
Michael Tyler, Public Health, EP Social Work  
Proncey Robertson, Decatur P. D. Sgt.  
Ron Puckett, Hartselle P. D., Chief of Police  
Steve Shelton, Hartselle Fire, Chief  
Steve Vaughn, Hartselle Fire, Lt.  
Summer Morris, Parkway Medical Center, Director ER  
Terry Garwood, Hartselle Medical Center

### **Purpose of the Meeting**

The meeting had several purposes.





1. Introduce key participants in the planning process
2. Provide a context for the project and background information
3. Discuss the project work program and schedule
4. Explain tasks

### **Materials Provided and Discussed at the Meeting**

A bound booklet with the agenda and technical details of the work was distributed to all attendees.

Attendees reviewed the requirements for the revised mitigation plan. A number of immediate action items were identified, as well as the need to start gathering data and information for the baseline assessments.



## **MORGAN COUNTY HAZARD MITIGATION POTENTIAL PROJECTS**

### **Property Protection:**

- ❖ Relocating
- ❖ Acquiring Property
- ❖ Elevating
- ❖ Barriers
- ❖ Retrofitting

### **Natural Resource Protection Activities:**

- ❖ Wetland Protection
- ❖ Habitat Protection
- ❖ Erosion and Management Control
- ❖ Stream Dumping
- ❖ Shoreline Barrier Protection
- ❖ Forestry Practices

### **Emergency Services Measures:**

- ❖ Hazard Warning
- ❖ Emergency Response
- ❖ Critical Facilities Protection
- ❖ Health and Safety Maintenance
- ❖ Post-Disaster Mitigation

### **Structural Projects:**

- ❖ Reservoirs
- ❖ Levees and Floodwalls
- ❖ Channeling Modifications
- ❖ Diversions
- ❖ Channel Maintenance

### **Public Involvement Activities:**

- ❖ Map Information
- ❖ Outreach Projects
- ❖ Library
- ❖ Technical Assistance
- ❖ Real Estate Disclosure
- ❖ Environmental Education



## HAZARD MITIGATION PLAN REVISIONS

Lee Helms Associates (LHA), L. L. C. will need information on the following items in order to update the Hazard Mitigation Plan for your county:

1. A List of the Following:
  - a) Amount, Use, and Type of Hazard Mitigation Grants that have been received since last plan
  - b) Critical Infrastructures/Buildings in each participating jurisdiction and the value of each (property tax info can be used for this value).
2. Each department/agency must submit any new projects/goals and include Action Plans for each. Describe the problem, list the solution, state the address, and include a map if possible.
3. Data concerning recent hazards such as costs, deaths, injuries, effects, etc.
4. A list of new businesses or changes in the economy since the last plan. Provide a list of future growth in this area, (such as new businesses/buildings/roads etc.) if any are known.
5. Documentation of the development of the planning committee when the previous plan was created in 2005.
6. Review your jurisdiction's projects from the previous plan (see handout) and mark on the sheet which projects have been completed, which projects have been or need to be deleted and why, and list any new projects for the revised plan.

Please have this information by **APRIL 10, 2010**. Send information to LHA at 236 Town Mart, Clanton, AL 35045; email to [renee@leehelmsllc.com](mailto:renee@leehelmsllc.com); or by fax to 205.280.0543.



**Public Involvement**

Lee Helms identified options for how opportunities for public input could be developed.

**Work Plan and Tentative Schedule**

The attendees discussed the schedule for the project. There will be an initial, mid-term, and final meeting. Committee members will be made aware of the meetings via letter or email.



**Date:** May 7, 2010

**Subject: Mid-Term Meeting for the Local Hazard Mitigation Plan**

**BACKGROUND**

On May 7, 2010, representatives of the Morgan County Emergency Management Agency [MCEMA] and Lee Helms Associates, L. L. C. held a mid-term meeting at 9 a.m. at the Morgan County EMA EOC, 302 Lee St. in Decatur to discuss the draft revision of the Natural Hazards Mitigation Plan of 2010.

**Attendees:**

The meeting was attended by the following people:

Chris S. Free, Falkville Public Safety, Chief  
Eddie Hicks, Athens - Morgan Co. EMA Director  
Emily Johnson, City of Decatur, Safety Coordinator  
Jeff O. Johnson, City of Hartselle, Director, Dept. of Development  
Jerry Reeves, Hartselle City School, Director  
Julia Chenault, City of Decatur, Public Works Coordinator  
Lee Helms, Lee Helms Associates, L. L. C.  
Michael Tyler, Public Health, EP Social Work  
Ron Puckett, Hartselle P. D., Chief of Police  
Steve Shelton, Hartselle Fire, Chief

**Purpose of the Meeting**

1. Update progress on tasks to date
2. Review action items from last meeting
3. Discussion about remainder of project

**Materials Provided at the Meeting**

1. Meeting agenda; sign-in sheets; in-kind contribution forms
2. Preliminary draft of hazard identification section of plan

The following represents the major discussion points from the meeting.

1. Reviewed the specific potential projects by jurisdiction
2. Identified a timeframe to complete detailed project information
3. Provided status of draft plan completion



**Date:**

**Subject:** Final Adoption Meeting for the Local Hazard Mitigation Plan

**BACKGROUND**

On -----, representatives of the Morgan County Emergency Management Agency [MCEMA] met in conjunction with the regularly scheduled Morgan County Commission Meeting. This meeting was the final adoption of the revision of the Natural Hazards Mitigation Plan of 2010.

**Attendees:**

The meeting was attended by the following people:

Eddie Hicks, Morgan County EMA



## Appendix J – Sign-In Sheets for HMPC Meetings





APPENDIX J – (Sign-In Sheets)



## MORGAN COUNTY

March 12, 2010 9:00 a.m.

### INITIAL HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

NAME	AGENCY OR DEPARTMENT/ JOB TITLE	PHONE/ FAX	E-MAIL
Mark Pore	Agency: Decatur	Phone: 341-4740	
	Job Title: Dir. PW/Eng	Fax: 341-4747	
Proncy Robertson	Agency: Decatur P.D.	Phone: 341-4641	
	Job Title: Sgt.	Fax: 341-4651	
Emily Johnson	Agency: City of Decatur	Phone: 341-4770	ejohnson@decatur-AL.org
	Job Title: Safety Coordinator	Fax:	
Ron Puckett	Agency: Hartsville P.D.	Phone: 751-4911	rpuckett@hartsville.org
	Job Title: Chief of Police	Fax:	
Dwight Tankersley	Agency: City of Hartsville	Phone: 773-2535	dtankersley@hartsville.org
	Job Title: Mayor	Fax:	
Franklin Parkam	Agency: City of Decatur	Phone: 341-4740	
	Job Title: Superintendent	Fax:	



# MORGAN COUNTY

March 12, 2010 9:00 a.m.

## INITIAL HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

NAME	AGENCY OR DEPARTMENT/ JOB TITLE	PHONE/ FAX	E-MAIL
Billy Peebles	Agency: Riceville P.D. Job Title: Chief	Phone: 256-355-5476 Fax: 256-584-0341	Billy.Peebles@ricevillapd.gov
Jeff Holt	Agency: Joe Wheeler EMC Job Title: Operations Mgr.	Phone: 552-2344 Fax: 552-2388	JHolt@Jwemc.org
DON STANFORD	Agency: City of Decatur Job Title: Mayor	Phone: 341-4502 Fax:	DSTANFORD@DECATUR-AL.COM
TERRY GARWOOD	Agency: County EMS Job Title: Operation mgr	Phone: 476-7729 Fax: 974-1900	GarwoodemsLA@DA
Buddy KEILEY	Agency: PARSONS MED. CENTAL Job Title:	Phone: 751-3000 EXT 490 Fax:	owFILE?
Julia Chenault	Agency: City of Decatur Job Title: Fair Wks Coord.	Phone: 341-4742 Fax: 341-4747	jchenault@decatur-al.gov



## MORGAN COUNTY

March 12, 2010 9:00 a.m.

### INITIAL HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

NAME	AGENCY OR DEPARTMENT/ JOB TITLE	PHONE/ FAX	E-MAIL
Michael Tyler	Agency: Public Health Job Title: EP Social Work	Phone: 256 340 2113 Fax: -	Michael.Tyler@cdph.state.nc.us
Chris S. Free	Agency: Falkville Public Safety Job Title: Chief	Phone: 256-784-5922 Fax: 256-784-9510	Chris@falkville.net
Charlie Johnson	Agency: Job Title:	Phone: Fax:	
Kelly Armor	Agency: 411 Job Title: Operations Manager	Phone: 552-0911 Fax:	
Jason Bowling	Agency: Town of Trinity Job Title: water & street Supervisor	Phone: Fax:	
Justin LouAllen	Agency: Town of Trinity Job Title: Bldg. inspector	Phone: 553-2474 Fax:	Jtlouallen@att.net



# MORGAN COUNTY

March 12, 2010 9:00 a.m.

## INITIAL HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

NAME	AGENCY OR DEPARTMENT/ JOB TITLE	PHONE/ FAX	E-MAIL
AMERICAN RED CROSS LINDA JOHNSON DIRECTOR OF EMER SERV	Agency: Job Title:	Phone: Fax:	
Steve Vaughn	Agency: Hartselle Fire Job Title: Lt	Phone: 773-2545 Fax:	
Steve Shelton	Agency: Hartselle Fire Job Title: Chief	Phone: 773-2545 Fax:	SSHELTON@HARTSELLE,ORG
Dennis Clark	Agency: Decatur Fire Job Title: Fire Marshal	Phone: 341-4865 Fax:	
	Agency: Job Title:	Phone: Fax:	
	Agency: Job Title:	Phone: Fax:	



# MORGAN COUNTY

March 12, 2010 9:00 a.m.

## INITIAL HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

NAME	AGENCY OR DEPARTMENT/ JOB TITLE	PHONE/ FAX	E-MAIL
JEFF O. JOHNSON	Agency: CITY OF HARTSELLE Job Title: DIRECTOR, DEPT. OF DEVELOPMENT	Phone: 773-0188 Fax: 773-2257	jjohnson@hartselle.org
Summer Morris	Agency: Parkway Med. Ctr Job Title: Director ER	Phone: 301-3383 Fax: 301-3349	Summer.Morris@capellahealth.com
Howard E. Battles	Agency: M.C.S.O. Job Title: CAPT./Homeland office	Phone: 560-6027 Fax: 351-4822	Howard.battles@MorganCO.SO.com
Jerry Reeves	Agency: Hartsville City School Job Title: Director	Phone: 773-5415 Fax:	Jerry.Reeves@Hes.k12-Al.us
	Agency: Job Title:	Phone: Fax:	
	Agency: Job Title:	Phone: Fax:	



**MORGAN COUNTY**

March 12, 2010 9:00 a.m.

**INITIAL HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET**

(PLEASE PRINT CLEARLY)

NAME	AGENCY OR DEPARTMENT/ JOB TITLE	PHONE/ FAX	E-MAIL
Charlie Johnson	Agency: Decatur Fire-Rescue Job Title: Fire Chief	Phone: 256-341-4862 Fax:	cjohnson@decatur-al.gov
	Agency: Job Title:	Phone: Fax:	
	Agency: Job Title:	Phone: Fax:	
	Agency: Job Title:	Phone: Fax:	
	Agency: Job Title:	Phone: Fax:	
	Agency: Job Title:	Phone: Fax:	



Eddie Hicks                      Morgan County EMA                      256-351-4620                      [ehicks@hiwaay.net](mailto:ehicks@hiwaay.net)  
 Lee Helms                      Lee Helms Associates                      205-280-3027                      [lee@leehelmsllc.com](mailto:lee@leehelmsllc.com)



## MORGAN COUNTY

May 7, 2010 9:00 a.m.

### Second HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

NAME	AGENCY OR DEPARTMENT/ JOB TITLE	PHONE/ FAX	E-MAIL
Michael Tyler	Agency: ADPH Job Title: EP Team	Phone: 256.306.340.2113 Fax:	Michael.Tyler@msph.state.al.us
STEVEN SHELTON	Agency: HARTSELLE FIRE & RESCUE Job Title: CHIEF OF FIRE	Phone: 256-751-4945 Fax: 256-773-2257	SSHELTON@HARTSELLE.ORG
Julia Chenault	Agency: City of Decatur Job Title: PUB WKS Coord.	Phone: 256-341-4742 Fax: 256-341-4747	j.chenault@decatur-al.gov
Emily Johnson	Agency: City of Decatur Job Title: Recycling Safety	Phone: 256-341-4710 Fax: 256-341-4735	e.johnson@decatur-al.gov
JERRY REEVES	Agency: Hartselle City Schools Job Title: Director School Operations	Phone: 256-773-5419 Fax: 256-773-5575	Jerry.Reeves@HCS.k12.al.us
Eddie [unclear]	Agency: EMA Job Title:	Phone: Fax:	



## MORGAN COUNTY

May 7, 2010 9:00 a.m.

### Second HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

*(PLEASE PRINT CLEARLY)*

NAME	AGENCY OR DEPARTMENT/ JOB TITLE	PHONE/ FAX	E-MAIL
<i>Chris S. Free</i>	Agency: <i>Town of Falkville</i>	Phone: <i>256-784-5922</i>	<i>Chris@falkville.net</i>
	Job Title: <i>P.D. Fire Chief</i>	Fax: <i>256-784-9510</i>	
	Agency:	Phone:	
	Job Title:	Fax:	
	Agency:	Phone:	
	Job Title:	Fax:	
	Agency:	Phone:	
	Job Title:	Fax:	
	Agency:	Phone:	
	Job Title:	Fax:	



Lee Helms

Lee Helms Associates

205-280-3027

[lee@leehelmsllc.com](mailto:lee@leehelmsllc.com)





## MORGAN COUNTY

May 7, 2010 9:00 a.m.

### Second HAZARD-MITIGATION PLANNING MEETING SIGN-IN SHEET

(PLEASE PRINT CLEARLY)

NAME	AGENCY OR DEPARTMENT/ JOB TITLE	PHONE/ FAX	E-MAIL
Ron Pickett	Agency: Hartselle P.D Job Title: Chief	Phone: 751-4911 Fax:	r.pickett@hartselle.org
JEFF O. JOHNSON	Agency: CITY of HARTSELLE Job Title: DIRECTOR, DEPT. DEVELOPMENT	Phone: 773-0188 Fax: 773-2257	j.johnson@hartselle.org
	Agency: Job Title:	Phone: Fax:	
	Agency: Job Title:	Phone: Fax:	
	Agency: Job Title:	Phone: Fax:	
	Agency: Job Title:	Phone: Fax:	



