2013

Prepared by the
Northeast Georgia
Regional Commission

2013 JASPER COUNTY PRE-DISASTER MITIGATION PLAN

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Chapter 1 **Planning Process**

1.1 Introduction

The Jasper County Pre-Disaster Mitigation (PDM) Plan was originally approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency (FEMA) and subsequently adopted by resolution of participating local governments in 2008. The Disaster Mitigation Act of 2000 (DMA2K) established mitigation planning requirements under 44 CFR Part 201. Included in the DMA2K is a requirement that each jurisdiction review, update, and resubmit its PDM plan for approval every five years in order to maintain eligibility for mitigation grant funding [44 CFR §201.6(d)(3)]. Federal hazard mitigation funding assistance programs include the following:

- Hazard Mitigation Grant Program
- Pre-Disaster Mitigation
- Flood Mitigation Assistance
- Severe Repetitive Loss

The 2013 update to the Jasper County Pre-Disaster Mitigation Plan is a cooperative effort between the county and the municipalities of Monticello and Shady Dale, and is funded through a grant from the FEMA Hazard Mitigation Grant Program. The County and all of its cities were also participants in the original 2008 Pre-Disaster Mitigation Plan process; therefore the participating jurisdictions have not

changed. In July 2013, the Jasper County Board of Commissioners requested assistance from the Northeast Georgia Regional Commission (NEGRC) to facilitate the planning process and prepare the plan update for submission to GEMA.

A summary table of updates is included at the beginning of each chapter of this document to highlight changes that have been made to the original 2008 plan.

Table 1-1 : Summary of Updates to Chapter 1

Section	Update Summary
1.1 Purpose and Need	Text revisions
1.2 Methodology	Changes to committee structure and participants; addition of public questionnaire to planning process; text revisions
1.3 Review/Analysis/Revision Process	New to 2013 update
1.4 Organization of the Plan	Identification of contents of specific chapters; addition of Mitigation Actions Guides for natural and technological hazards; text revisions
1.5 Hazard, Risk, Vulnerability (HRV) Summary, Goals & Objectives	Text revisions
1.6 Multi-Jurisdictional Considerations	Text revisions
1.7 Adoption, Implementation, Monitoring, & Evaluation Process	Text revisions
1.8 Community Data	2010 Census and 2011 American Community Survey data additions; text revisions

1.2 Purpose and Need

Natural and technological (manmade) disasters can occur without warning and may result in damages that extend beyond the initial costs of recovery. Disasters can devastate neighborhoods, the local economy, and infrastructure, posing significant risks to the health and welfare of residents. The intent of this plan is to provide a set of guidelines for the implementation of hazard mitigation projects with the goal of reducing the losses associated with natural and technological hazards.

1.3 Methodology

All information contained within this document has been obtained through personal knowledge of the committee members as well as research conducted by committee members and the Northeast Georgia Regional Commission (NEGRC), who facilitated the planning process and compiled all of the data into a single planning document.

The Jasper County Emergency Management Agency (EMA) invited a diverse group of community leaders, local and regional experts, and emergency management staff to participate in the development of the plan. A full planning committee was assembled for the plan update kick-off meeting in November 2011, with a smaller steering committee directly guiding the planning process and providing regular input.

Steering committee members were responsible for working with NEGRC to review and update the list of critical facilities and potential hazards, assess risk and determine potential losses as a result of hazard events, and develop mitigation goals and strategies. The following table lists planning committee participants and their affiliated agencies.

Table 1-2 : Planning Committee Members

Committee Member	Affiliation
	City of Monticello
	City of Shady Dale
	Monticello Police Department
	DFACS
	Jasper County EMA/911
	Jasper County Planning and Zoning
	Jasper County Manager
	Jasper County Health Department
Melissa Slocumb	Director, Jasper County EMA
	Jasper County Fire Department
	Jasper County EMS
	Jasper County Finance Department
	Jasper County Public Works
	Jasper County Sheriff's Department
	Jasper County Board of Education
	Georgia Forestry Commission
	Georgia Department of Natural Resources
	The Monticello News
	Southern Crescent Technical College
	Jasper Memorial Hospital

Two public meetings were held for the purposes of soliciting public input on the plan update, one during the drafting stage and the second during the final stage of the planning process prior to submittal of the plan to GEMA. The meetings were intended to inform the public of the process and its implications for disaster mitigation countywide as well as to engage the public in identifying their priorities for disaster mitigation. NEGRC staff and the steering committee also developed a brief questionnaire that was distributed in print and online following the first public hearing on February 20, 2014. The purpose of this questionnaire was to gather information from Jasper County residents on their expectations and concerns during and after hazard events. The results of this questionnaire can be found in Appendix E, and were used to assist in determining goals and objectives for the plan update. Many respondents expressed a lack of knowledge about emergency operations, notification systems, and emergency shelters, each of which was addressed in the Mitigation Strategies section. These results were made available and presented at the second public hearing in June of 2014, along with a discussion of the planning process, hazard risk and vulnerability, and mitigation strategies.

Additionally, NEGRC staff utilized http://www.negrc.org/resource-1.php?page_ID=1390583596 to post relevant meeting and planning process information for access by the Steering Committee and general public. This site included meeting notes, the public questionnaire, and a plan draft posted prior to the second public hearing for review and comment. The site address was included in flyers and advertisements for the second public hearing, along with instructions for providing comments feedback prior to the plan's submission. Refer to Appendix E for further details on the public involvement process.

Additionally the planning process included a review of existing planning mechanisms within Jasper County to ensure consistency, and to inform the development of its goals, strategies, and recommended actions. The following table describes the applicable planning mechanisms and how they were incorporated into the mitigation plan update:

Table 1-3: Record of Review

Existing Planning Mechanisms	Reviewed?	Method of use in Hazard Mitigation Plan
Jasper County Comprehensive Plan	Yes	Development trends, capability assessment, mitigation strategies
Local Emergency Operations Plan	Yes	Identifying hazards; Assessing vulnerabilities
Storm Water Management / Flood Protection Ordinance	Yes	Mitigation strategies, capability assessment
Building Code and Zoning Ordinance	Yes	Development trends; Future growth, capability assessment, mitigation strategies
Mutual Aid Agreements	Yes	Assessing vulnerabilities
State Hazard Mitigation Plan	Yes	Risk assessment
Land Use Maps	Yes	Assessing vulnerabilities; Development trends; Future growth
Critical Facilities Maps	Yes	Locations
Community Wildfire Protection Plan	Yes	Mitigation strategies, risk assessment

1.4 Review, Analysis, and Revision Process

Chapter One (Introduction to the Planning Process) was revised and updated to reflect a reorganized Steering Committee, and new public participation techniques.

With input from the Steering Committee, NEGRC staff reviewed the text and data included in Chapters Two and Three (Local Hazard, Risk and Vulnerability) and made updates and revisions where necessary. The methodology for completing an assets inventory (see GEMA Worksheet #3 in Appendix A) was developed based on the availability of data for Jasper County. The Tax Assessor provided the numbers and values of structures by type for the entire county. Those land parcels containing a portion of the flood hazard area, or floodplain, were counted to determine the number of structures in the flood area; it was assumed that each land parcel contained one structure. Values for these affected structures were determined by multiplying the total value in the community by the percentage of structures in the hazard area.

The Steering Committee reviewed and revised the mitigation goals, objectives, and action items from the 2008 Plan for each hazard (Chapters Four and Five). While most of the goals and objectives were left unchanged, action items carried over from the 2008 Plan were revised, and several new items were added. The Steering Committee then utilized the Social, Technical, Administrative, Political, Legal, Economic, Environmental (STAPLEE) method to prioritize the action items by hazard. Additional detail on this process is included in section 6.1 of this document.

Chapter Six was updated in cooperation with members of the Steering Committee that will be directly involved in implementing, evaluating, and monitoring the Jasper County Pre-Disaster Mitigation Plan, including representatives from Jasper County Emergency Services and Jasper County Code Enforcement.

1.5 Organization of the Plan

Chapter Two of the Plan contains a Hazard, Risk and Vulnerability (HRV) assessment identifying the most prevalent natural hazards that have occurred, and are most likely to occur in Jasper County. Chapter Three identifies and evaluates potential technological hazards. Each of the hazards is profiled based on historic occurrences in the county. The vulnerability of critical facilities is examined for each of the identified hazards to determine an estimate of potential loss and total impact resulting from a hazard event.

Chapters Four and Five present Mitigation Goals, Objectives and Strategies for natural and technological hazards. Following these sections are Mitigation Actions Guides for natural and technological hazards (Chapters Six and Seven, respectively). These guides have been designed as stand-alone resources to be used for project development and guidance in grant-seeking efforts supporting the implementation of mitigation goals over the next five years.

Chapter Eight outlines roles, responsibilities and a schedule for implementing, evaluating, monitoring, and updating this plan. Upon formal approval by GEMA and prior to submission to FEMA, Jasper County and its municipalities will officially adopt the new plan and begin collaborating on implementation efforts. Chapter Nine summarizes the plan, providing a list of relevant references and additional sources of information.

In order to determine appropriate mitigation actions, a risk assessment was performed identifying the probability of various natural and technical disasters affecting Jasper County. This assessment analyzed historical data relating to disaster occurrences within Jasper County and estimated the probability of future occurrences.

The hazard identification process produced six natural hazards and one technological hazard that may affect Jasper County and its municipalities in the future. Appendix A provides a profile of each of the hazards and the supportive historical data illustrating the probability of future hazard occurrences. For purposes of clarity, the historical hazard event data has been analyzed in order to provide a better understanding of which hazards have the potential to impact the community most significantly. To this end, events that were reported to have caused no injury or loss of life, and no property or crop damage were not included. For a complete listing of all recorded hazard events please see the reference information at the end of Appendix A.

The vulnerability of Jasper County and its municipalities was determined by first updating the list of critical facilities identified in the 2008 Plan. These critical facilities and existing land use were then mapped along with the most current floodplain data. This allowed NEGRC staff and the steering committee to identify structures and neighborhoods potentially exposed to these "mappable" hazards. Additionally, potential financial losses were determined based on an examination of values of critical facilities as provided by the Jasper County Tax Assessor. This information is discussed in greater detail in Chapter Two and the data is provided in Worksheet #5 in Appendix D.

The HRV assessment informed the development of mitigation goals and objectives for each identified hazard in Jasper County. Under these goals and objectives, NEGRC and the Steering Committee identified implementation actions, including responsible agencies, approximate costs, potential financial resources, and an estimated timeline for completion in the Mitigation Actions Guides that comprise Chapters Six and Seven.

1.6 Multi-Jurisdictional Considerations

The cities of Monticello and Shady Dale have participated in the 2013 planning process. None of the hazards identified and profiled are limited to specific jurisdictional boundaries (with the exception of flood, which are more likely to occur within the identified floodplain associated with streams and rivers). Therefore, each of the hazards applies equally to Jasper County and its municipalities. Where appropriate, goals, objectives and mitigation actions are tailored specifically to a jurisdiction's need, otherwise the application is considered to be countywide. The governing bodies for Monticello and Jasper County will be responsible for formally adopting the Jasper County Hazard Mitigation Plan.

1.7 Adoption, Implementation, Monitoring, and Evaluation Process

Upon final approval from GEMA, Jasper County, Monticello and Shady Dale will formally adopt the plan and will be responsible for coordinating the implementation of the identified mitigation actions. In accordance with DMA2K, Jasper County and its municipalities will review and update its pre-disaster mitigation plan on a five-year interval and address the implementation schedule of the identified mitigation actions annually. In order to ensure that multiple jurisdictions, as well as multiple agencies, are implementing common goals related to disaster mitigation it is important that the recommendations originating from this planning document are incorporated into the county's Comprehensive Plan and Short-Term Work Program and reflect those found in the 2012 Emergency Management Agencies Local Emergency Operations Plan.

1.8 Community Data

Jasper County's total population according to the 2010 U.S. Census was 13,900 which represented a 21.7% increase from 2000 Census figures (11,426).

The 2010 Census showed little change in the racial and ethnic composition of Jasper County. Seventy percent of the population identified themselves as white, down slightly from 75% in 2000. While twenty-seven percent of the population identified themselves as black or African-American in 2000, by 2010 the percentage decreased slightly to 23 percent. While the percentage of residents identifying as white or black remained relatively similar over the ten-year period, the percentage of Hispanic or Latino persons nearly doubled from 2.1% in 2000 to 4% by 2010. The population of Jasper County aged between 2000 and 2010. The median age for the county in 2010 increased to 39 years of age from 36.3 in 2000. This may result in the need for additional outreach services to ensure the safety of all residents in the event of a natural or technological hazard occurrence.

According to 2011 American Community Survey estimates, the median household income in Jasper County was $44,404, which is just below the State as a whole ($47,736). In 2011, approximately 19.7% of Jasper County residents were living below the poverty level.

More detailed information on the demographics of Jasper County including the municipalities of Monticello and Shady Dale can be found in Appendix B.

Chapter 2 Natural Hazard, Risk, and Vulnerability

The steering committee was responsible for reviewing and updating the list of hazards likely to affect Jasper County. The goal was to utilize local knowledge, experience, and expertise to determine whether the hazards identified and profiled in the 2008 Plan were still relevant to Jasper County. As a result of this process, the steering committee retained all hazards from the previous plan.

Table 2-1: Summary of Updates to Chapter 2

Hazard Type	Section	Update Summary
Severe Thunderstorms and Tornados	2.1.1 Hazard Identification	Text revision; addition of Tornados to hazard section
	2.1.2 Hazard Profile	Text revisions; addition of Tornados to hazard section; updated relevant data for hazard frequency
	2.1.3 Assets Exposed to Hazard	Text revisions
	2.1.4 Estimate of Potential Losses	Updated relevant data for mobile/manufactured homes; added text to address Fujita scale for tornados
	2.1.5 Land Use & Development Trends	Added information on relevant zoning regulations for mobile/manufactured homes
	2.1.6 Multi-Jurisdictional Concerns	No changes
	2.1.7 Hazard Effects Summary	Text revisions
Drought	2.2.1 Hazard Identification	New hazard; previously combined with drought
	2.2.2 Hazard Profile	Text revisions
	2.2.3 Assets Exposed to Hazard	Text revisions
	2.2.4 Estimate of Potential Losses	Text revisions; new historical data
	2.2.5 Land Use & Development Trends	Text revisions
	2.2.6 Multi-Jurisdictional Concerns	Text revisions
	2.2.7 Hazard Effects Summary	Text revisions
Wildfire	2.3.1 Hazard Identification	Separated from drought; Text revisions incorporating recently created Jasper County Community Wildfire Protection Plan
	2.3.2 Hazard Profile	Text revisions incorporating Jasper County CWPP
	2.3.3 Assets Exposed to Hazard	Text revisions incorporating Jasper County CWPP
	2.3.4 Estimate of Potential Losses	Text revisions incorporating Jasper County CWPP
	2.3.5 Land Use & Development Trends	Text revisions incorporating Jasper County CWPP
	2.3.6 Multi-Jurisdictional Concerns	No Changes
	2.3.7 Hazard Effects Summary	Text revisions incorporating Jasper County CWPP

Hazard Type	Section	Update Summary
Winter Storms	2.4.1 Hazard Identification	Text revisions
	2.4.2 Hazard Profile	Text revisions; updated relevant data for hazard occurrences and frequency
	2.4.3 Assets Exposed to Hazard	Text revisions
	2.4.4 Estimate of Potential Losses	Text revisions; updated relevant data
	2.4.5 Land Use & Development Trends	Text revisions; updated relevant data
	2.4.6 Multi-Jurisdictional Concerns	No changes
	2.4.7 Hazard Summary	Text revisions
Floods	2.5.1 Hazard Identification	Text revisions
	2.5.2 Hazard Profile	Updated text to account for 2009 FIS
	2.5.3 Assets Exposed to Hazard	Updated text to account for 2009 FIS
	2.5.4 Estimate of Potential Losses	Updated text to account for 2009 FIS
	2.5.5 Land Use & Development Trends	Updated text to account for 2009 FIS
	2.5.6 Multi-Jurisdictional Concerns	No Changes
	2.5.7 Hazard Summary	Updated text to account for 2009 FIS
Earthquakes	2.4.1 Hazard Identification	Text revisions
	2.4.2 Hazard Profile	Text revisions; updated relevant data for hazard occurrences and frequency
	2.4.3 Assets Exposed to Hazard	Text revisions
	2.4.4 Estimate of Potential Losses	Text revisions; updated relevant data
	2.4.5 Land Use & Development Trends	Text revisions; updated relevant data
	2.4.6 Multi-Jurisdictional Concerns	No changes

2.1 Severe Thunderstorms (Includes Thunderstorms, Lightning, Hail, Tornado)

2.1.1 Hazard Identification

Thunderstorms can bring heavy rains, strong winds, hail, lightning and tornados depending on the weather conditions. All of these events have been classified together as a Severe Thunderstorms, which pose the greatest threat to the population, property, and resources of Jasper County. These events are described below, and additional information on thunderstorms and tornados is accessible via FEMA's Ready.gov website at the "Be Informed" tab.[1]

Thunderstorm

A thunderstorm is formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air such as a warm or cold front, a sea breeze, or a mountain. The rising air forms a low-pressure zone underneath the forming thunderstorm. All thunderstorms contain lightning. Thunderstorms may occur singly, in clusters, or in lines, making it possible for several thunderstorms to affect a single location over the course of a few hours.[2]

1 Retrieved on December 5, 2013, from the Ready.gov website at: http://www.ready.gov/tornadoes
2 Additional information about thunderstorms is accessible from the Ready.gov: www.ready.gov/thunderstorms-lightning

Hail

Hail is produced by many strong thunderstorms. Hail can be smaller than a pea or as large as a softball and can be very destructive to crops and property.

Lightning

Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt". This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches a temperature approaching 50,000 degrees Fahrenheit in a split second. Rapid heating and cooling of air near the lightning causes thunder.[3]

Tornado

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm (or sometimes as a result of a hurricane) when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of high-velocity winds and wind-blown debris.[4]

Additional hazards associated with Severe Thunderstorms include Flooding and Wildfires; these hazard types will be described in subsequent sections of this Chapter.

2.1.2 Hazard Profile

Thunderstorms can essentially occur at any time of the year and can be found throughout the country. However, they are more common in the central and southern states and severe thunderstorms (with the potential for hail and tornados) are more prevalent between the months of March and August.

The National Climatic Data Center (NCDC) organizes climate data related to thunderstorms into several possible categories: gusty winds, hail, heavy rain, high winds, lightning, thunderstorm winds, and tornado. Of these, the most frequently recorded events since 1950 are thunderstorm winds (80 occurrences). Since the 2008 Plan, there have been 20 occurrences of thunderstorm winds and lightning and one tornado event.

The National Weather Service issues a severe thunderstorm watch when conditions are likely to generate damaging winds in excess of 58 mph, or hail in excess of three-fourths of an inch. Straight-line winds in excess of 100 mph are responsible for the majority of thunderstorm damage. According to the United States Wind Zone map, Jasper County is located in Zone III, indicating the possibility of 200 mph design wind speeds.[5] Therefore the potential extent for this hazard is a possible category EF4 (166-200 mph) tornado as measured by the Enhanced Fujita Scale. [6] Historic hail events in Jasper County reported hail sizes of 0.75 inches to 2.5 inches in diameter. On the National Oceanic and Atmospheric Administration (NOAA) Estimating Hail-Size Chart, these sizes amount to marble-sized to baseball-sized hail. According to the Tornado and Storm Research Organization (TORRO)7, these sizes would result in significant damage to fruit, crops and vegetation on the low end (H2) to severe roof damage and risk of serious injuries (H7).

3 Additional information about lighting is accessible from the Ready.gov website at: http://www.ready.gov/thunderstorms-lightning.

4 Additional information about tornadoes is accessible from the Ready.gov website at http://www.ready.gov/tornadoes

5 Retrieved on December 5, 2013, from the FEMA website at www.fema.gov/graphics/library/wmap.gif

6 The Enhanced F-scale is a set of wind estimates (not measurements) based on damage. Its uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to 28 unique indicators. These estimates vary with height and exposure. Retrieved on December 5, 2013 from the NOAA National Weather Service website at: www.spc.noaa.gov/efscale/ef-scale.html

7 Additional information about hail size and potential extent is available at the NOAA and TORRO websites at: www.wrh.noaa.gov/pqr/info/hail.php; www.torro.org.uk/site/hscale.php

Since 1950, severe thunderstorm events have resulted in a total of approximately $4.9 million[8] in damage to property and crops and 2 personal injuries in Jasper County. Based on historic frequency, Jasper County might expect a hail event every 1.55 years, thunderstorm winds every 0.66 years, and a tornado event every 17.76 years. For additional information on severe thunderstorm events, see GEMA Worksheet #1 and the Worksheet #1 addenda in Appendix D.

2.1.3 Assets Exposed to Hazard

There is no methodology to predict where a thunderstorm event is going to occur, and therefore the entire county is vulnerable. Additionally, all identified critical facilities are susceptible to damages.

2.1.4 Estimate of Potential Losses

Historically, Jasper County has not experienced a tornado above an EF1 on the Enhanced Fujita scale. Tornados ranging from F0 to F1 have resulted in up to $267,000 in property damage per occurrence. Since Jasper County lies in a wind zone associated with EF3 tornados, it is possible that future events could result in more serious and widespread damages[9]. All public and private facilities were determined to be at risk of damage from severe thunderstorms.

2.1.5 Land Use and Development Trends

Most land use and development trends will not inform the strategies identified to mitigate the possible effects of severe thunderstorms and associated hazards, as the entire county is at equal risk for these types of events. The number of mobile or manufactured homes in Jasper County has remained relatively unchanged since the last Pre-Disaster Mitigation Plan was adopted, with a decrease from 1,056 in 2008 to 1,001 in 2013. This trend is expected to continue for the foreseeable future. However, residents of mobile and manufactured homes throughout the county are still at greater risk from thunderstorm and tornado events. These structures are susceptible to severe damage and possible destruction from strong thunderstorm winds and tornados. Jasper County manufactured and mobile home regulations require that all manufactured homes be anchored according the State Building Code and the Federal Manufactured Housing Construction and Safety Standards Act. Jasper County also requires that manufactured homes be placed on an appropriate foundation, and skirted with finished masonry at least 4 inches thick.

2.1.6 Multi-Jurisdictional Concerns

All of Jasper County is vulnerable to the effects of severe thunderstorms. All mitigation goals, objectives and strategies are applicable to the entire county and each city.

2.1.7 Hazard Effects Summary

Based on the quantifiable data, thunderstorms present the most prevalent disaster in Jasper County and have generated the largest financial losses in property and crop damages, exceeding $126 million. As the risk for thunderstorms is equal throughout the county, most mitigation strategies will need to address the community as a whole. An exception to this might be the areas with concentrations of mobile homes.

2.2 Drought

2.2.1 Hazard Identification

Drought cannot be characterized as a single event, but rather a prolonged period without sufficient precipitation. The Georgia Automated Environmental Monitoring Network website defines drought as "a

8 Inflation adjusted for 2011 Dollars.
9 Retrieved on December 12, 2013 from the FEMA website at http://www.fema.gov/graphics/library/wmap.gif

period of insufficient rainfall for normal plant growth, which begins when soil moisture is so diminished that vegetation roots cannot absorb enough water to replace that lost by transpiration."[10]

According to the 2003 Georgia Drought Management Plan, Jasper County is located in Climate Division 5. For this Climate Division, the Georgia Environmental Protection Division (EPD) monitors the following indicators for drought triggers, or specific values. If any one of the indicators reaches or passes a trigger value for two consecutive months, a preliminary evaluation is conducted to determine the appropriate response.

- Standard Precipitation Index: This figure compares precipitation levels during the last three, six, and twelve months with historical figures to determine net loss or increase.
- Groundwater Levels: Water level is measured at wells 11AA01 Located in Laurens County, and 21T001 in Spalding County.
- Streamflow: Annual and monthly discharge levels are monitored and compared with historical figures along the Oconee River at Dublin and the Ocmulgee River at Macon.

A drought event is not considered to be over until all of the indicators for the Climate Division are at an acceptable stress level for at least four consecutive months.[11]

Another hazard often associated with Drought is Wildfires, which will be described in subsequent sections of this Chapter.

2.2.2 Hazard Profile

Due to the lengthy nature of a drought event, the adverse impacts can affect a community for extended periods of time. The severity of impacts increases as the drought event is prolonged, and many may still be felt long after the drought is declared over.

Drought conditions are typically associated with the dry summer months, but they may persist throughout the winter months as well. Over the past 53 years there have been 23 occurrences of drought conditions in Jasper County recorded by the NCDC, as illustrated in the Worksheet #1 Addendum in Appendix D. All of the recorded events occurred between 1986 and 2011, reflecting a period of statewide drought-like conditions.

Based on the historic frequency recorded by the NCDC, Jasper County has a 43.4% chance of experiencing a drought event in any given year, or to look at it another way, a drought event can be expected approximately once every two years. However, the multiple variables involved in declaring a drought event challenge the accuracy of this estimation. As of December 12, 2013 Jasper County was identified in the Abnormally Dry (D0) category by the National Drought Mitigation Center's U.S. Drought Monitor which is used to identify areas showing dryness but not yet in drought, or for areas recovering from drought.[12] The U.S. Drought Monitor is produced in partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration, and is a synthesis of multiple indices and impacts, that represents a consensus of federal and academic scientists designed to represent the spatial location and severity of drought conditions on a weekly basis.

10 Retrieved on December 12, 2013 from the Georgia Automated Environmental Monitoring Network website at www.georgiaweather.net
11 Retrieved on December 5, 2013 from the DCA Planning & Quality Growth website at: www.georgiaplanning.com
12 Retrieved on December 12, 2013 from the National Drought Mitigation Center's U.S. Drought Monitor website at: droughtmonitor.unl.edu

2.2.3 Assets Exposed to Hazard

Droughts typically do not affect critical facility structures directly. Instead, droughts have the most significant impact on the agricultural community and the residential population, particularly those that utilize groundwater wells.

2.2.4 Estimate of Potential Losses

Drought events are going to generate the largest impact on crop and livestock farmers countywide. Yields of crops have been documented at a total loss during the worst drought seasons. Row / forage crops and ornamental horticulture are a significant part of Jasper County's agricultural output with an annual farm-gate value of approximately $17.2 million.[13] The most directly identified loss is illustrated in reduced yields, but these impacts generate spin-off effects in the poultry and livestock industries.

Decreased yields of hay and silage reduce the amount of feed available for the livestock population, which has a number of ramifications that are often prolonged beyond the drought event. Cattle may have difficulty maintaining their weight during a drought event due to unproductive pastureland and they may also have difficulty breeding. In addition to creating an obvious burden on the animal population, drought events may result in reduced economic viability of cattle farming and poultry production.

2.2.5 Land Use and Development Trends

Jasper County's population grew by 21.7% between the 2000 and 2010 U.S. Censuses. This growth continues a trend since 1970, with the county growing by an average of 28% per decennial census, placing a major increase in demand for residential and commercial water supplies. The increased demand from new development coupled with the demands from agricultural uses would lead to a scenario where prolonged drought conditions could present a risk to the local economy.

Agriculture remains a primary industry. The overall use of land for agriculture has diminished, making way for residential, commercial, and industrial uses, which are typically less affected by droughts.

2.2.6 Multi-Jurisdictional Concerns

The effects of prolonged drought conditions are felt countywide. Although agricultural production typically occurs outside municipal boundaries, a decrease in the sector's economic productivity will have an effect on the entire county. Therefore, it is important that five jurisdictions cooperate on the implementation of drought mitigation strategies to assist the agricultural community withstand drought conditions.

2.2.7 Hazard Summary

It is often difficult to assess the impacts of drought because the negative effects are distributed over a prolonged period of time. Drought may have effects on residential and commercial water supplies, but the most immediate impacts are felt in the agricultural industry and the increased risk of wildfires.

2.3 Wildfires

2.3.1 Hazard Identification

Wildfires (or wildland fires) present threats to people and property living or recreating near undeveloped wilderness areas. Drought and dry weather conditions contribute to an increased potential for wildfires.

Wildfires are classified under three different types:

1. **Surface Fire**: Burns rapidly at a low intensity
2. **Ground Fire**: Most infrequent, characterized by intense blazes destroying all vegetation and organic matter

13 Retrieved December 12, 2013 from: www.georgiastats.uga.edu

3. **Crown Fire**: Generally resulting from ground fires, occurs in upper sections of trees [14]

The most dangerous conditions are extended periods of drought (typically during the summer months) and high winds (typically during late winter and early spring). Drought conditions create an adverse environment for containing fires because of the dry condition of the forest on a regional scale. Additionally, high gusting winds facilitate the spread of wildfires throughout a much larger region.

2.3.2 Hazard Profile

There are 3 recorded wildfire events in the NCDC database between 2009 and 2012. These events have resulted in approximately $26,000 in total damage. Additionally the Georgia Forestry Commission has recorded the number and location of wildfires in Jasper County between 2005 and 2010. During that time period there were 130 reported wildfires countywide, resulting in an average of 26 wildfires per year. According to the 2011 Jasper County Community Wildfire Protection Plan (CWPP), developed by the Georgia Forestry Commission, the leading cause (69%) of wildfires is debris burning.[15]

The wild land fire risk assessments conducted in 2010 by the Jasper County Fire Department and the Georgia Forestry Commission returned an average score of 91, placing Jasper County in the "moderate risk" hazard range. The risk assessment instrument used to evaluate wildfire hazards to Jasper County was the Hazard and Wildfire Risk Assessment Checklist. The instrument takes into consideration accessibility, vegetation (based on fuel models), roofing assembly, building construction, and availability of fire protection resources, placement of gas and electric utilities, and additional rating factors.[16]

2.3.3 Assets Exposed to Hazard

All of Jasper County is potentially vulnerable to wildfires, either large blazes affecting expansive tracts of forestland or multiple small fires damaging individual lots. Both are potentially extremely dangerous and may escalate quickly depending on the prevailing weather conditions. The current Georgia Forestry Commission Community Wildfire Protection Plan does not include a map of wildfire occurrences.

2.3.4 Estimate of Potential Losses

Monticello and Shady Dale are equipped with pressurized water systems and fire hydrants throughout each jurisdiction. Fire departments are active in both cities, and five stations are located in unincorporated areas. Even with the best protections, the possible losses from a wildfire event could be significant. According to the 2011 Jasper County CWPP between 2005 and 2010 wildfires burned an average of 26 acres annually, and were responsible for estimated losses of $1.2 million of property.[17]

14 Retrieved on December 5, 2013 from a report on the U.S. Fire Administration website, entitled, "Wildland Fires: A Historical Perspective" at: www.usfa.dhs.gov

15 Georgia Forestry Commission (2011) "Community Wildfire Protection Plan: An Action Plan for Wildfire Mitigation and Conservation of Natural Resources, Jasper County, Georgia," p. 5

16 Georgia Forestry Commission (2011) "Community Wildfire Protection Plan: An Action Plan for Wildfire Mitigation and Conservation of Natural Resources, Jasper County, Georgia," p. 9-10

17 Ibid. p.4-5

2.3.5 Land Use and Development Trends

Development in Jasper County has often been seen in areas that may be referred to as the wildland urban interface (WUI). WUIs are defined as areas "where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels."[18] Jasper County is predominantly comprised of two of the three main categories of WUI, as follows:

Boundary: Classic type of WUI, with a clearly-defined boundary between suburban and rural areas
Intermix: Structures, such as rural homes, are scattered in wildland (undeveloped) areas.[19]

Identified land use and development factors from the woodland fire risk assessments conducted in 2010 by the Jasper County Fire Department and the Georgia Forestry Commission contributing to Jasper County's designation in the "moderate risk: category include:

- Dead end roads with inadequate turn-arounds
- Narrow roads without drivable shoulders
- Long, narrow, and poorly labeled driveways
- Limited street signs and homes not clearly addressed
- Thick, highly flammable vegetation surrounding many homes
- Minimal defensible space around structures
- Homes with wooden siding and roofs with heavy accumulations of vegetative debris
- No pressurized or non-pressurized water systems available
- Above ground utilities
- Large, adjacent areas of forest or wildlands
- Heavy fuel buildups in adjacent wildlands
- Undeveloped lots comprising half the total lots in many rural communities.
- High occurrence of wildfires in the several locations
- Distance from fire stations
- Lack of homeowner or community organizations

The National Fire Protection Association (NFPA) is responsible for developing and updating standards for fire protection. Relevant land use and development issues are addressed in *NFPA 1141: Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas.*[20]

Three general approaches should be taken for development in the WUI: 1) design developments to be defensible against wildfires, 2) design fire-resistant landscapes and structures, and 3) incorporate fuel reduction treatments to reduce vegetative hazards.[21]

2.3.6 Multi-Jurisdictional Concerns

Though the majority of heavily wooded areas are located outside of the municipal jurisdictions, a small fire burning uncontained within either of the cities may create more damage because of the increased density of development. It is imperative that all three jurisdictions work closely with the Georgia Forestry Commission to continue their joint efforts in combating wildfires countywide.

18 Retrieved on December 12, 2013 from a report by the U.S. Fire Administration entitled, "Fires in the Wildland/Urban Interface" at: www.usfa.dhs.gov

19 Georgia Forestry Commission (2011) "Community Wildfire Protection Plan: An Action Plan for Wildfire Mitigation and Conservation of Natural Resources, Jasper County, Georgia," p. 7

20 This document is available for purchase through the NFPA website at: www.nfpa.org

21 Department of Landscape Architecture, Mississippi State University, Wildfire Planning Strategies for Community Design: A Guide for Southeastern Developers and Planners, p. 31. Retrieved on December 5, 2013 from: www.lalc.msstate.edu

2.3.7 Hazard Summary

It is difficult to estimate the losses as a result of wildfires because the extent of damages depends solely on the severity of the fire and the types of structures and/or property that are impacted. To guide wildfire mitigation efforts, the 2011 Jasper County CWPP identified several priorities in the following categories: Hazard and Structural Ignitability Reduction, Wildland Fuel Reduction, Wildland Fire Response, and Education and Outreach. Mitigation actions will vary, as wildfires may be classified as both a natural and a technological, or manmade, hazard.

2.4 Winter Storms

2.4.1 Hazard Identification

Winter storms include snow, freezing rain, sleet, freezing temperatures, or a combination thereof.[22] The most prevalent occurrences of winter storms in Jasper County are accumulations of ice as the result of freezing rain and temperatures dropping below the freezing point. Ice storms, in particular, can generate extensive damage to trees and power lines as well as create unsafe driving conditions.

2.4.2 Hazard Profile

The severity and characteristics of winter storms vary greatly, but all winter storms are capable of causing extensive damages. Temperatures in Jasper County rarely reach the extreme cold experienced in northern climates, but freezing temperatures accompanied by high winds can produce a wind chill factor that may be dangerous if overexposed.

Winter storms in Jasper County are most prevalent during the months of December through February. Southern winter storms are usually the result of northern cold fronts moving southward which typically affords the local EMA and general population ample time to prepare for adverse conditions.

Over the past 53 years there have been 44 occurrences of winter storms in Jasper County recorded by the NCDC, detailed in Hazard Frequency Table located in Appendix A. The worst recorded event was a winter storm that occurred in March of 1960 and caused approximately $538,000 in damages. Based on the historic frequency recorded by the NCDC, the county can expect a winter storm event every 1.2 years.

2.4.3 Assets Exposed to Hazard

There is no methodology to predict where a winter storm event is going to occur, and therefore the entire county is vulnerable. Additionally, winter storms generally affect very large areas. All identified critical facilities are susceptible to damages caused by winter storms.

2.4.4 Estimate of Potential Losses

All Critical Facilities were determined to be at risk of damage from Winter Storms. Additionally, crops throughout the County are susceptible to losses.

Damages from winter storms are typically caused by an accumulation of ice on trees, limbs, or power lines that can result in loss of power and property damage. Winter weather also creates adverse road conditions that pose an increased risk to motorists. The accident rate can be much higher during winter storm events, particularly to a resident population that is not accustomed to driving under these conditions. The accumulation of snow or ice beyond the typical winter weather months can result in crop losses and have a devastating impact on the agricultural industry. The 44 winter storm events recorded by the NCDC resulted in a reported loss of $1,619,133 in property and crop damage.

22 Additional information about winter storms is accessible from the FEMA website at www.fema.gov/hazard/winter

2.4.5 Land Use and Development Trends

Most land use and development trends will not inform the strategies identified to mitigate the possible effects of winter storms, as the entire county is at equal risk for these types of hazard events.

2.4.6 Multi-Jurisdictional Concerns

All of Jasper County is vulnerable to the effects of winter storms. All mitigation goals, objectives and strategies are applicable to each jurisdiction.

2.4.7 Hazard Summary

Based on frequency and reported damage, winter storms pose a significant threat to Jasper County. Winter storms have the potential to immobilize the entire county. Extended periods of power outages due to down power lines pose a risk to residents who primarily heat their homes with electricity. Roads that are blocked or covered in ice may delay any needed assistance as well as put motorist at risk. As the risk for winter storms is equal throughout the county, most mitigation strategies will need to address the community as a whole.

2.5 Floods

2.5.1 Hazard Identification

A flood is a partial or complete inundation of water on normally dry areas. The causes of flooding include severe thunderstorms, tropical cyclones, seasonal rains, run-off from snow or ice, and other weather-related conditions.[23] The severity of flooding is also a function of environmental variables such as topography, previous ground saturation, soil types, and native vegetative cover, urbanization, and drainage patterns.

Flash flooding is characterized by rapid accumulation or runoff of surface waters. Flash flooding impacts smaller rivers, creeks, and streams and can occur when the soil becomes oversaturated or when excess volumes of water collect on impervious surfaces.

2.5.2 Hazard Profile

Flooding in Jasper County is most commonly associated with severe thunderstorms that typically generate during the Atlantic hurricane season, which runs from June to November. However, due to the southeastern climate, flooding may occur year-round due to the potential for prolonged periods of precipitation during any month.

During the past 53 years, there have been 6 flood events in Jasper County recorded by the NCDC, detailed in Hazard Frequency Table located in Appendix A.

Based on the historic frequency recorded by the NCDC, the county can expect a flood event every 8.83 years. However, as illustrated by the level of activity during particular years, the number of occurrences is directly related to the severity of the storm season. The best available data indicate that the extent of hazards associated with a flood event is most accurately represented by the boundary of the delineated 0.2-percent-annual-chance floodplains (also known as the 500-year floodplain) from the most recent DFIRM. A map depicting this boundary can be found in Appendix A. Based on historical stream gauge data from the USGS major flood stage for the Ocmulgee River just south of Jackson Lake is 26 feet. The highest historical crest at this location was 26.9 feet on July 6, 1994. [24]

23 Additional information about thunderstorms is accessible from the FEMA website at www.fema.gov/hazard/flood
24 Retrieved 6/26/2014 from the National Weather Service Advanced Hydrologic Prediction Service Webpage at : water.weather.gov

2.5.3 Assets Exposed to Hazard

In June of 2010, FEMA completed a Flood Insurance Study (FIS) for Jasper County which included creation of Digital Flood Insurance Rate Maps (FIRM) for Jasper County and its incorporated areas. The FIS identified principal flood problems in Jasper County as low-lying areas adjacent to major creeks that are subject to periodic flooding which accompanies major storm events.[25] The Jasper County FIRM delineates specific flood insurance risk zones that correspond with 1-percent-annual-chance floodplains (also known as the 100-year floodplain) and 0.2-percent-annual-chance floodplains (also known as the 500-year floodplain) as well as areas outside of these floodplain zones.

Approximately 3.83% percent of Jasper County is covered by either 100-year or 500-year floodplains. Based on an evaluation of the location of critical facilities, there are ## critical facilities located within flood hazard areas. All of these facilities are either bridges or culverts. No critical facility structures are within the floodplains.

2.5.4 Estimate of Potential Losses

The potential losses from flooding are difficult to determine due to the variable intensity of rainfall associated with each storm event. The largest direct potential loss in the county is related to the repeated damage of the local road network. Additionally, because of the large amount of agriculturally productive land, there is a possibility that extreme flood damage could have a major adverse impact on agricultural production. The result of the 6 flood events recorded by the NCDC is a reported loss of $52,543 in property and crop damage.

There are no identified repetitive loss properties within Jasper County. Repetitive loss properties are defined as a National Flood Insurance Program (NFIP) insured property or structure that has had at least two paid flood losses of more than $1,000 each in any 10-year period since 1978.[26]

2.5.5 Land Use and Development Trends

Jasper County has experienced a mix of both rural and suburban development. Increased development throughout the County may cause an increased risk of flooding. Not only can new development in areas already prone to flooding result in potential losses, but development of impervious surfaces and urban infrastructure elsewhere in the County may result in increased risks. The construction of new roads, parking lots, roof-tops, and other impervious surfaces typically increases surface runoff volumes beyond pre-development levels, thereby creating a greater risk of flooding downstream in the watershed and potentially enlarging floodplains.

Jasper County and the City of Monticello participate in the National Flood Insurance Program and all jurisdictions currently have FEMA approved flood hazard identification maps. Additionally, all construction is required to meet the standards set forth by the Georgia State Minimum Standard Codes (Uniform Code Act) and the International Building Code. Minimum standards established by these codes provide reasonable protection for persons and property within structures that comply with the regulations for most natural hazards.

2.5.6 Multi-Jurisdictional Concerns

Each of the jurisdictions is subject to the potential damages caused by floods, although those areas lying within the defined flood hazard boundary, as illustrated in Appendix A, are subject to increased vulnerability to flood hazards.

25 Retrieved on December 17, 2013, from the Georgia Floodplain Mapping Program website at www.georgiadfirm.com
26 Retrieved on December 12, 2013 from the FEMA website at www.fema.gov/business/nfip/

2.5.7 Hazard Summary

The occurrences of flood events in Jasper County are typically correlated with the occurrences of severe thunderstorms that carry excessive amounts of rainfall. As indicated in the flood hazard boundary map in Appendix A, each of the jurisdictions has varying levels of vulnerability to flooding.

2.6 Earthquakes

2.6.1 Hazard Identification

An earthquake is a sudden shaking of the earth caused by a fault slip which results in a release of energy that travels away from the fault surface as seismic waves. Seismic waves are elastic shocks that travel through the earth. Faults slip to release stress that is created as tectonic plates move around the surface of the earth. Earthquakes can cause buildings and bridges to collapse, telephone and power lines to fall, and cause fires, explosions, and landslides.[27]

There are currently three scales that measure earthquakes: the Richter Magnitude Scale, the Moment Magnitude Scale, and the Modified-Mercalli Intensity Scale.

1. The Richter Magnitude Scale is logarithmic and expresses earthquake size as a magnitude using whole numbers and decimal fractions. The Richter Magnitude Scale measures the energy released by an earthquake, not the damage caused by an earthquake[28]. The Richter Magnitude Scale has no theoretical upper limit, however the practical upper limit lies just below 9.0 and 10.0 for local or surface-wave magnitudes and moment magnitudes respectively[29]
2. The Moment Magnitude Scale provides the most reliable estimate of the size of an earthquake when the earthquake exceeds 6.0 on the Richter Magnitude Scale[28]. The Moment Magnitude scale is the preferred magnitude scale.
3. The Modified-Mercalli Intensity Scale is a measure of the strength of shaking of an earthquake at a specific location and is normally represented in roman numerals[30]. The Modified-Mercalli Intensity Scale ranges from one (I) to twelve (XII) with one (I) meaning that shaking could not be felt and twelve (XII) is total damage[31]

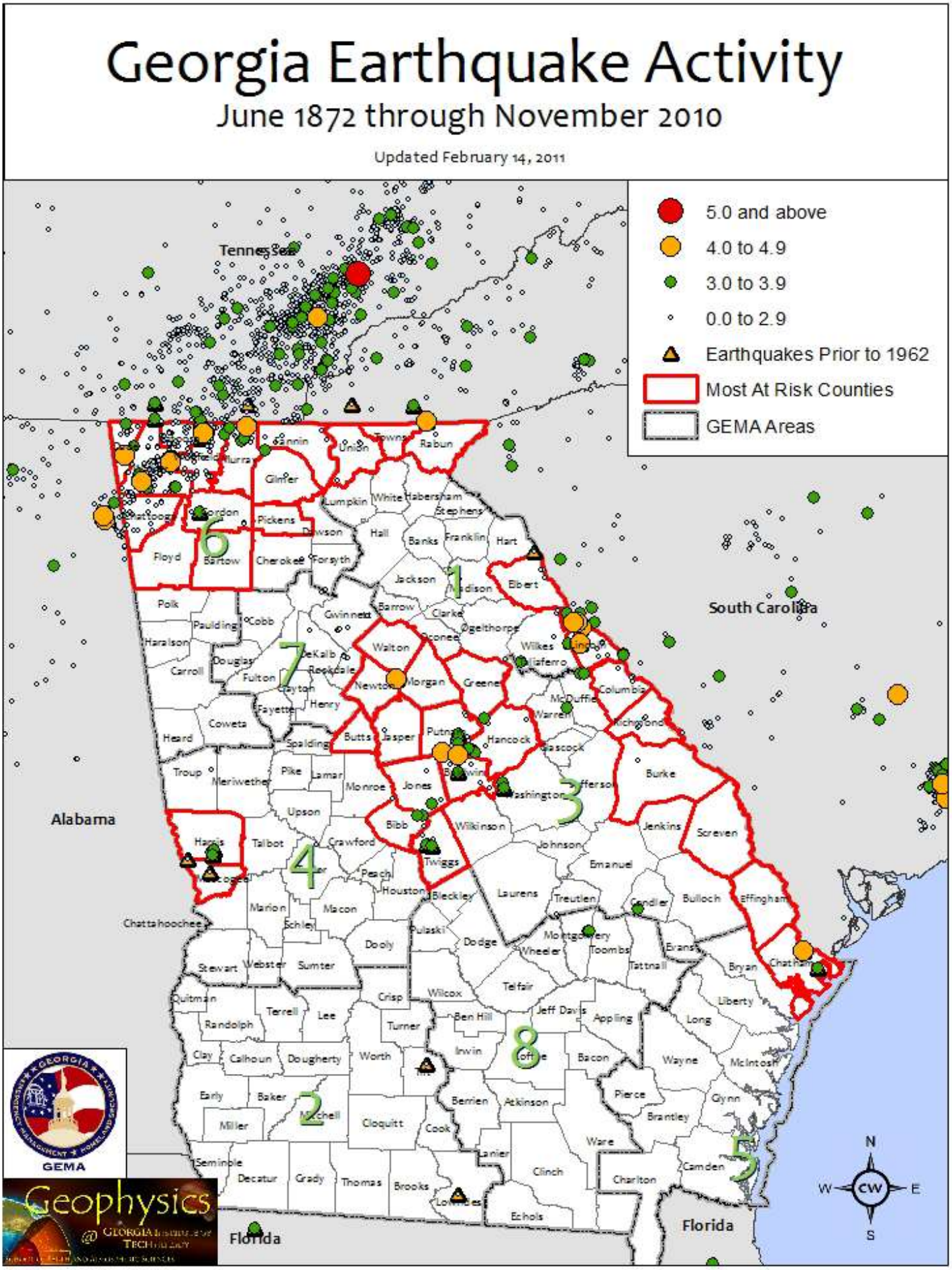
2.6.2 Hazard Profile

Jasper County is listed as one of several counties in the state that is at risk for an earthquake event. The risk is due to several factors including Jasper County's proximity to areas that have experienced significant earthquake events in the past.

On April 29, 2003 a moderate earthquake, rated 4.9 on the Richter Scale, shook most of the northwest corner of Georgia, south to Atlanta. The epicenter was located in Menlo, Georgia. In Jasper County, slight trembles were felt and rumbles heard. There are no incidents reported in any damage history. These accounts come from personal testimonies from citizens. Historic data records indicate that Jasper County can expect an earthquake to affect their county every fifty years with a 2% chance of an earthquake occurring in any given year. See the Hazard Frequency Table in *Appendix A*.

Based on historic occurrences, Jasper County may be susceptible to a level VII earthquake on the Modified-Mercalli Intensity Scale, which may result in minor damage to well-designed structures and significant damage to poorly-built structures.[32] The Richter scale is not used to express damage.[33]

27 Georgia Emergency Management Agency, Georgia Earthquake Awareness Guide, April 2011, pg. 3
28 Georgia Emergency Management Agency, Georgia Earthquake Awareness Guide, April 2011, pg. 6
29 Retrieved on May 2, 2013, from the United States Geological Survey (USGS) website at earthquake.usgs.gov
30 Georgia Emergency Management Agency, Georgia Earthquake Awareness Guide, April 2011, pg. 7
31 Retrieved on May 2, 2013, from the United States Geological Survey (USGS) website at earthquake.usgs.gov/learn/topics/mercalli
32 Retrieved on May 2, 2013 from the USGS Earthquake Hazard Program website at: earthquake.usgs.gov/learn/topics/mercalli
33 Retrieved on May 2, 2013, 2012 from the USGS Earthquake Hazard Program website at: earthquake.usgs.gov/learn/topics/richter


Georgia Earthquake Activity
June 1872 through November 2010
Updated February 14, 2011
5.0 and above
4.0 to 4.9
3.0 to 3.9
0.0 to 2.9
Earthquakes Prior to 1962
Most At Risk Counties
GEMA Areas
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South Carolina
Alabama
Florida
Florida
GEMA
Geophysics
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2.6.3 Assets Exposed to Hazard

All critical facilities, personal, and public property in Jasper County are susceptible to damage caused by an earthquake.

2.6.4 Estimate of Potential Losses

There are no damage records available in relation to Earthquakes. Loss would be determined based on intensity and magnitude and would vary in each case. The potential losses from an earthquake event are difficult to determine due to the variable intensity and magnitude associated with each earthquake event. The most readily identifiable damages from a significant earthquake event would be fallen trees, downed power lines, and ruptured gas lines. Structural damage can also occur during an earthquake event depending upon the intensity and magnitude of the earthquake. At a level IV on the Modified Mercalli Intensity scale, windows and doors are disturbed, and walls make cracking sound.[34] Within a structure, a sensation like a heavy truck striking the building can be felt. Standing motor cars are rocked noticeably. In a significant earthquake event, cracks in structural foundations can occur as well as the cracking and/or buckling of sidewalks, driveways, and roads.

The fatality and injury rate may increase during and following an earthquake event, particularly for a resident population that is not accustomed to these conditions.

2.6.5 Land Use and Development Trends

When evaluating the resilience of existing structures or the construction of new structures, it is important to consider that the following land and building characteristics are particularly susceptible to damage during an earthquake event: soft ground, weak slopes, and structures of poor quality that contain un-reinforced masonry or are built with earth, rubble, and/or stone. Structures with heavy roofs and above-ground infrastructure are also vulnerable to damage from an earthquake event.[35]

2.6.6 Multi-Jurisdictional Concerns

Because there are no clearly defined faults in Georgia, it is difficult to predict where an earthquake event is going to occur, and therefore the entire county is equally vulnerable.

2.6.7 Hazard Summary

Earthquakes can pose numerous risks to a community, including loss of life, injury, as well as significant economic loss. Depending on the location, magnitude, and intensity of an earthquake event, road conditions could be unsafe, resulting in a disruption to food supply and overall continuity of business.

Structural damage to critical facilities can result in the delay of deployment and receipt of lifeline services, including hospitals, nursing homes, and schools.

Overall, Jasper County has the potential; though moderate, to experience damage in relation to earthquakes. Because of this, specific mitigation goals have been developed and should receive adequate consideration. They can be found in *Chapter 4, Section 6*.

34 Further details of the Modified Mercalli Intensity Scale are available at the USGS Earthquake Hazard Program website at: earthquake.usgs.gov/learn/topics/mercalli

35 Retrieved on May 2, 2013 from the United Nations International Strategy for Disaster Reduction (UNISDR) website at www.stopdisastersgame.org/Earthquake-fact-sheet

Chapter 3 Technological Hazard, Risk, and Vulnerability

TABLE 3-1: SUMMARY OF UPDATES TO CHAPTER 3

Hazard	Section	Update
Hazardous Material Releases	3.1.1 Hazard Identification	Text revisions
	3.1.2 Hazard Profile	Text revisions; updated information
	3.1.3 Assets Exposed to Hazard	Text revisions, updated information
	3.1.4 Estimate of Potential Losses	Text revisions
	3.1.5 Land Use & Development Trends	Text revisions
	3.1.6 Multi-Jurisdictional Concerns	Text revisions
	3.1.7 Hazard Effects Summary	Text revisions

3.1 Hazardous Material Releases

3.1.1 Hazard Identification

Hazardous materials are chemical substances which if released or misused can pose a threat to the environment and the health and welfare of the population. These products are used in industry, agriculture, medicine, research, and consumer goods. They can take the form of explosives, flammable and combustible substances, poisons, and radioactive materials. The release of these substances into the environment is most often a result of transportation accidents or because of chemical spills in industrial areas.

The Jasper County Hazard Mitigation Planning Committee reviewed data from the Environmental Protection Division of the Georgia Department of Natural Resources in researching hazardous material spills in Jasper County. A major source of hazardous material accidents are spills along roadways, railways, and pipelines. Hazardous materials are substances that are harmful to the health and safety of people and property. Jurisdictions with facilities that produce, process, or store hazardous materials are at risk, as are facilities that treat, store, or dispose of hazardous wastes.

3.1.2 Hazard Profile

Transportation-related hazardous material releases carry the potential for the greatest exposure to risk and also are impossible to predict because they typically involve an accident of some kind. There have been 32 reported hazardous material releases in Jasper County between 2000 and 2013, as recorded by the Georgia Department of Natural Resources (DNR) Emergency Response Team (see GEMA Worksheet #1 Addendum in Appendix D). The majority of these incidents are the result of individuals, businesses, or utility departments (knowingly or unknowingly) releasing hazardous materials in or near waterways.

Based on the historic frequency recorded by the DNR the county can expect a hazardous material release event every 0.38 years. As the DNR only records reported events through its complaint tracking system, this figure may misrepresent the actual number of individual releases.

3.1.3 Assets Exposed to Hazard

In identifying which assets are exposed to hazardous materials, we evaluated areas with facilities that might house or use hazardous materials. A one mile radius buffer was figured for each facility either known or suspected to use hazardous agents. All critical facilities that lie within these buffers have the potential to be affected. None of the critical facilities would be affected. While not as frequent as transportation related spills, fixed facility releases are also possible in Jasper County.

There are several sites within the County where significant quantities of hazardous materials are used or stored. Hazardous material releases can also pose a threat to the portions of the population that utilize wells for drinking water supplies and to waterways throughout the County.

3.1.4 Estimate of Potential Losses

Jasper County has no recorded instances of critical facilities or property being damaged as a result of hazardous material spills. Due to this lack of data and the variance of each situation, it is difficult to estimate the potential losses that could occur. The unpredictable nature of hazardous material releases makes it impossible to accurately estimate the specific time, conditions, amount, and concentration of many of the materials that pass through our community daily. These variables make estimating future damages extremely difficult. Because of the existence of so many variables, it is important for the community to continue to monitor, learn about, and train to respond to these incidents.

3.1.5 Land Use and Development Trends

Jasper County currently has no land use and development trends relative to hazardous materials spills.

3.1.6 Multi-Jurisdictional Concerns

Jasper County, including the municipalities, is vulnerable to the impact of hazardous materials release. While the County is possibly more vulnerable to fixed facility releases due to the higher number of manufacturing facilities in the unincorporated areas of the County, there is shared vulnerability county-wide to transportation related releases due to the existence of highways and railways throughout. The City of Monticello may arguably have a higher vulnerability to fixed facility releases than Shady Dale because of the concentration of fuel stations, etc. For purposes of mitigation planning, however, all areas of the county are considered to be vulnerable to both fixed facility and hazardous materials release.

3.1.7 Hazard Summary

Although the possibility for a major release or other accident seems remote, the potential for serious effects must be considered. Spills can occur at points of operation but greater potential damage, both to property and people, exist as these materials move through the county. As the PDM Planning Committee identified roads, bridges, and rail lines where hazardous materials travel, mitigation actions are identified that reduce potential losses resulting from hazardous materials. In general, an increase in partnership and communication between facilities that sore and use potentially hazardous materials and local emergency management personnel will help to reduce the likelihood of a release and allow a timely and appropriate response should one occur in the future.

Chapter 4 **Natural Hazard Mitigation Goals and Objectives**

TABLE 4-1: SUMMARY OF UPDATES TO CHAPTER 4

Hazard Type	Section	Update Summary
Severe Thunderstorms	4.1.1 Community Mitigation Goals	Text changes; Addition of Tornados
	4.1.2 Identification & Analysis of Range of Mitigation Options	Text changes; Addition of Tornados
	4.1.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Drought	4.2.1 Community Mitigation Goals	Text changes; Separation of Drought & Wildfire
	4.2.2 Identification & Analysis of Range of Mitigation Options	Text changes; Separation of Drought & Wildfire
	4.2.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Wildfire	4.3.1 Community Mitigation Goals	Text changes; Separation of Drought & Wildfire
	4.3.2 Identification & Analysis of Range of Mitigation Options	Text changes; Separation of Drought & Wildfire
	4.3.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Winter Storms	4.4.1 Community Mitigation Goals	Text changes
	4.4.2 Identification & Analysis of Range of Mitigation Options	Text changes
	4.4.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Floods	4.5.1 Community Mitigation Goals	Text changes
	4.5.2 Identification & Analysis of Range of Mitigation Options	Text changes; update with NFIP participation
	4.5.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
Earthquakes	4.5.1 Community Mitigation Goals	Text revisions
	4.5.2 Identification & Analysis of Range of Mitigation Options	Text revisions
	4.5.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
All Hazards	4.6 Mitigation Strategy and Recommendations	Multiple changes/revisions

4.0 Introduction to Mitigation Strategy

4.0.1 Mitigation Priorities

Priorities have not changed significantly since the plan was previously adopted. The committee has determined that public awareness of hazards and increasing knowledge of notification systems are of increasing importance.

4.0.2 Capability Assessment

Jasper County and its municipalities' current mitigation capabilities include those listed below. All current mitigation capabilities apply to the entire county and its municipalities.

1. **Planning and regulatory capabilities**
   a. Comprehensive Plan
   b. Local Emergency Operations Plan
   c. Community Wildfire Protection Plan
   d. Building Code (ICC – 2006, NEC – 2011); BCEGS Score: Commercial and Residential Class 7
   e. Fire Department ISO rating: 5/9
   f. Site plan review requirements
   g. Zoning, subdivision, floodplain, wildfire, stormwater ordinances
   h. Flood insurance rate maps
2. **Administrative and Technical Capabilities**
   a. Mitigation Planning Committee
   b. Public Works maintenance programs
   c. Mutual aid agreements (with cities, surrounding counties)
   d. Chief Building Official, Floodplain Administrator, Emergency Manager, Civil Engineer (ind. contractor)
   e. Tornado sirens, mass notification call system
3. **Financial Capabilities**
   a. Capital improvements project funding
   b. Community Development Block Grant (eligible but not received)
   c. Other federal funding programs
   d. State funding program
4. **Education and Outreach Capabilities**
   a. Local citizen groups, CERT
   b. Ongoing public education programs (annual fire safety and preparedness education programs)
   c. Natural disaster and safety-related school programs
   d. Firewise Communities certification (Turtle Creek subdivision)
   e. Public-private partnership initiatives addressing disaster-related issues (formed in 2013)

4.1 Severe Thunderstorms

4.1.1 Community Mitigation Goals

Severe Thunderstorms, which include hail, lightning and tornados, pose the most serious threat to Jasper County and its residents based on the historic frequency of events discussed in Chapter 2. Thunderstorms are also the most difficult hazard to predict, making the identification of appropriate and effective mitigation strategies difficult. The highest priority for the county is increasing public awareness prior to the development of a severe thunderstorm event.

4.1.2 Identification and Analysis of Range of Mitigation Options

Thunderstorms require both structural and non-structural mitigation strategies due to the widespread impacts these events may have. The most important mitigation strategy relates to public awareness, particularly for vulnerable populations. To this end, several mitigation actions relating to public education, engagement, and notification relating to all potential hazards in Jasper County have been identified. However, there are also mitigation opportunities to increase structural resistance to severe thunderstorms.

Mitigation options relating to new buildings and infrastructure have been targeted toward ensuring that new manufactured and mobile homes are reinforced to maintain their structural resistance to the effects of severe thunderstorms. Mitigation options relating to existing buildings and infrastructure address the vulnerability of critical facilities to lightning strikes and the reinforcements required for existing manufactured and mobile homes to reduce their vulnerability to severe thunderstorms.

4.1.3 Mitigation Strategy and Recommendations

The goals, objectives, and action steps for severe thunderstorms from the 2007 plan were evaluated by Steering Committee members. The goals and objectives were updated to improve clarity, and each "Action Step" was categorized as completed, in progress, cancelled, or postponed (see Appendix D for this document). With the 2007 plan's "in progress" and "postponed" Action Steps as a starting point, the committee formulated a new list of mitigation Action Items. Updated mitigation action steps for severe thunderstorms are coded "ST."

Goal: Minimize the loss of life and damage to property due to severe thunderstorms o throughout Jasper County and its municipalities

Objective 1: Educate the public on potential impacts and increasing public awareness of emergency preparations and procedures.

Objective 2: Provide means for advanced public notification through multiple outlets in the event of severe thunderstorms and tornados and significantly increase public registration for notification.

Objective 3: Improve preparedness and response measures to mitigate potential structural damage from severe thunderstorms and tornados.

Objective 4: Identify and protect vulnerable populations from the effects of severe thunderstorms and tornados.

TABLE 4-2: SEVERE THUNDERSTORMS AND TORNADO ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party
ST1	Construct a shelter in manufactured home parks	**3**	2018	$125,000	Manufactured home park; Grants	Jasper County EMA
ST2	Continue to promote the use of CodeRed mass notification system to alert the public in the case of immediate threats	**1**	2014-2015	Staff Time	General Fund	Jasper County EMA, BOC and Sheriff's Office
ST3	Use local newspapers and social media to encourage the public to purchase weather radios	**4**	2014-2019	Staff Time	General Fund	Jasper County EMA
ST4	Continue to raise awareness of tornado siren protocol through local newspapers and social media	**5**	2014-2019	Staff Time	General Fund	Jasper County EMA/E-911
ST5	Conduct regular assessments of zoning and building codes' ability to mitigate severe thunderstorm damage and update as needed	**5**	2014-2019	Staff Time	General Fund	Jasper County EMA and Jasper County Planning & Zoning
ST6	Develop a prioritized list of critical facilities in need of backup power sources and provide new sources as needed	**2**	2014	Staff Time	General Fund	Local Emergency Planning Committee

4.1.4 Special Multi-Jurisdictional Strategy and Considerations

Severe thunderstorm and tornado events can occur throughout the county and all areas are equally vulnerable.

4.1.5 Local Public Information and Awareness Strategy

A primary mitigation strategy involves the county's ability to notify its residents of severe thunderstorm and tornado occurrences because of the rapid development of storm events. It is also imperative that part of the mitigation strategy involves educating the public on preparedness to increase the safety of the population.

4.1.6 Action Steps Revisions

Appendix D includes a Report of Accomplishments table, which indicates which Action Steps from the 2007 plan were completed, postponed, in progress, or cancelled. Several of these "in progress" or "postponed" Action Steps were used as a starting point for the Action Items in this plan update. However, all of these Action Steps were revised and updated for increased clarity, readability, and usability.

Unchanged Action Steps: There were no unchanged Action Steps from the 2007 plan.

New Action Steps: All Action Items in this plan update are new, although several are based on Action Steps from the 2007 plan.

4.2 Drought

4.2.1 Community Mitigation Goals

The Committee determined that while Droughts and Wildfire were considered as a single hazard in the 2007 plan, the mitigation goals and strategies were sufficiently distinct to warrant separate consideration in this plan update.

As discussed in Chapter 2, droughts are prolonged events that affect the agricultural community and public and private water supplies. In addition to actions supporting livestock production during drought occurrences, the Committee identified regulatory and resource-sharing action steps. Some actions relating to public education, engagement, and notification overlap with other hazards and are included in section 4.6.

4.2.2 Identification and Analysis of Range of Mitigation Options

The Committee considered the potential effects of drought and considered potential mitigation options. These options involve primarily non-structural mitigation in preventing any potential losses by providing information to the public. It is possible that some structural options could be identified at a later date as drought effects are monitored and as the County continues to grow. Additionally, potential new sources of water were discussed.

Jasper County has adopted a water conservation ordinance and imposes watering restrictions during periods of drought. New construction within the county conforms to existing building codes and no special codes relating to drought are limited to xeriscaping guidelines.

Droughts may also greatly affect crop and livestock production. The committee considered mitigation options aimed at lessening the effects of drought on the local agricultural economy.

4.2.3 Mitigation Strategy and Recommendations

The goals, objectives, and action steps for drought from the 2007 plan were evaluated by Steering Committee members. The goals and objectives were updated to improve clarity, and each "Action

Step" was categorized as completed, in progress, cancelled, or postponed (see Appendix D for this document). With the 2007 plan's "in progress" and "postponed" Action Steps as a starting point, the committee formulated a new list of mitigation Action Items. Updated mitigation action steps for drought are coded with "D."

Goal: Minimize the impact of droughts on the local population, agriculture, economy, and water supply.

Objective 1: Through proactive education, ensure that all residents and workers in Jasper County are aware of the potential effects of prolonged droughts and strategies to conserve water.

Objective 2: Assist the community in developing mitigation strategies minimizing the impacts of droughts on the County's crops, livestock, water supply, and economy.

TABLE 4-3: DROUGHT ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party
D1	Develop and conduct regular educational programs about water conservation, especially in regards to the effects of water shortages on the agricultural community	**2**	2014-2019	Staff Time	General Fund	Jasper County EMA, Jasper County Extension Office
D2	Explore working with Farm Bureau on feed supply sharing programs during droughts	**1**	2015	Staff Time	General Fund	Jasper County EMA, Jasper County Extension Office

4.2.4 Special Multi-Jurisdictional Strategy and Considerations

Though prolonged drought affects the entire county, the majority of the impacts are felt within the agricultural community.

4.2.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to reduce the inefficient use of water by individual households. Key action steps relating to public information and awareness that apply to all hazards ("AH") are described in detail in section 4.6.

4.2.6 Action Steps Revisions

Completed Action Steps, Unchanged Action Steps, and Deleted and/or Revised Action Steps

The 2007 plan included no Action Steps for droughts. All Action Items in the plan update are new.

4.3 Wildfire

4.3.1 Community Mitigation Goals

The Committee determined that while Droughts and Wildfire were considered as a single hazard in the 2007 plan, the mitigation goals and strategies were sufficiently distinct to warrant separate consideration in this plan update.

Although wildfires are categorized as randomly occurring events, they are often with the result of dry weather associated with weather-influenced seasonal conditions. However, this is not always the pattern. Weather is the major factor for influencing wildfires regardless of drought conditions. They are also often a result of human carelessness as caused by the burning of debris. However, other causes include machine use, lightning, children, campfires, smoking, and arson.

The highest mitigation priority is to maintain a cooperative relationship among municipalities, fire departments, and the Georgia Forestry Commission to ensure that the County can minimize the potential damage to lives, property, natural resources, and the economy.

4.3.2 Identification and Analysis of Range of Mitigation Options

Uncontrolled wildfires can have devastating impacts on natural resources, property, and structures. Mitigation measures relating to structural impacts are largely related to fire protection services and increased training for local firefighters. Non-structural strategies are related to public education and awareness to increase fire prevention.

Water plays a major role in the county's ability to combat wildfires. Similarly to policies related to drought mitigation, the County's water service districts designed to accommodate new growth in the county to ensure adequate access to water. This includes adequate fire protection service to new residential and commercial developments.

Wildfires pose a threat to community character areas near developed areas, including the County's incorporated areas.

Even though there are no specific mitigation strategies for new buildings or infrastructure, it is recommended to use Firewise strategies for structural and home protection.

Mitigation options relating to existing buildings and infrastructure are targeted towards the increased training of all firefighters reducing the vulnerability of land, life, and property countywide.

4.3.3 Mitigation Strategy and Recommendations

The 2007 plan did not include any goals, objectives or action steps for wildfires. Steering Committee members discussed the County and cities' mitigation strategies and decided to base its recommendation on the 2011 Jasper County Community Wildfire Protection Plan (CWPP).

Goal: Reduce the potential for damage to the general population and personal and public property resulting from the impacts of wildfires.

Objective 1: Protect lives, property, the environment, and the economy in Jasper County through continued implementation of the Wildfire Protection Plan.

TABLE 4-4: WILDFIRE ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party
WF1	Create and implement fire safety awareness programs for county/city employees.	**2**	2014	Staff Time	General Fund	Jasper County Fire, Jasper County Sheriff's Office
WF2	Inform the public through newspaper ads and flyers of the importance of clearing underbrush a safe distance from house.	**3**	2014-2019	Staff Time	General Fund	Jasper County EMA, Jasper County Fire
WF3	Inform the public through newspaper ads and flyers of 911 signs available through the Jasper County Fire Department.	**4**	2014-2019	Staff Time	General Fund	Jasper County Fire
WF4	Collaborate with state and county agencies to develop and conduct regular educational programs addressing the risks of wildfire and potential mitigation actions	**5**	2015	Staff Time	General Fund	Jasper County Fire, Georgia Forestry Commission
WF5	Work to increase public awareness of the Community Wildfire Protection Plan and its provisions	**5**	2014-2019	Staff Time	General Fund	Jasper County Fire
WF6	Purchase truck with skid unit for local wildland firefighting	**1**	2015	$110,000	General Fund or Grants	Jasper County Fire

4.3.4 Special Multi-Jurisdictional Strategy and Considerations

There are no discernible patterns in the location of wildfires throughout the county, and therefore each jurisdiction is equally susceptible.

4.3.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to increase individual responsibility in preventing unnecessary wildfires. Key action steps relating to public information and awareness that apply to all hazards ("AH") are described in detail in section 4.7.

4.3.6 Action Steps Revisions

Completed, Unchanged, and Deleted and/or Revised Action Steps

The 2007 plan included no Action Steps for wildfires. All Action Items in the plan update are new.

4.4 Winter Storms

4.4.1 Community Mitigation Goals

Although winter storms do not occur as frequently as in northern climates, they can still have an adverse impact on Jasper County. As discussed in Chapter 2, winter storms may bring about accumulated ice on

roads, trees, and power lines that create dangerous conditions and cause structural damage. While there is little that can be done to mitigate the accumulation of ice, increasing public education and awareness regarding safety procedures during winter storm events is the highest priority in reducing the population's vulnerability.

4.4.2 Identification and Analysis of Range of Mitigation Options

The majority of damage related to winter storm events is structural in nature, resulting from fallen tree limbs. Though structural damage is the most prevalent form, it is the most difficult to mitigate. Local power companies have a power line right-of-way (ROW) cutting strategy in place, and the County has an ordinance prohibiting planting trees in rights-of-way or utility easements. The primary focus for reducing the county's vulnerability is to increase public awareness, particularly related to the dangers associated with driving during winter storm conditions. Mitigation actions relating to public education, engagement, and notification pertaining to all potential hazards in Jasper County have been identified, and are located in section 4.6 of this document.

There are few other policies, regulations, ordinances or land use trends that relate directly to the mitigation of winter storm events. With this in mind, the mitigation strategies formulated by the committee are focused on awareness and adequate preparation. Many winter storm-related mitigation measures also apply to various other hazards, and are included in section 4.7.

There are no immediate threats to any community character area as a result of winter storms.

There are no specific mitigation strategies for new buildings or infrastructure.

Mitigation options relating to existing buildings and infrastructure are targeted towards ensuring that emergency power sources are adequate, operational, and efficient at all critical facilities.

4.4.3 Mitigation Strategy and Recommendations

The goals, objectives, and action steps for winter storms from the 2007 plan were evaluated by Steering Committee members. The goals and objectives were updated to improve clarity, and each "Action Step" was categorized as completed, in progress, cancelled, or postponed (see Appendix D for this document). With the 2007 plan's "in progress" and "postponed" Action Steps as a starting point, the committee formulated a new list of mitigation Action Items. Updated mitigation action steps for winter storms are coded with "WS."

Goal: Minimize the impacts of winter storms on lives, property, and the economy throughout the County.

Objective 1: Educate the public and government staff on potential impacts of winter storms and increase public awareness of emergency preparations and procedures.

Objective 2: Improve preparedness and response measures to mitigate potential damage from winter storms, including protecting critical facilities.

TABLE 4-5: WINTER STORM ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party
WS1	Install generators at two emergency shelters	**1**	2019	150,000	General Fund or Grant	Jasper County EMA
WS2	Identify and implement new ways to educate public about the dangers posed by winter storms while continuing current educational initiatives	**3**	2014	Staff Time	General Fund	Jasper County EMA
WS3	Ensure adequate supplies of winter storm response materials, such as sand, salt, chainsaws, and safety gear	**2**	2015	Staff Time	General Fund	Jasper County Public Works, Jasper County Fire
WS4	Develop and implement a county-wide winter storm sheltering plan	**4**	2015	Staff Time	General Fund	Jasper County EMA

4.4.4 Special Multi-Jurisdictional Strategy and Considerations

Winter storms affect all of Jasper County and mitigation strategies are applicable to the entire County and all municipalities.

4.4.5 Local Public Information and Awareness Strategy

The primary mitigation strategy involves increased public education and awareness to reduce the potential for personal injury resulting from vehicular crashes. The nature of winter storms (typically predictable events with weather conditions building throughout the day) allows a greater timeframe to generate public warnings, and notification is not as critical as during rapidly occurring events, such as tornados.

Key action steps relating to public information and awareness that apply to all hazards ("AH") are described in detail in section 4.6.

4.4.6 Action Steps Revisions

Completed Action Steps: All Action Steps identified in the 2007 plan were not fully completed due to their ongoing nature. The Steering Committee modified the language of these action items to be more organized and measurable where possible.

Unchanged Action Steps: There were no unchanged action steps from the 2007 plan.

New Action Steps: All action steps from the 2007 plan will carry over to this update with revised wording.

4.5 Floods

4.5.1 Community Mitigation Goals

Flooding has occurred in Jasper County and is typically associated with severe thunderstorms during the Atlantic hurricane season (June–November). The majority of flood damage is limited to facilities within the floodplains of streams and rivers. Jasper County remains a mix of suburban and rural areas, with limited concentrations of urbanized areas containing high percentages of impervious surfaces. The highest priority in the county is mitigating flood damage to roadways lying within the flood hazard boundary.

4.5.2 Identification and Analysis of Range of Mitigation Options

The major implications resulting from flood events relates to structural damages. It is important that the county and each of the cities continue to monitor development adjacent to flood-prone areas (as indicated on floodplain maps) to minimize the impacts of flooding.

Jasper County and the cities of Bogart, Watkinsville, Bishop, and North High Shoals currently participate in the National Flood Insurance Program (NFIP). All municipalities are aware of the county's compliance with NFIP standards as addressed under the Jasper County Comprehensive Plan, which is supported by all municipalities within the county. There are no immediate threats to any community character area as a result of flooding.

Mitigation options relating to new buildings and infrastructure are targeted toward the enforcement of ordinances directing all new construction and development away from identified flood hazard areas.

Mitigation options relating to existing buildings and infrastructure are targeted towards monitoring and recording flood conditions and taking actions to reduce recurring flood damage to facilities (specifically roadways) located within identified hazard areas.

4.5.3 Mitigation Strategy and Recommendations

The goals, objectives, and action steps for flooding from the 2007 plan were evaluated by Steering Committee members. The goals and objectives were updated to improve clarity, and each "Action Step" was categorized as completed, in progress, cancelled, or postponed (see Appendix D for this document). With the 2007 plan's "in progress" and "postponed" Action Steps as a starting point, the committee formulated a new list of mitigation Action Items. Updated mitigation action steps for flooding are coded "FL."

Goa l: Reduce the impact of floods throughout the County through floodplain management and mitigation strategies

Objective 1: Minimize damage to lives and property resulting from floods through policy and mitigation efforts

Objective 2: Pursue policies that work toward protecting new development from the effects of flooding

TABLE 4-6: FLOOD ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party
FL1	Develop county-wide policies to use floodplain areas for forestry, recreation, and green space preservation while limiting new construction	**2**	2016	Staff Time	General Fund	Jasper County EMA, BOC & Planning & Zoning
FL2	Continue to identify and replace deficient bridges and culverts in flood-prone locations including: 1. River Rd. 2. Wicker RD. 3. New Hope Church Rd. 4. Kinard Creek Rd. 5. Cook Rd. 6. Pitts Chapel Rd. 7. Old Adgateville Rd. 8. Ozborne Rd. 9. Benton Rd. 10. Clay Tillman Rd. 11. Guy Jones Rd.	**1**	2014-2019	Unknown	Unknown	Jasper County Public Works
FL3	Continue to enforce and update floodplain maps and ordinances	**3**	2014-2019	Staff Time	General Fund	Jasper County Planning & Zoning
FL4	Continue compliance with NFIP criteria by enforcing Land Development Regulations	**4**	2014-2019	Staff Time	General Fund	Jasper County Planning & Zoning

4.5.4 Special Multi-Jurisdictional Strategy and Considerations

Flood events are typically constrained by the delineation of flood hazard boundaries; however those boundaries can expand based on the intensity of the flood event. Watkinsville, North High Shoals, and unincorporated Jasper County all contain flood-prone areas, with the majority of potential damage falling in unincorporated areas.

4.5.5 Local Public Information and Awareness Strategy

In order to increase public awareness of the risks associated with flood events it is important that the jurisdictional maps illustrating the flood hazard boundaries be publicized and on display in public areas to allow the population to develop a better understanding of the risks associated with construction in flood-prone areas. The nature of floods (typically slow-building events) allows a greater timeframe to generate public warnings, and notification is not as critical as during rapidly occurring events, such as tornados.

4.5.6 Action Steps Revisions

Completed Action Steps: All Action Steps from the 2007 plan were determined to be "ongoing" and were used as the basis for the plan update's Action Items.

Unchanged Action Steps: There were no unchanged action steps from the 2007 plan.

Deleted and/or Revised Action Steps:

All Action Steps identified in the 2007 plan were not fully completed due to their ongoing nature. The Steering Committee modified the language of these action items to be more organized and measurable where possible.

4.6 Earthquakes

4.6.1 Community Mitigation Goals

There is a low probability that an earthquake will occur within Jasper County. Earthquake risk is due primarily to proximity to seismic activity zones in the Appalachian Mountains and fault lines off the shore of South Carolina. In more recent years, minor earthquakes have been felt, although no damage has been reported. Due to a relatively low risk factor, the primary focus for earthquake mitigation in Greene County is outreach and education. Actions relating to public education, engagement, and notification pertinent to all potential hazards, including earthquakes, are included in section 4.7.

4.6.2 Identification and Analysis of Range of Mitigation Options

Mitigation measures relating to structural impacts of earthquake events are related to identifying structures within the county that could sustain significant damage. Non-structural strategies are related to public education and awareness of the risk of earthquake within the county.

There are no existing policies, regulations, ordinances, and/or land use restrictions relating to earthquakes.

4.6.3 Mitigation Strategy and Recommendations

The goal, objectives, and action steps for earthquakes were developed by Steering Committee members. The mitigation action step for earthquakes is coded with "EQ," and is applicable for all jurisdictions in Jasper County.

Earthquake Goal:

Reduce the potential for damage to the general population and personal and public property resulting from the impact of an earthquake.

Earthquake Objective:

Educate the public on the risk of earthquakes within the county, and minimize potential damage by protecting critical facilities and teaching household mitigation strategies

Goal: Minimize the loss of life and property in the event of an eqrthquake.

Objective 1: Educate the public on its role in earthquake preparation and response measures.

Objective 2: Protect critical facilities and other structures from damage in the event of an earthquake.

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party
EQ1	Identify and implement new ways to educate the public on earthquake preparedness	**1**	2014-2015	Staff Time	General Fund	Jasper County EMA
EQ2	Continue to evaluate building codes' ability to protect against earthquake damage and update as needed	**2**	2014-2019	Staff Time	General Fund	Jasper County EMA and Planning & Zoning

4.7 All Hazards

The following Action Items apply to of the hazards found in sections 4.1-4.5.

TABLE 4-7: ALL HAZARDS ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party
AH1	Organize and conduct regular educational outreach activities through a variety of channels, including schools, churches, radio PSAs, refrigerator magnets, pamphlets, flyers, and social media	**1**	2014-2019	Staff Time	General Fund	Jasper County EMA & Local Emergency Planning Committee
AH2	Develop a county-wide sheltering plan in coordination with DFACS and the Red Cross	**2**	2017	Staff Time	General Fund	Jasper County EMA
AH3	Develop a storm spotter training program for county employees	**3**	2014	Staff Time	General Fund	Jasper County EMA
AH4	Develop emergency response training programs for all appropriate county employees	**2**	2015	Staff Time	General Fund	Jasper County EMA
AH5	Develop a county-wide social media policy	**3**	2014	Staff Time	General Fund	Jasper County BOC
AH6	Develop a county-wide policy for using Facebook, Twitter, and other social media for public education about hazards	**3**	2014	Staff Time	General Fund	Jasper County BOC
AH7	After developing a county-wide social media and internet policy, develop a public awareness site with information on emergencies, including contact numbers, shelters, and home safety procedures	**4**	2015	Staff Time	General Fund	Jasper County BOC and EMA
AH8	Provide weather radios to elderly citizens and those in high-risk areas	**4**	2015	$1,000	General Fund or Grants	Jasper County EMA

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party
AH9	Place signs along the roadway to alert people of to the County's emergency preparedness information	**4**	2014-2015	$3,000	General Fund or Grants	Jasper County EMA and Public Works
AH10	Run a coordinated campaign to significantly increase the percentage of County residents registered for CodeRed alerts	**1**	2014-2019	Staff Time	General Fund	Jasper County EMA
AH11	Work with Tax Assessors Office to update critical facilities values, square footage and GIS information	**3**	2015	Staff Time	General Fund	Jasper County Tax Assessor and Jasper County EMA

Chapter 5 Technological Hazard Mitigation Goals and Objectives

TABLE 5-1: SUMMARY OF UPDATES TO CHAPTER 5

Hazard	Section	Update
Hazardous Material Releases	5.1.1 Community Mitigation Goals	Text Revisions
	5.1.2 Identification & Analysis of Range of Mitigation Options	No changes
	5.1.3 Mitigation Strategy and Recommendations	Multiple changes/revisions
	5.1.4 Special Multi-Jurisdictional Strategy and Considerations	No changes
	5.1.5 Local Public Information and Awareness Strategy	Text Revisions
	5.1.6 Action Steps Revisions	Text Revisions

5.1 Hazardous Material Releases

5.1.1 Community Mitigation Goals

Hazardous material releases are difficult to predict because those producing the greatest damages are typically associated with transportation accidents (tractor trailers overturning or train derailment). Because of the location of major transportation corridors (both road and rail) intersecting the county and in proximity to key critical facilities, the highest priority is to develop an assessment of the county's vulnerability to hazardous material releases.

The PDM Planning Committee considered mitigation of the effects of a hazardous material releases (the most significant technological hazard that may affect the county) and attempted to identify possible measures to address training and awareness concerns with a focus toward prevention of incidence and protection of the environment.

5.1.2 Identification and Analysis of Range of Mitigation Options

In addressing mitigation for hazardous materials, both structural and non-structural actions were considered, and ultimately no structural projects were deemed feasible over the five-year life of the plan update.

Occurrences of hazardous material releases have the potential to occur with greater frequency on or near roads, rail lines and bridges, making collaboration and communication with both the public and entities that store and transport hazardous materials a high priority.

There are no policies, regulations, ordinances or land use trends that relate to the mitigation of hazardous material releases.

There are no immediate threats to any community character area as a result of hazardous material releases.

There are no specific mitigation strategies for new buildings or infrastructure.

There are no specific mitigation strategies for existing buildings or infrastructure outside of emergency response facilities.

5.1.3 Mitigation Strategy and Recommendations

The goal, objectives, and action steps for winter storms from the 2007 plan were re-evaluated by Steering Committee members. The goal and objectives were revised for increased clarity, applicability, and organization. The Steering Committee completed a report on mitigation actions identified in the previous plan (see Appendix D for this document), and revised these as necessary. Updated mitigation action steps for Hazardous Material Releases are coded with "HMR."

Goal 1: Mitigate the potential loss of life and property resulting from the release of hazardous materials.

Objective 1: Ensure proper training of city and county response personnel for hazardous material releases

Goal 2: To reduce the negative impacts of hazardous materials releases on lives, property and the environment.

Objective 2: Ensure that warning and communication systems are able to meet the needs of response personnel and the public.

TABLE 5-2: HAZARDOUS MATERIAL RELEASE ACTION ITEMS

ID	Action Item Description	Priority	Timeframe	Estimated Cost	Funding Source	Responsible Party
HMR1	Offer hazardous material operations and technician training to emergency personnel	**3**	2014-2019	Staff Time	General Fund	Jasper County Fire/Oconee Area Haz-Mat Team
HMR2	Do annual tabletop exercise involving all responding organizations on hazardous material spills	**5**	2014-2019	Staff Time	General Fund	Jasper County Fire/Oconee Area Haz-Mat Team
HMR3	Purchase two extra-large Hazwik Chemical Spill Truck Kits to store on the Special Ops Trailer	**2**	2018	$8,000	General Fund or Grants	Jasper County Fire/Oconee Area Haz-Mat Team
HMR4	Purchase a fully equipped hazardous materials response truck	**1**	2018	$500,000	Grants	Jasper County Fire/Oconee Area Haz-Mat Team
HMR5	Continue to evaluate and review hazardous materials response plan	**4**	2014-2019	Staff Time	General Fund	Jasper County Fire/Oconee Area Haz-Mat Team
HMR6	Offer hazardous material operations and technician training to new emergency personnel	**4**	2014-2019	Staff Time	General Fund	Jasper County Fire/Oconee Area Haz-Mat Team

5.1.4 Special Multi-Jurisdictional Strategy and Considerations

There are no special multi-jurisdictional requirements necessary for hazardous material releases. A potential event is most likely to occur near transportation lines, but is nevertheless possible in any jurisdiction.

5.1.5 Local Public Information and Awareness Strategy

The PDM Committee recommends utilizing the local media and emergency response agencies in a coordinated effort to provide Public Service Announcements, make available persons to publicly address the dangers associated with hazardous materials release, and any applicable preventative measures, and also to provide contact information to facilitate communication with the public.

5.1.6 Action Steps Revisions

Completed Action Steps: The majority of Action Steps identified in the 2007 plan were completed, and none were cancelled. Several Action Steps were postponed or in progress, and were carried over to the plan update.

New Action Steps: All Action Items in the plan update have been carried over from the 2007 plan.

Chapter 6: Executing the Plan

TABLE 0-1: SUMMARY OF UPDATES TO CHAPTER 6

Section	Update Summary
6.1 Implementation Action Plan	Text revisions; new mitigation action prioritization process described
6.2 Evaluation, Monitoring, Updating	Text revisions
6.3 Multi-Jurisdictional Strategy and Considerations	Text revisions
6.4 Plan Update and Maintenance	Text Revisions

6.1 Implementation Action Plan

The Jasper County Emergency Management Agency served as the primary local contact during the development of the Jasper County Pre-Disaster Mitigation Plan Update. The Northeast Georgia Regional Commission (NEGRC) assisted by facilitating the planning process and assembling the relevant information into the planning document. Upon review and approval by the Georgia Emergency Management Agency (GEMA), all participating jurisdictions will formally adopt the planning document by resolution.

Under the direction of the Jasper County Board of Commissioners, the Director of the Jasper County Emergency Management Agency (EMA) assumes responsibility for the maintenance of the plan and for coordinating the pursuit of implementation strategies set forth within the document. Following a timeframe of no more than five years (2014-2018), the EMA Director will convene a planning committee to update and revise the planning document as well as the mitigation strategies per FEMA standards.

It is imperative that the EMA monitors the progress of the plan and the implementation of the identified strategies to ensure that pre-disaster mitigation efforts are maximized throughout the county.

Mitigation strategies within this document were revised, developed and prioritized by the steering committee. NEGRC facilitated a quantitative prioritization process using the STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) method. For every identified mitigation action the steering committee was charged with assigning a rating under each STAPLEE component with a "+" for favorable, a "-" for less favorable, and "N/A" for not applicable. These symbols were then assigned numerical values as follows: "+" = 1, "-" = -1, and "N/A" = 0. NEGRC staff calculated the scores for each mitigation action and presented them to the steering committee. Input was obtained by steering committee members then qualitatively reviewed and revised the numerical prioritization, where necessary.

Upon adoption of the 2014 PDM Plan Update, Jasper County and all municipalities should incorporate its Pre-Disaster Mitigation Plan into its next Short Term Work Program Update and future Comprehensive Plan updates to create a more cohesive planning document.

Through the revision of the Short Term Work Program the Pre-Disaster Mitigation (PDM) Plan should be distributed to county and municipal agencies as well as made available at the Short Term Work Program public meetings to inform county residents and staff of the PDM plan's strategies. Additionally, the PDM planning committee should be consulted in the Comprehensive Plan participation process to ensure that the PDM plan is adequately incorporated into the Comprehensive Plan update.

6.2 Evaluation, Monitoring, Updating

The Jasper County Pre-disaster Mitigation Plan will be updated throughout the five-year cycle from 2013-2017. The organizational framework of PDM Planning Committee will be used to solicit input from representative county and municipal departments. These departments and their staff are knowledgeable about PDM Planning and can assist in monitoring plan implementation. The overall responsibility for coordinating this process will be the Director of the Jasper County Emergency Management Agency.

The Jasper County EMA Director will schedule any required meetings to facilitate the review process. The extent and level of participation of these meetings will be based on the prior year's mitigation activities as determined by the EMA Director. Involvement will include the County and all municipalities. The results of these planning meetings will be recorded and any required changes or amendments to the plan reported to GEMA by Jasper County Emergency Management Agency.

It is anticipated that regular updates will be made to the GEMA On-line Tool. These updates will include amendments and additions to existing critical facilities. In some cases, information on selected sites was unavailable during the plan's preparation; new information will be added as it becomes available. Additional "points" or critical facilities will be added that exist as secondary structures within governmental facilities. Dollar valuations of critical facilities will be updated as new assessments occur to provide an accurate estimate of potential losses. The Jasper County Emergency Management Agency will oversee these updates through their access to the GEMA On-line Tool.

6.3 Multi-Jurisdictional Strategy and Considerations

All goals, objectives and strategies set forth in this planning document are relevant to Jasper County as well as the cities of Watkinsville, Bogart, Bishop, and North High Shoals unless specifically stated otherwise. Each of the jurisdictions participated in the planning process and has authorized the Jasper County EMA to act on its behalf with regards to disaster mitigation as set forth in the Service Delivery Strategy.

6.4 Plan Update and Maintenance

During the PDM Planning process, public involvement and participation was invited. The purpose of this involvement was to inform and educate the public about PDM and receive specific information about hazard events, critical facilities, and mitigating any potential losses. In updating the PDM Plan, public involvement will be solicited through public notification. Any required or special meetings will be scheduled as required and at the discretion of the Jasper County EMA in coordination with the Jasper County Manager's Office. The Jasper County EMA will facilitate updates to the PDM Plan on a regular basis that involve administrative tasks as well as updates to the GEMA On-line Tool. More specifically, new and updated data will be added to the critical facilities list as they change. All these updates will cover all jurisdictions.

Chapter 6 7.0 Conclusion

TABLE 6-1: SUMMARY OF CHANGES TO CHAPTER 7

Section	Update Summary
7.1 Conclusion Summary	Text revisions
7.2 References	Revised to reflect updated references

7.1 Conclusion Summary

The planning process has provided Jasper County officials, emergency personnel, staff and the general public with a greater understanding of the county's vulnerability to natural and technological hazards. This process has allowed the county to develop mitigation measures to minimize the adverse impacts resulting from hazard events.

As the community moves forward in implementing the identified mitigation strategies, periodic reviews will be conducted to assess the continued relevance of the established goals and objectives and define new projects worthy of funding. Although the implementation of mitigation measures may require the expenditure of funds in some cases, it has been proven throughout the nation and the world that dollars spent on hazard mitigation can ultimately save the local government over the long-term by minimizing the community's vulnerability to negative impacts of natural and technological hazards by protecting people and property. Therefore, it is important that the pre-disaster mitigation planning process retain strong political and public support ensuring that the identified implementation strategies can be pursued.

The information contained in the Jasper County PDM Plan is intended to function as a tool for planning for implementation of future mitigation actions. It represents the involvement and contributions of numerous key governmental departments and their representatives. As the county continues to grow and develop, this plan's information will be updated to address these changes and accommodate additional local needs. This PDM Plan will essentially become a 'living document,' used on a daily basis and adjusted with changes in the community.

7.2 References

Documents/Publications

- Federal Emergency Management Agency Local Multi-Hazard Mitigation Planning Guidance (2008)
- FEMA Multi-Jurisdictional Pre-Disaster Mitigation Plan Update Guidance Template (2009)
- FEMA State and Local Mitigation Planning How-To Guide (2007)
- 2011 State of Georgia Hazard Mitigation Strategy
- 2009 Jasper County Comprehensive Plan

Websites

- Federal Emergency Management Agency: www.ready.gov
- Georgia Emergency Management Agency: www.gema.state.ga.us
- Georgia Department of Natural Resources: www.dnr.state.ga.us/dnr/environ
- Office of Hazardous Materials Safety: hazmat.dot.gov/index.html
- National Climatic Data Center: www.ncdc.noaa.gov/oa/ncdc.html
- Georgia Forestry Commission: www.gfc.state.ga.us
- Federal Emergency Management Agency: www.fema.gov
- Georgia Department of Community Affairs: www.dca.state.ga.us
- State of Georgia Government: www.georgia.gov

Appendix A:

Hazard Identification, Risk Assessment, & Vulnerability

Severe Thunderstorms

Referenced in Chapter 2 – Section 2.1

As discussed in Chapter 2 – Section 2.1 Severe Thunderstorms include Tornados, Hail, and Lightning and are each described in the following section.

Description

Thunderstorms are most prevalent in the central and southern United States. Each year, an average of 100,000 thunderstorms occurs. A thunderstorm forms from rapidly rising warm air that is lifted by either a warm or cold front. Moisture must also be present under these conditions to produce a thunderstorm that can occur singly, in clusters, or in lines. A thunderstorm can also produce other hazards that include: heavy rain, strong winds, hail, lightening, and tornados.

The National Weather Service provides information about thunderstorms through watches and warnings. A thunderstorm watch means that winds in excess of 58 miles per hour and/or hail are likely to develop. A warning means a thunderstorm has been sighted and everyone should proceed to a safe location. In general, thunderstorms can cause significant damage and disruption of services. Power outages can occur and traffic flows can be severely disrupted from thunderstorms. Thunderstorms also pose a high risk for loss of life and advisories help protect the public from this hazard.

Hail:

A hailstone is a product of the updrafts and down drafts that develop inside the cumulonimbus clouds of a thunderstorm, where super cooled water droplets exist. The transformation of droplets to ice requires not only a temperature below 32F (0C), but also a catalyst in the form of tiny particles of solid matter, or freezing nuclei. Continued deposits of super cooled water cause the ice crystals to grow into hailstones. What we generally call hailstones have passed through several stages of accretion, from the first stage, called graupel, to small hail, to hailstones. Sometimes only the first stage is reached; at other times hailstones from two or more stages may fall to earth simultaneously. By scientific agreement, an icy conglomeration is called a hailstone when it reaches a diameter of 1/5 inch (5 mm). In all its forms, hail usually occurs in relatively short episodes rather than as steady precipitation.

Lightning:

By definition all thunderstorms contain lightning, which occurs when the difference between the positive and negative charges becomes great enough to overcome the resistance of the insulating air and to force a conductive path for current to flow. Electrical potential can be as much as 100 million volts and strikes can proceed from cloud to cloud, cloud to ground, or from ground to cloud. The summer months of June through August represent the peak of lightning strikes in the state of Georgia.

Tornadoes:

Tornados vary in strength that is determined by their wind speeds ranging from 40-318 miles per hour. All tornados come from the same conditions: a violent column of air reaching from a thunderstorm to the ground. This column of air can also travel across land, covering up to a one-mile width over a distance of up to fifty miles. The path a tornado travels is unpredictable.

In Georgia, tornado season occurs from March through August. They can, however, occur in any given month if the right atmospheric conditions exist. In most cases, tornados strike in the afternoon and evening hours. A tornado's conditions typically involve a layer of cold air overriding a layer of warm air that forces the warm air to rise quickly. This combination of air temperatures is most often produced from the results of thunderstorms and hurricanes but also from wildfires.

The destructive capacity of tornados and their inherent high winds can be severe. Their winds can remove buildings, structures, and vegetation that lie in their path. A tornado's wind can also carry debris that can result in serious damage when impacted with another objects or people. Each year, approximately 1,000 tornados are reported that result in 80 deaths and over 1,500 injuries.

A tornado's winds typically travel at 30 miles per hour and vary between 0-70 miles per hour. In many instances, a tornado's path moves from southwest to northeast but the direction can shift or change at any moment. A tornado's speed determines its classification as listed below:

Category F0: Gale Tornado (40-72 mph). Light Damage

Category F1: Moderate Tornado (73-112). Moderate Damage

Category F2: Significant Tornado (113-157 mph). Considerable Damage

Category F3: Severe Tornado (158-206). Severe Damage

Category F4: Devastating Tornado (207-318 mph). Devastating Damage

Category F5: Incredible Tornado (261-318 mph). Incredible Damage

This classification system is known as the Fujita Damage Scale, or "F Scale," and is used to measure the potential damage caused by a tornado. For each category, certain damages can be expected as listed below:

Category F0: Damage to chimney, tree limbs, and outdoor signs.

Category F1: Damage to roofing materials, mobile homes, and cars blown off road.

Category F2: Roofs torn from houses, boxcars overturned, and large trees uprooted.

Category F3: Roof and walls torn away, trains overturned, and cars lifted off ground.

Category F4: Houses leveled, structures removed, and large objects become airborne.

Category F5: Houses lifted off foundations and swept away, automobiles moved over 100 meters, and trees debarked.

While this scale is used only as a guide, it does provide a rating system that qualifies a tornado's destructive potential.

Flooding

Referenced in Chapter 2 – Section 2.2

Description

Flooding is a natural event that occurs in any given geographical area and is largely dependent topographic and physical characteristics, such as elevation, vegetative cover, and drainage. An area is likely to flood if these characteristics are present and when large amounts of rainfall occur over short and/or long periods of time. When a large amount of rain falls in a short period of time, flash floods can result that typically cause minimal damage. When rain continuously falls over a longer period of time, soils become saturated and/or supersaturated and lose their ability to absorb water. In this set of circumstances, conditions are conducive to flooding as water moves to low-lying areas. It is the type of flooding that causes the most significant damage.

The potential for floods to occur can also increase as more and more land is developed and made impervious to water. Roads, parking lots and driveways, for example, prevent the ground from absorbing water. If this water is not adequately transferred or contained, it can cause flooding. Storm water management is intended to mitigate the effects of runoff water from developed areas, reducing the potential for flooding and other effects.

Flooding, more generally, is a natural event for rivers and streams that occurs as increased flows of water extend above banks and into floodplains. These floodplains lie adjacent to rivers and streams and are subject to reoccurring floods. Flooding is the most common natural hazard as it occurs each year. Property within the floodplain is similarly susceptible to damage and destruction. Many homes throughout the United States exist within these floodplains and are vulnerable to floods. As nine million homes actually exist in the floodplains nationally, the effects of flooding result can also result in loss of life and significant property damage. Each year, 150 deaths occur from flooding. When property damage and loss of life are combined, flooding remains one of the most devastating hazards confronting many communities.

Winter Storms

Referenced in Chapter 2 – Section 2.3

Description

Winter storms are characterized by the threat of freezing rain and ice storms. When surface temperatures fall below 32 degrees Fahrenheit, freezing rain develops. Freezing rain glazes surfaces, objects, and vegetation with ices that can cause dangerous conditions. Heavy accumulations of ice on power lines and trees can result in power outages, property damage, and extremely hazardous conditions for motorists and pedestrians. The public is advised on these conditions through winter

storm "watches" and "warnings." A winter storm watch means that severe winter weather may affect your area while a winter storm warning means a winter storm is expected.

Sleet can also be associated with winter storms. It is appears as frozen rain drops or ice pellets that bounce after hitting the ground. Unlike ice associated with winter storms, sleet does not accumulate on utility lines or trees. It does, however, result in hazardous driving conditions along roadways.

Wildfires

Referenced in Chapter 2 – Section 2.4

Description

The uncontrollable spreading of fire through vegetated or forested areas occurs across the United States and is known as a wildfire. Georgia is located in one of the nation's highest danger zones for wildfires, due to the large amount of forested areas. Wildfires are grouped into three different classes:

1. **Surface Fire**: The most common type that burns slowly on the forest floor and damages or kills trees.
2. **Ground Fire**: A fire caused by lightening burning on or below the forest floor.
3. **Crown Fire**: A rapidly spreading fire that spreads by moving across the tops of trees.

Wildfires are typically recognized by dense smoke that covers many miles. Droughts can create conditions suitable for a wildfire and weather conditions (e.g., temperature, humidity, and wind) affect a wildfire's severity. Wildfires result from both human and natural causes. The leading cause is human where people start fires either accidentally or by arson. Lightening that strikes and ignites vegetative fuel is the second leading cause of wildfires.

Drought

Referenced in Chapter 2 – Section 2.5

Description

Drought is a hazard caused by the absence of water and/or moisture over an extended period of time. Depending on their duration, droughts are categorized in severity as listed below:

1. **Short Term**: 1-3 months
2. **Intermediate**: 4-6 months
3. **Long Term**: > 6 months

Agriculture and the cultivation of crops are particularly threatened by a drought event. The threat of wildfires is also heightened during a period of drought. More generally, any period of drought can affect water quality and availability to communities. Local water restrictions typically go into effect during period of drought.

Flood

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

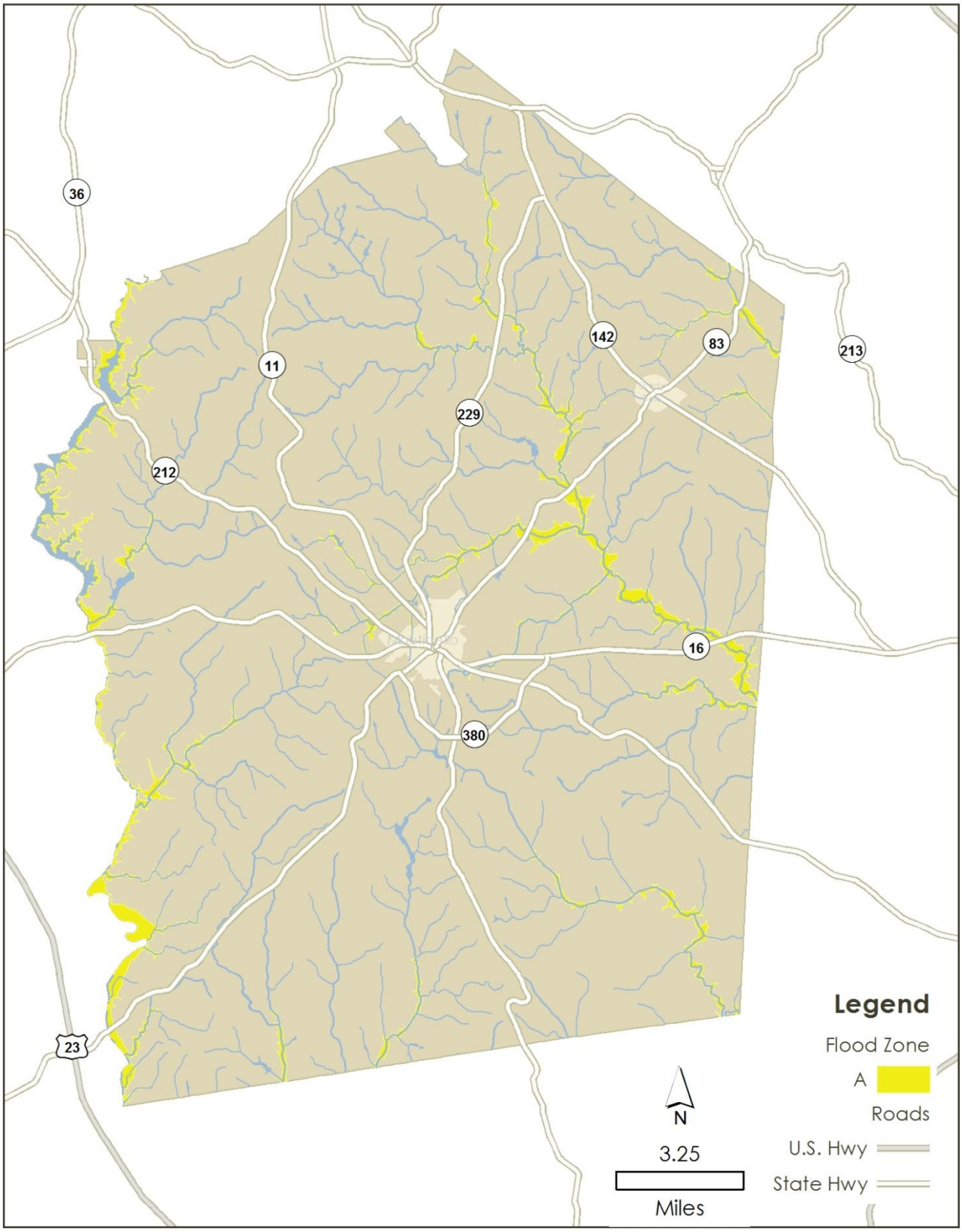
	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
Total	**10,159**	**1,396**	**13.7%**	**$859,468,535**	**$118,104,092**	**13.7%**	**13,614**	**1671**	**12.3%**

Task B. Determine whether (and where) you want to collect additional inventory data.

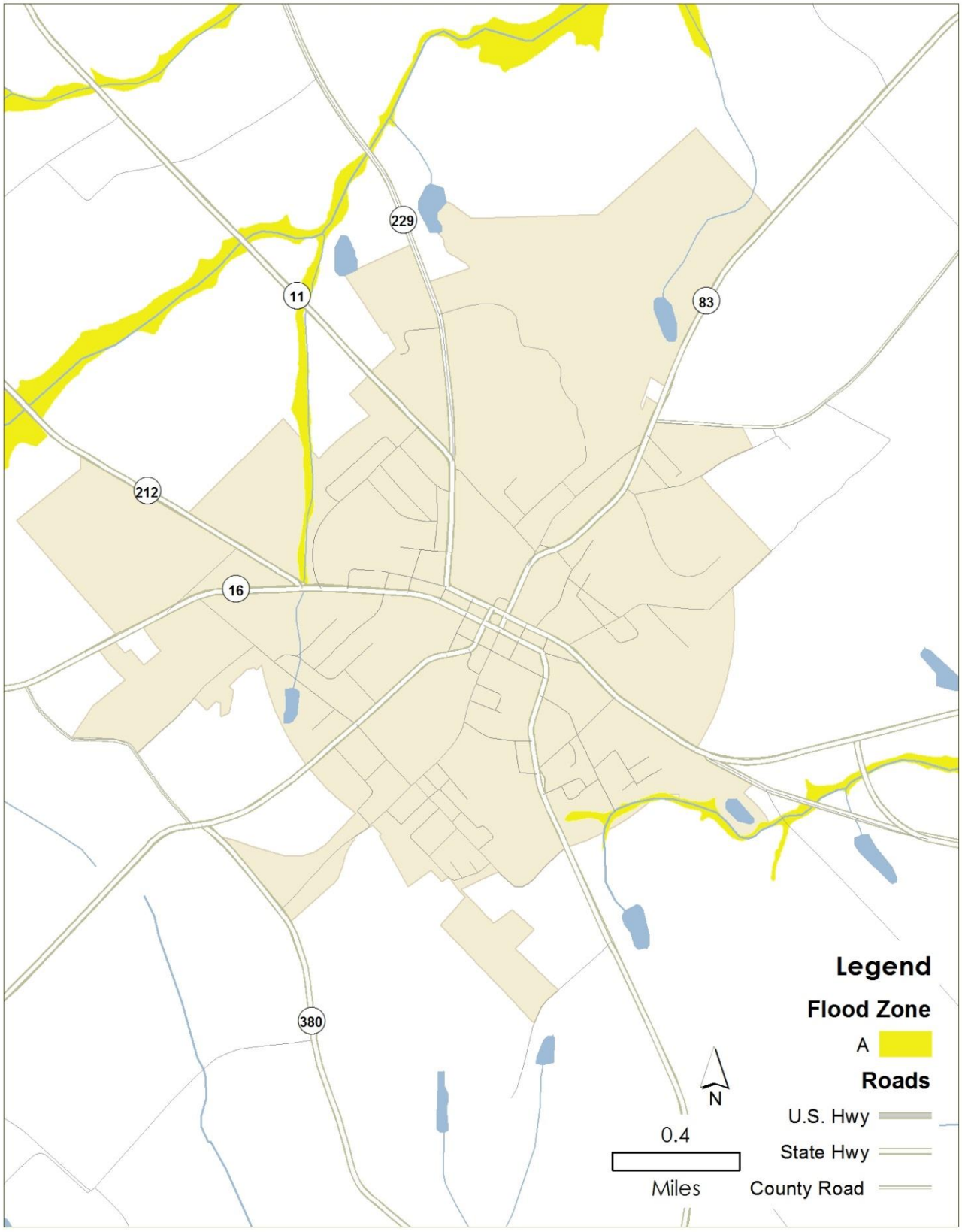
	Yes	No
1. Do you know where the greatest damages may occur in your area?	x	
2. Do you know whether your critical facilities will be operational after a hazard event?	x	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	x	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	x	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	x	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		x
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		x

Multiplier for persons per household = 2.61 (2010 Census)
Utilized LUCA residential address points to determine # households by LU category
Agriculture includes conservation use exemption properties
For ppl hazard area - # people based on those properties which have a portion of land in the floodplain (not necessarily the structure itself)
For # structures in hazard area, utilize those parcels which have a portion of land in the floodplain, assume one structure per parcel
For value of structures in hazard area, assume same percentage of structures in hazard area with total value in community

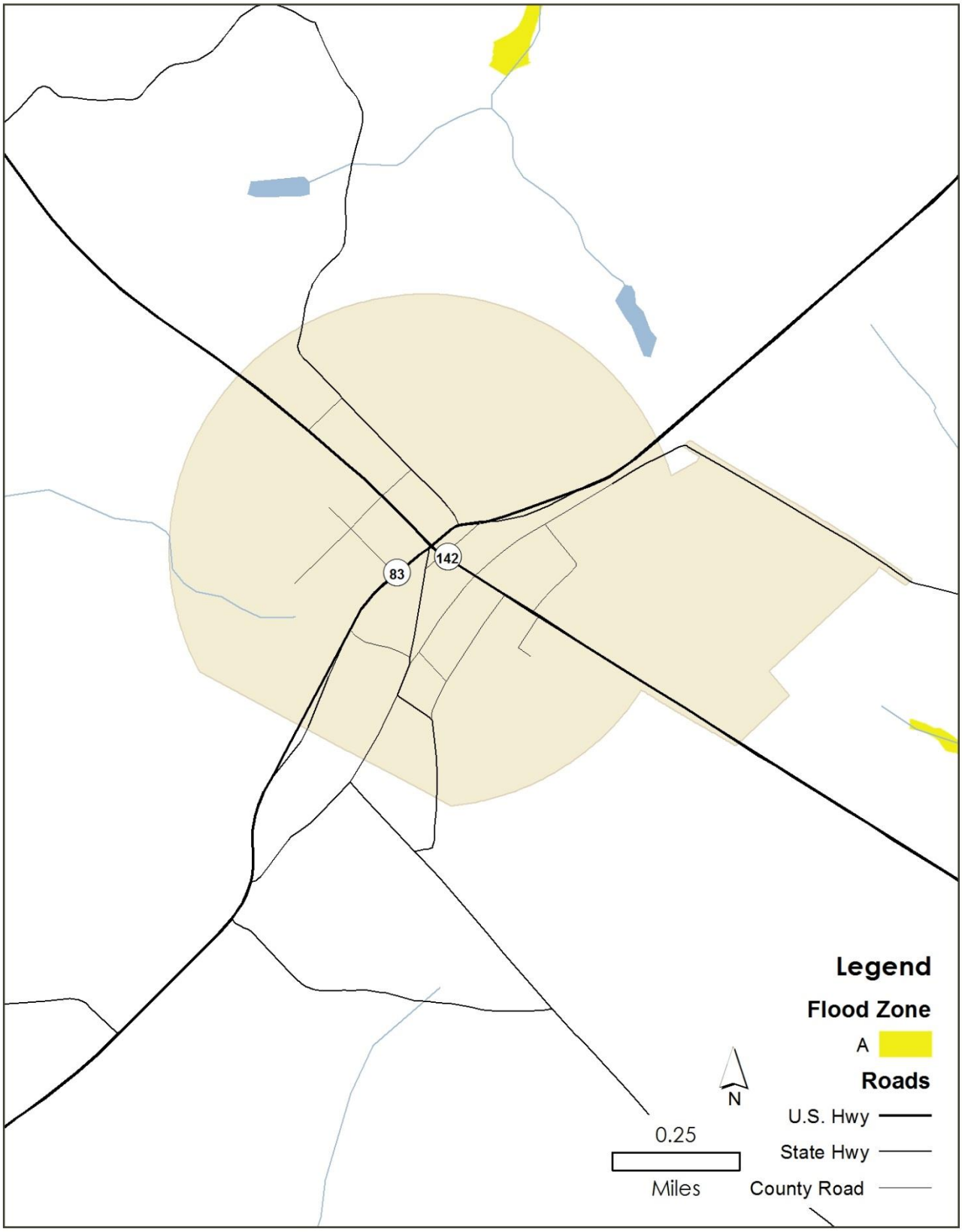
Map 1: Jasper County Floodplains: 2013 Pre-Disaster Mitigation Plan



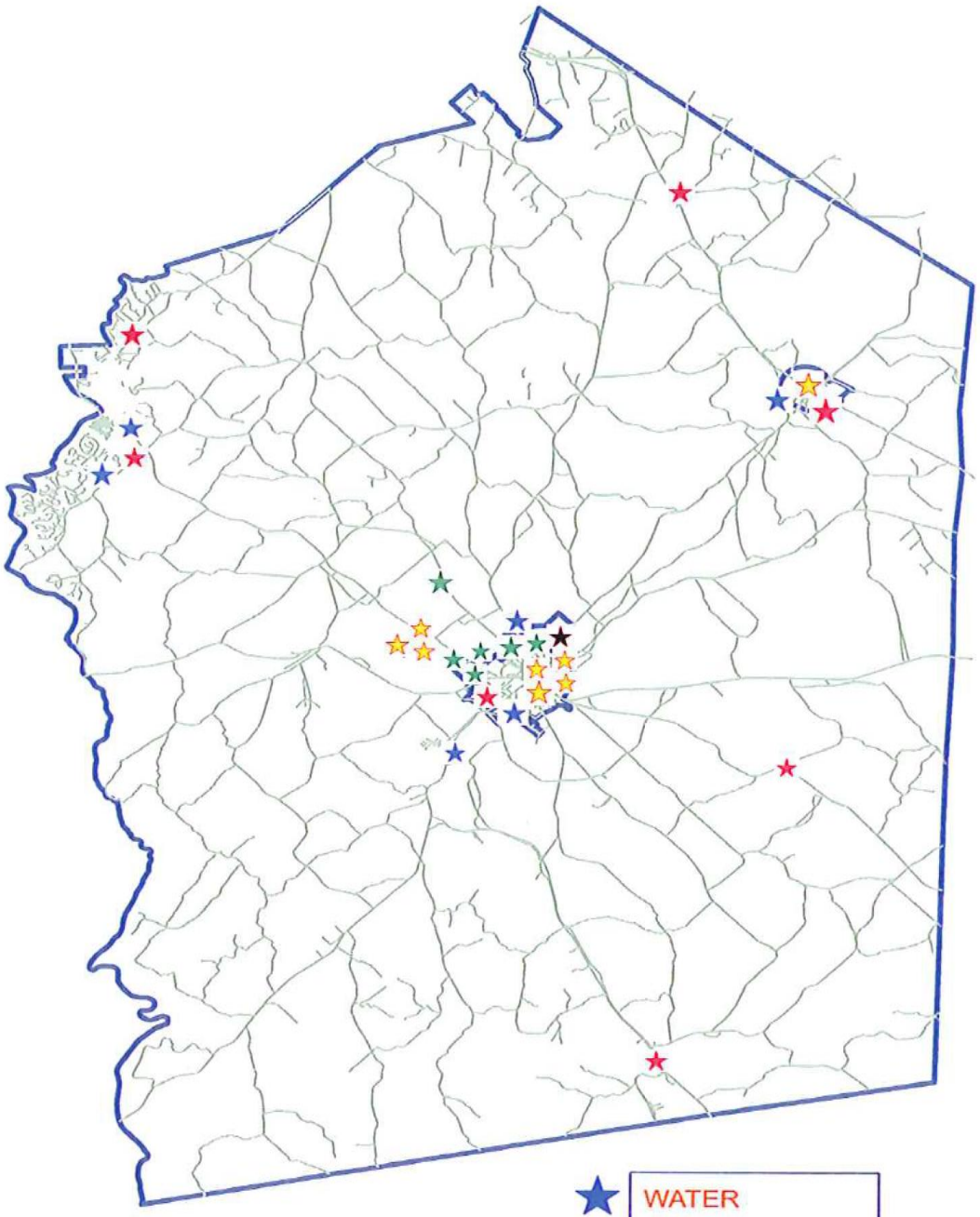
Map 2: Monticello Floodplains: 2013 Pre-Disaster Mitigation Plan



Map 3: Shady Dale Floodplains: 2013 Pre-Disaster Mitigation Plan



JASPER COUNTY CRITICAL FACILITIES



WATER
FIRE
GOVT FACILITY
SCHOOL
HOSPITAL

N

Map Created October 8, 2012
Jasper County Assessors GIS

2014 Critical Facilities						
Facility Name	Essential	Transportation	Lifeline	Important	Vulnerable Population	Facility Type
Jasper County 911	TRUE	FALSE	TRUE	TRUE	FALSE	Emergency Services
Jasper County High School	FALSE	FALSE	FALSE	TRUE	FALSE	High School, Public
Jasper County Health Dept	FALSE	FALSE	FALSE	TRUE	FALSE	Other
Jasper County Public Works	FALSE	TRUE	FALSE	FALSE	FALSE	Other
Jasper Memorial Hospital	TRUE	FALSE	TRUE	TRUE	TRUE	Hospital, Emergency
Jasper County Library	FALSE	FALSE	FALSE	TRUE	FALSE	Library
Monticello Police Dept.	TRUE	FALSE	TRUE	TRUE	FALSE	Police Station
Jasper Co. Primary School	FALSE	FALSE	FALSE	TRUE	TRUE	Primary School
Piedmont Academy, Inc.	FALSE	FALSE	FALSE	TRUE	TRUE	Private School
Jasper Co. Sheriff's Office/Jail	TRUE	FALSE	TRUE	TRUE	TRUE	Sheriff's Office, County Jail
Monticello City Hall	FALSE	FALSE	FALSE	TRUE	FALSE	City Hall
Shady Dale City Hall	FALSE	FALSE	FALSE	TRUE	FALSE	City Hall
Jasper County Courthouse	FALSE	FALSE	FALSE	TRUE	FALSE	Courthouse
Washington Park Elementary School	FALSE	FALSE	FALSE	TRUE	TRUE	Elementary School
Hillsboro Volunteer Fire Dept.	TRUE	FALSE	TRUE	TRUE	FALSE	Fire Station
Jackson Lake Volunteer Fire Dept.	TRUE	FALSE	TRUE	TRUE	FALSE	Fire Station
Monticello Fire Department	TRUE	FALSE	TRUE	TRUE	FALSE	Fire Station
North Alcovy Volunteer Fire Dept.	TRUE	FALSE	TRUE	TRUE	FALSE	Fire Station
Piedmont Volunteer Fire Dept.	TRUE	FALSE	TRUE	TRUE	FALSE	Fire Station
Shady Dale Volunteer Fire Dept.	TRUE	FALSE	TRUE	TRUE	FALSE	Fire Station
Jasper County Middle School	FALSE	FALSE	FALSE	TRUE	TRUE	Middle School
Senior Center	FALSE	FALSE	FALSE	FALSE	TRUE	Other
Farrar Volunteer Fire Station	TRUE	FALSE	TRUE	TRUE	FALSE	Fire Station
Monticello Water Treatment Plant	TRUE	FALSE	TRUE	TRUE	FALSE	Wastewater Treatment

Report of Accomplishments 2009-2014

Action Item	Status	Comments	Carry Over?
Tornados			
Construct a shelter in manufactured home parks.	Postponed	Lack of Funding	Yes
Educate those in vulnerable areas of safety measures they can take through pamphlets and flyers.	In Progress (2014-2018)	Continuous through media	
Utilize the effectiveness of the Mass Notification system to alert the public of any immediate threat	In Progress (2014-2018)	Continuous use of current CodeRed System	
Utilize local newspapers to encourage the public to buy weather alert radios	Complete/In Progress	Ongoing program	
Involve the use of social media (Facebook, Twitter, etc.) to educate and alert the public of potential threats.	Postponed	Need Countywide policies established for social media	
Create and maintain a public awareness website which includes information on emergencies such as contact numbers, emergency shelters, and home safety procedures."	Postponed	Lack of Funding - Yes	Yes
Run ads in the local newspapers explaining the use and protocol of the Mass Notification system.	Complete/In Progress	First series of articles were complete when system was implemented.	
Run ads in the local newspapers explaining the use and protocol of the Tornado Warning Sirens.	Complete		
Involve the use of social media (Facebook, Twitter, ect.) to educate and alert the public of potential threats.	Postponed	Need Countywide policies established for social media	Yes
Add 4 sirens throughout the county.	Completed	5 Sirens Countywide	
Create an emergency radio station to utilize in the event of a tornado or other emergency situation.	Postponed	Lack of Funding - Yes	Yes
Place signs along the roadway to alert people of radio stations with weather updates and emergency information.	Postponed	Lack of Funding - Yes	Yes
Utilize HAM radio operators in notifying the public.	Canceled	Lack of Operators in County	

Action Item	Status	Comments	Carry Over?
Drought/Wildfire			
Create and implement fire safety awareness programs for county/city employees.	Complete		
Inform the public through newspaper ads and flyers of the importance of clearing underbrush a safe distance from house.	Complete		
Inform the public through newspaper ads and flyers of 911 signs available through the Jasper County Fire Department.	Complete		
Involve the use of social media (Facebook, Twitter, etc.) to educate and alert the public of potential threats.	Complete		
Develop a protection plan for critical facilities in wildfire hazard areas.	Postponed	Need Countywide policies established for social media	Yes
Identify vulnerable populations in high hazard areas and notify residents of action steps they can take to protect their property and lives.	Complete		
Enforce burning regulations and penalties regarding burn permits.	Complete		
Thunderstorm Winds and Lightning Damage			
Provide weather radios to elderly citizens and those in high risk areas.	Postponed	Lack of Funding	Yes
Implement a public awareness program to encourage citizens to purchase weather radios.	In Progress (2014-2018)	Continuous through media	
Utilize the effectiveness of the Mass Notification System to alert the public of any immediate threat	In Progress (2014-2018)	Continuous use of current CodeRed System	
Using ads in the local paper encourage the public to purchase and utilize power surge strips to reduce damage to property.	In Progress (2014-2018)	Continuous through media	
Ensure that all critical facilities are properly grounded and install lightning rods where necessary.	Complete		

Action Item	Status	Comments	Carry Over?
Create a "telephone book" style pamphlet that includes information on emergencies such as contact numbers, emergency shelters, and home safety procedures.	Complete		
Host information booths at local festivals to inform the public of emergency procedures offered to them.	Complete		
Involve the use of social media (Facebook, Twitter, etc.) to educate and alert the public of potential threats.	Postponed	Need Countywide policies established for social media	
Flooding			
Distribute pamphlets on low water crossing hazards.	Complete		
Contact the DOT and local PE's to examine some areas prone to flood for possibly upgrading pipe size and determine the needed opening to let water flow.	Complete		
Involve the use of social media (Facebook, Twitter, etc.) to educate and alert the public of potential threats.	Postponed	Need Countywide polices established for social media	Yes
Use floodplain areas for forestry, recreation, and greenspace preservation.	Complete		
Incorporate flood plain and runoff management considerations in land use planning and zoning regulations.	Complete		
Winter Storms			
Install generators at two emergency shelters.	Postponed	Lack of Funding	Yes
Make available emergency preparedness pamphlets to citizens	Postponed	Lack of Funding	Yes
Encourage the public, through flyers and newspaper ads, to purchase weather radios.	In Progress (2014-2018)	Continuous through media	
Involve the use of social media (Facebook, Twitter, etc.) to educate and alert the public of potential threats.	Postponed	Need Countywide polices established for social media	
Utilize the effectiveness of the Mass Notification system to alert the public of any immediate threat	In Progress (2014-2018)	Continuous use of current CodeRed System	

Action Item	Status	Comments	Carry Over?
Earthquakes			
Distribute flyers and pamphlets to citizens on earthquake preparedness	Postponed	Lack of Funding	Yes
Map all critical facilities in the hazard area and monitor earthquake data.	Complete		
Involve the use of social media (Facebook, Twitter, etc.) to educate and alert the public of potential threats	Postponed	Need Countywide policies established for social media	
Hazardous Materials Spills			
Develop and implement a public awareness program to inform the public on reporting incidents and necessary information to 911 Communications.	Complete		
Offer hazardous material operations and technician training to emergency personnel	Complete		
Do annual tabletop exercise involving all responding organizations on hazardous material spills	In Progress (2014-2018)		
Purchase two extra-large Hazwik Chemical Spill Truck Kits to store on the Special Ops Trailer	Postponed	Lack of Funding	Yes
Purchase a fully equipped hazardous materials response truck	Postponed	Lack of Funding	Yes
Develop a specific plan for hazardous material spill response	Complete		
Define in a written plan responsible parties for clean-up of hazardous material spills	Complete		

Action Item	Status	Comments	Carry Over?
All Hazards			
Ensure that all shelters are Red Cross certified and current on inspections	In Progress (2014-2015)		
In cooperation with the Jasper County DFACS, designate a special needs shelter	Postponed	Lack of Resources	Yes
Evaluate the availability of volunteers and training to operate the shelters	Complete		
Ensure that all offices have an updated safety plan in place that addresses natural hazards	Complete		
Present trainings to all county/city offices on emergency procedures	In Progress (2014-2018)		
Test emergency plans for all buildings yearly	Complete		
Test and exercise the EOC's capabilities annually	Complete		
Create and implement an operating procedure plan for the EOC	Complete		
Create and implement a training program for personnel and departments involved in the EOC's operations	In Progress (2014-2018)		

Appendix B:

Growth & Development Trends

Community Information

The Comprehensive Plan for Jasper County and the Cities of Monticello and Shady Dale is an overall guide for the growth and general development of the County and the municipalities located within its boundaries for a twenty year period beginning in the year 2005 and extending to the year 2025. The 2007 Partial Plan Update includes updated Short Term Work Program items for the County and each of its cities. The County and its cities have jointly pursued the preparation of a Comprehensive Plan as mandated by the 1989 Georgia Planning Act. The Comprehensive Plan for Jasper County and the Cities of Monticello and Shady Dale, as presented in this document, is the result of a cooperative effort involving the residents and officials of the County and cities. The Comprehensive Plan respects the separate authorities of each local government, but also recognizes the interdependence of the entire County, and the effect long range plans have on the community as a whole. The Comprehensive Plan consists of three principle documents: The Community Assessment, The Community Participation Program and the Community Agenda, including the Short Term Work Plan. The Service Delivery Plan is included as a supportive element of the Comprehensive Plan.

Planning Authority

This Comprehensive Plan was prepared and reviewed under the authorities of the governing bodies of Jasper County and its cities.

Study Area

The study area for the Comprehensive Plan includes Jasper County in its entirety. The majority of the County is unincorporated Jasper County, with the remainder being the incorporated cities of Monticello and Shady Dale.

Community Assessment and Community Participation Program

The Northeast Georgia Regional Commission submitted for review the Community Assessment and Community Participation Program for Jasper County. The Mayor and Commission reviewed the documents and held a public hearing on the Assessment and Participation Program. These documents were forwarded by resolution to the Northeast Georgia Regional Development Center for official review.

Community Vision

A community vision was established for Jasper County, Monticello, and Shady Dale. The purpose of the vision is to portray a complete picture of what the community desires to become. That vision is: "*Foster a healthy economic environment through an integrated approach among government, business, education, and community that increases the quality, stability, and wages of local employment opportunities through a diversified attraction of new and retention of existing business and industry.* "

The community vision is supported by a vision for each individual planning element that can be found in the individual planning element's chapter. Visions for each planning element are supported by the community goals and implementation policies.

Jasper County Census Quick Facts: 2013

People	
Population, 2012 estimate	13,630
Population, 2010 (April 1) estimates base	13,900
Population, percent change, April 1, 2010 to July 1, 2013	NA
Population, percent change, April 1, 2010 to July 1, 2012	-1.9%
Population, 2010	13,900
Persons under 5 years, percent, 2012	6.3%
Persons under 18 years, percent, 2012	24.4%
Persons 65 years and over, percent, 2012	13.7%
Female persons, percent, 2012	50.8%
White alone, percent, 2012 (a)	75.2%
Black or African American alone, percent, 2012 (a)	22.5%
American Indian and Alaska Native alone, percent, 2012 (a)	0.5%
Asian alone, percent, 2012 (a)	0.3%
Native Hawaiian and Other Pacific Islander alone, percent, 2012 (a)	Z
Two or More Races, percent, 2012	1.5%
Hispanic or Latino, percent, 2012 (b)	4.0%
White alone, not Hispanic or Latino, percent, 2012	71.8%
Living in same house 1 year & over, percent, 2008-2012	83.6%
Foreign born persons, percent, 2008-2012	3.4%
Language other than English spoken at home, pct age 5+, 2008-2012	5.1%
High school graduate or higher, percent of persons age 25+, 2008-2012	84.2%
Bachelor's degree or higher, percent of persons age 25+, 2008-2012	14.3%
Veterans, 2008-2012	850
Mean travel time to work (minutes), workers age 16+, 2008-2012	36.6
Housing units, 2012	6,186
Homeownership rate, 2008-2012	77.0%
Housing units in multi-unit structures, percent, 2008-2012	1.9%
Median value of owner-occupied housing units, 2008-2012	$123,000
Households, 2008-2012	5,101
Persons per household, 2008-2012	2.68
Per capita money income in past 12 months (2012 dollars), 2008-2012	$21,854
Median household income, 2008-2012	$43,768
Persons below poverty level, percent, 2008-2012	20.2%

Business QuickFacts	Jasper County
Private nonfarm establishments, 2011	162
Private nonfarm employment, 2011	1,318
Private nonfarm employment, percent change, 2010-2011	-2.4%
Nonemployer establishments, 2011	1,082
Total number of firms, 2007	1,517
Black-owned firms, percent, 2007	S
American Indian- and Alaska Native-owned firms, percent, 2007	F
Asian-owned firms, percent, 2007	S
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	F
Hispanic-owned firms, percent, 2007	F

Women-owned firms, percent, 2007	27.7%
Manufacturers shipments, 2007 ($1000)	187,450
Merchant wholesaler sales, 2007 ($1000)	D
Retail sales, 2007 ($1000)	33,351
Retail sales per capita, 2007	$2,442
Accommodation and food services sales, 2007 ($1000)	3,412
Building permits, 2012	39
Geography QuickFacts	**Jasper County**
Land area in square miles, 2010	368.17
Persons per square mile, 2010	37.8
FIPS Code	159
Metropolitan or Micropolitan Statistical Area	Atlanta-Sandy Springs-Marietta, GA Metro Area

(a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so also are included in applicable race categories.
FN: Footnote on this item for this area in place of data
NA: Not available
D: Suppressed to avoid disclosure of confidential information
X: Not applicable
S: Suppressed; does not meet publication standards
Z: Value greater than zero but less than half unit of measure shown
F: Fewer than 100 firms

Source: US Census Bureau State & County Quick Facts

Appendix C:

Related Planning Documents

Community Wildfire Protection Plan

An Action Plan for Wildfire Mitigation and Conservation of Natural Resources

Jasper County, Georgia

A Program of the Georgia Forestry Commission
with support from the U.S. Forest Service

MARCH 12, 2011

SIGNATURE PAGE

_____ _____

Honorable Charles Hill, Chairman Date
Jasper County Board of County Commissioners

_____ _____

Greg Wood Date
Jasper County Manager

_____ _____

Mellissa Slocumb Date
Jasper County EMA Director

_____ _____

Jarret Slocumb Date
Jasper County Fire Chief

_____ _____

Howell Crutchfield Date
GFC Chief Ranger

_____ _____

Tim Colmick Date
Fire Management Office, USFS

Prepared by;

Howell Crutchfield, Jasper County Chief Ranger
Eric Mosley, Community Wildfire Protection Specialist
Georgia Forestry Commission
112 Juliette Rd
Round Oak GA 31038

The following report is a collaborative effort among various entities; the representatives listed below comprise the core decision-making team responsible for this report and mutually agree on the plan's contents:

Charles Hill
County Commission Chair, Jasper County

Greg Wood
Jasper County Manager

Mellissa Slocumb
Jasper County Emergency Management Director

Jarret Slocumb
Jasper County Fire Chief

Howell Cructchfield
Chief Ranger, Jasper County Forestry Unit

Tim Colmick
Fire Management Officer, Oconee National Forest

PLAN CONTENTS

I. OBJECTIVES

A Community Wildfire Protection Plan (CWPP) provides a community with a road map to reduce its risk from wildfire. A CWPP is designed through collaboration between state and local fire agencies, homeowners and landowners, and other interested parties such as city councils, utilities, homeowners associations, environmental organizations, and other local stakeholders. The plan identifies strategic sites and methods for risk reduction and structural protection projects across jurisdictional boundaries.

Comprehensive plans provide long-term guidance for growth, reflecting a community's values and future expectations. The plan implements the community's values and serves to protect natural and community resources and public safety. Planning also enables communities to address their development patterns in the Wildland Urban Interface and determine how they can reduce their risk through alternative development patterns. The formal legal standing of the plan and its central role in local government decision making underscores the opportunity to use this planning process as an effective means for reducing wildfire risk.

The mission of the following plan is to set clear priorities for the implementation of wildfire mitigation in Jasper County. The plan includes prioritized recommendations for the appropriate types and methods of fuel reduction and structure ignitability reduction that will protect this community and its essential infrastructure. It also includes a plan for wildfire suppression. Specifically, the plan includes community-centered actions that will:

- Educate citizens on wildfire, its risks, and ways to protect lives and properties,
- Support fire rescue and suppression entities,
- Focus on collaborative decision-making and citizen participation,
- Develop and implement effective mitigation strategies, and
- Develop and implement effective community ordinances and codes.

II. COMMUNITY COLLABORATION

Wildfire risk reduction strategies are most effective when approached collaboratively – involving groups of residents, elected officials, community decision makers, emergency managers, and natural resource mangers –and when combined with effective outreach approaches. Collaborative approaches make sense as the initial focus of any community attempting to work toward wildfire risk reduction. In all Community Wildfire Protection Plan collaborations, the goal is to cooperatively identify problems and reach a consensus for mutual action. In the case of wildfire mitigation, a reduction in the wildfire risk to the community's lives, houses, and property is the desired outcome.

The collaborative core team convened on January 25, 2010 to assess risks and develop the Community Wildfire Protection Plan. The group is comprised of representatives from local government, local fire authorities, and the state agency responsible for forest management.

Below are the groups included in the task force:

Jasper County Government
- *County Fire Department*
- *Emergency Management*
- *Board of County Commissioners*

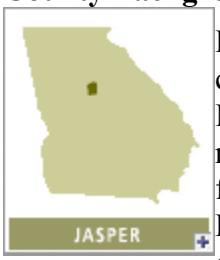
Georgia Forestry Commission

It was decided to conduct community assessments on the basis of the on high risk communities and the individual fire districts in the county. The chief of the Jasper County Fire Department, Chief Ranger of the local Georgia Forestry Commission office, and the Community Wildfire Protection Specialist reconvened on July19, 2010 for the purpose of completing the following:

Risk Assessment	Assessed wildfire hazard risks and prioritized mitigation actions. The wildfire risk assessment will help homeowners, builders, developers, and emergency personnel whether the area needs attention and will help direct wildfire risk reduction practices to the areas at highest risk.
Fuels Reduction	Identified strategies for coordinating fuels treatment projects.
Structure Ignitability	Identified strategies for reducing the ignitability of structures within the Wildland interface.
Emergency Management	Forged relationships among local government and fire districts and developed/refined a pre-suppression plan.
Education and Outreach	Developed strategies for increasing citizen awareness and action and to conduct homeowner and community leader workshops. Outreach and education programs are designed to raise awareness and improve audience knowledge of wildfire risk reduction needs and practices. In the best cases, education and outreach programs will influence attitudes and opinions and result in effective action.

III. COUNTY BACKGROUND AND WILDFIRE HISTORY

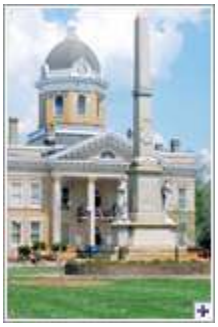
County Background



Located in central Georgia, Jasper County, the state's thirty-first county, was created in 1807 from part of Baldwin County on land formerly held by Creek Indians. It is one of the "antebellum trail" counties, which stretch from lower northeast Georgia to the center of the state. The 370-square-acre county was named for Revolutionary War (1775-83) sergeant William Jasper, a hero of the 1776 Battle of Sullivan's Island (also known as the Battle of Fort Moultrie) who died during the Siege of Savannah in 1779. The county was first named for John Randolph of Virginia, whose opposition to the War of 1812 (1812-15) made him so unpopular with Georgians that the legislature renamed the county in 1812. (In 1828 another county was named for Randolph.)

The Creek Indians long maintained settlements on the shoals of the Ocmulgee River, and Carolina fur trappers traded with them at a location known as the "Seven Islands of the Ocmulgee" as far back as the 1670s. The first non-Indians to settle in what became Jasper County arrived in the late eighteenth century. The first known white settler was a deer hunter known only by the name Newby, who lived near present-day Hillsboro as early as 1790. A treaty with the Creek nation that year provided land for a stagecoach route (the Seven Islands Stagecoach Road) from Augusta, Georgia, to Mobile, Alabama. Settlements grew up around the stagecoach stops.

The Seven Island Stagecoach Road became a valuable route for cotton planters, who shipped their cotton down the Ocmulgee River to mills near "Seven Islands," which grew into a thriving commercial center complete with cotton gins and grist-, saw-, and textile mills. The products of these industries were shipped out to seaports via the stagecoach road.



Jasper County Courthouse

In the 1830s and 1840s the importance of the river and coach road for transportation of goods declined in favor of rail transportation. However, during the Civil War (1861-65), Union troops laid two pontoon bridges across the Ocmulgee River at Planter's Factory near Seven Islands and crossed into Jasper County between November 17 and 20, 1864. Sherman's troops destroyed much of the railroad infrastructure during their march to the sea, and until the railroads could recover, the river once again was used for transporting goods. The Seven Islands mills were operated until cotton lost its dominance in Georgia's economy. Abandoned mill buildings were finally torn down in the 1980s.

The county seat, Monticello, was named after U.S president Thomas Jefferson's home in Virginia by the town's founders, Virginians who had settled the area in 1808. Monticello was incorporated in 1810. Court was first held in the home of John Towns, one of the settlers. A log cabin served as courthouse until 1838, when it was replaced with a brick building. The current courthouse, made of marble and brick, was completed in 1907.

Among the other communities in Jasper County are Farrar, Hillsboro, Kelly, and Shady Dale. Shady Dale is the only other incorporated town.

As with much of the state, cotton was once the primary crop grown in Jasper County. After "King

Cotton" lost its battle with the boll weevil and economic depression, many farm workers left the county. Those who remained began growing peaches. Later they adopted a diversified range of commodities from livestock and poultry to wood products. During the 1980s a number of clothing and textile factories in the county closed, making a serious dent in the local economy. Residents began encouraging the growth of tourism by promoting their national forest areas and Jackson Lake. A major employer in the county is Georgia-Pacific.

Among

the outdoor attractions is the Lloyd Shoals Dam, also called Jackson Lake, which covers 4,750 acres, with 135 miles of shoreline. The lake was formed when the Central Georgia Power Company created a dam and hydroelectric plant at Lloyd Shoals on the Ocmulgee River in 1910. Jasper County shares the lake with Butts and Newton counties. Part of the Oconee National Forest, the only national forest in Georgia's Piedmont, is in Jasper County. Much of this large wooded tract was deforested during the cotton plantation era but has been replanted for both people and wildlife to enjoy. The Seven Islands Trail is in Monticello.

Seven Islands Nature Trail

(Courtesy *New Georgia Encyclopedia*)

Wildfire History

Recent data show that a majority of the fastest growing areas in the U.S. are in wildfire-prone environments. It is not a surprise that some of these fastest growing areas are in Georgia. In last decade of the 20th Century, Georgia's population increased substantially. Homeowners in Georgia must contend with natural hazards including wildfire, tornados, and flooding. This combination of factors – burgeoning population, abundant natural areas, development pressures, and lack of public awareness makes Georgia a perfect state for creating solutions to various hazards. Georgia is looked to throughout the southern region as a leader in comprehensive and hazard mitigation planning.

Many of Georgia's existing and new residents living in the urban interface are unaware of the vital role fire plays in our landscape and that their homes are extremely vulnerable to wildfire damage. Balancing development pressures with wildfire risk reduction and education creates a unique challenge for local governments, emergency managers, and wildfire management agencies such as the Georgia Forestry Commission.

Over the past five years, Jasper County has averaged 26 reported wildfires per year. The occurrence of these fires is fairly uniform throughout the year with a slight peak in the months of February and March and a slight decrease during the fall months. These fires have burned an average of 26 acres annually. While the numbers of fires remain fairly similar every month, there is a marked difference in the monthly acreage lost. The monthly acres lost during the late winter through summer period show a tenfold increase over the acres lost during the fall and early winter. Additionally while the annual numbers of fires have not increased noticeably during the 5 year period that records are available, the annual acreage lost appears to have decreased in later years. This perhaps a result of the increase in the practice of prescribed burning. The local Georgia Forestry Commission office needs to be commended for their valiant work increasing their very impressive prescribed burning

regiment. The Jasper / Jones County Unit lead their district in the Central Georgia for burning. Despite their work, more homes are being built outside of traditional communities into the wildland urban interface. With this migration of people to the wildland urban interface the potential for a wildfire disaster continues to increase for Jasper County.

The leading causes of these fires in Jasper County were careless debris burning which came to almost 60 percent of all fires reported. Though these causes are a bit disturbing, local efforts of outreach and education can easily curb this problem.

Georgia Forestry Commission Wildfire Records show that in the past five years, 23 Homes have been at risk to being damaged by wildfire in Jasper County resulting in estimated losses of 1.2 million dollars along with 3 outbuildings valued at $2,000. Additionally 3 vehicles valued at $40,000 were lost. This is a substantial loss of non timber property attributed to wildfires in Jasper County.

County = Jasper	**Cause**	**Fires**		**Acres**	**Fires 5 Yr Avg**	**Acres 5 Yr Avg**
Campfire	Campfire	0		0.00	1.00	1.39
Children	Children	1		1.60	1.00	2.92
Debris: Ag Fields, Pastures, Orchards, Etc	Debris: Ag Fields, Pastures, Orchards, Etc	1		0.39	1.00	5.65
Debris: Construction Land Clearing	Debris: Construction Land Clearing	0		0.00	1.20	4.20
Debris: Escaped Prescribed Burn	Debris: Escaped Prescribed Burn	6		15.48	7.00	18.76
Debris: Residential, Leafpiles, Yard, Etc	Debris: Residential, Leafpiles, Yard, Etc	1		0.56	2.20	4.92
Debris: Site Prep - Forestry Related	Debris: Site Prep - Forestry Related	1		0.43	3.00	2.42
Incendiary	Incendiary	1		1.20	1.00	2.85
Lightning	Lightning	0		0.00	0.40	5.66
Machine Use	Machine Use	1		0.75	4.60	8.94
Miscellaneous	Miscellaneous	1		0.50	2.60	3.91
Smoking	Smoking	0		0.00	1.00	3.91
Totals for County: Jasper Year: 2010		13		20.91	26.00	65.52

IV. COMMUNITY BASE MAP

V. COMMUNITY WILDFIRE RISK ASSESSMENT

The Wildland-Urban Interface

There are many definitions of the Wildland-Urban Interface (WUI), however from a fire management perspective it is commonly defined as an area where structures and other human development meet or intermingles with undeveloped wildland or vegetative fuels. As fire is dependent on a certain set of conditions, the National Wildfire Coordinating Group has defined the wildland-urban interface as a set of conditions that exists in or near areas of wildland fuels, regardless of ownership. This set of conditions includes type of vegetation, building construction, accessibility, lot size, topography and other factors such as weather and humidity. When these conditions are present in certain combinations, they make some communities more vulnerable to wildfire damage than others. This "set of conditions" method is perhaps the best way to define wildland-urban interface areas when planning for wildfire prevention, mitigation, and protection activities.

There are three major categories of wildland-urban interface. Depending on the set of conditions present, any of these areas may be at risk from wildfire. A wildfire risk assessment can determine the level of risk.

1. "Boundary" wildland-urban interface is characterized by areas of development where homes, especially new subdivisions, press against public and private wildlands, such as private or commercial forest land or public forests or parks. This is the classic type of wildland-urban interface, with a clearly defined boundary between the suburban fringe and the rural countryside.

2. "Intermix" wildland-urban interface areas are places where improved property and/or structures are scattered and interspersed in wildland areas. These may be isolated rural homes or an area that is just beginning to go through the transition from rural to urban land use.

3. "Island" wildland-urban interface, also called occluded interface, are areas of wildland within predominately urban or suburban areas. As cities or subdivisions grow, islands of undeveloped land may remain, creating remnant forests. Sometimes these remnants exist as parks, or as land that cannot be developed due to site limitations, such as wetlands.

(courtesy *Fire Ecology and Wildfire Mitigation in Florida* 2004)

Wildland Urban Interface Hazards

Firefighters in the wildland urban interface may encounter hazards other than the fire itself, such as hazardous materials, utility lines and poor access.

- Hazardous Materials
    - Common chemicals used around the home may be a direct hazard to firefighters from flammability, explosion potential and/or vapors or off-gassing. Such chemicals include paint, varnish and other flammable liquids; fertilizer; pesticides; cleansers; aerosol cans, fireworks, batteries and ammunition. In addition, some common household products such as plastics may give off very toxic fumes when they burn. Stay OUT of the smoke from burning structures and any unknown sources such as trash piles.
- Illicit Activities
    - Marijuana plantations or drug production labs may be found in wildland urban interface areas. Extremely hazardous materials such as propane tanks and flammable/toxic chemicals may be encountered, as well as booby traps.
- Propane tanks
    - Both large (household size) and small (gas grill size) liquefied propane gas (LPG) tanks can present hazards to firefighters, including explosion. See the "LPG Tank Hazards" discussion for details.
- Utility lines
    - Utility lines may be located above and below ground and may be cut or damaged by tools

or equipment. Don't spray water on utility lines or boxes.

- Septic tanks and fields
    - Below-ground structures may not be readily apparent and may not support the weight of engines or other apparatus.

- New construction materials
    - Many new construction materials have comparatively low melting points and may "off-gas" extremely hazardous vapors. Plastic decking materials that resemble wood are becoming more common and may begin softening and losing structural strength at 180° F, though they normally do not sustain combustion once direct flame is removed. However, if they continue to burn they exhibit the characteristics of flammable liquids.

- Pets and livestock
    - Pets and livestock may be left when residents evacuate and will likely be highly stressed, making them more inclined to bite and kick. Firefighters should not put themselves at risk to rescue pets or livestock.

- Evacuation occurring
    - Firefighters may be taking structural protection actions while evacuations of residents are occurring. Be very cautious of people driving erratically. Distraught residents may refuse to leave their property, and firefighters may need to disengage from fighting fire to contact law enforcement officers for assistance. In most jurisdictions firefighters do not have the authority to force evacuations. Firefighters should not put themselves at risk trying to protect someone who will not evacuate!

- Limited access
    - Narrow one-lane roads with no turn-around room, inadequate or poorly maintained bridges and culverts are frequently found in wildland urban interface areas. Access should be sized-up and an evacuation plan for all emergency personnel should be developed.

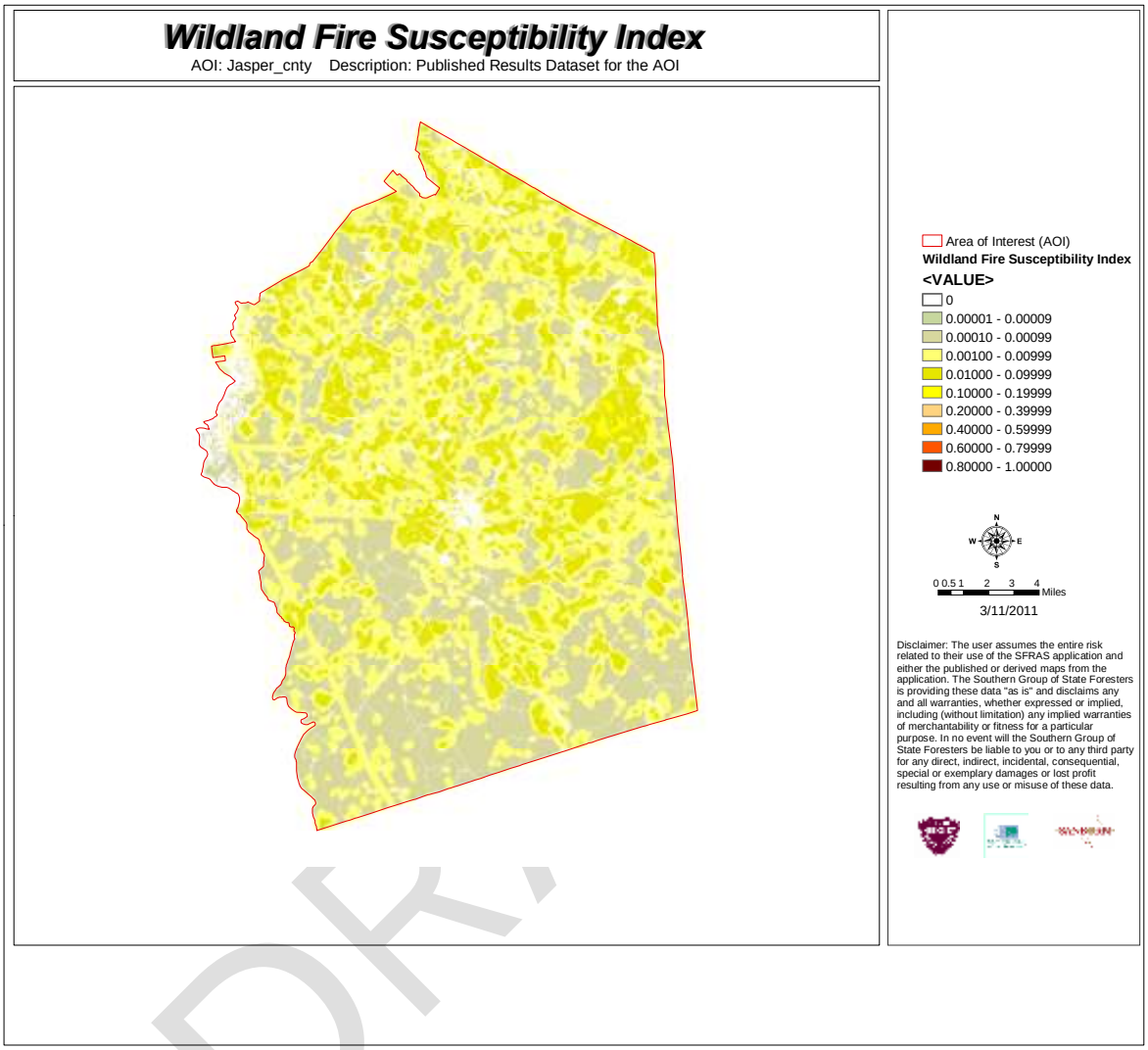
The wildland fire risk assessments conducted in 2010 by the Jasper County Fire Department and the Georgia Forestry Commission returned an average score of 91, placing Jasper County in the “moderate risk” hazard range. The risk assessment instrument used to evaluate wildfire hazards to Jasper

County's WUI was the Hazard and Wildfire Risk Assessment Checklist. The instrument takes into consideration accessibility, vegetation (based on fuel models), roofing assembly, building construction, and availability of fire protection resources, placement of gas and electric utilities, and additional rating factors. The following factors contributed to the wildfire hazard score for Jasper County:

- Dead end roads with inadequate turn arounds
- Narrow roads without drivable shoulders
- Long, narrow, and poorly labeled driveways
- Limited street signs and homes not clearly addressed
- Thick, highly flammable vegetation surrounding many homes
- Minimal defensible space around structures
- Homes with wooden siding and roofs with heavy accumulations of vegetative debris
- No pressurized or non-pressurized water systems available
- Above ground utilities
- Large, adjacent areas of forest or wildlands
- Heavy fuel buildups in adjacent wildlands
- Undeveloped lots comprising half the total lots in many rural communities.
- High occurrence of wildfires in the several locations
- Distance from fire stations
- Lack of homeowner or community organizations

The Communities-at-Risk within Jasper County that led to its moderate risk rating are:

Turtle Cove Community, Off Lake Jackson Rd.
Falcon Ridge Subdivision
Grandview Community, Grand View Road
Oconee Forest, Oconee Forest Road
Jones Estates, Hamilton Drive
Henderson Mill Subdivision, Henderson Mill Road at County Line Road
Gaisssert Subdivision, Gaissert Road
Gap Creek Community, Gap Creek Road
Johnny Fears Community, Johnny Fears Road
Ross Community, Ross Road
Kline Community, Kline Road
Wisteria Cove Subdivision
Hawks Nest Subdivision, Hawks Trail


Wildland Fire Susceptibility Index
AOI: Jasper_cnty Description: Published Results Dataset for the AOI
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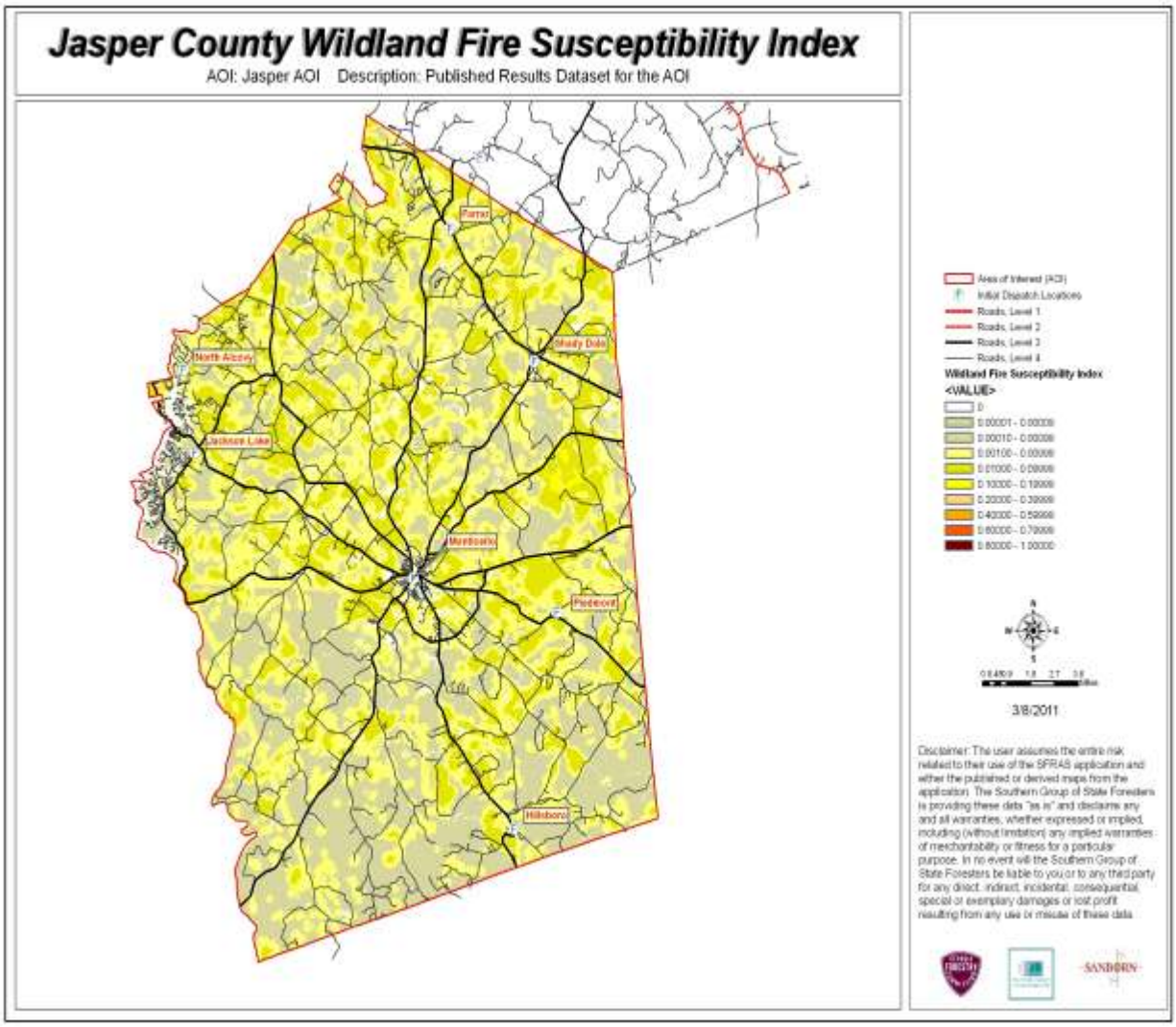
VI. COMMUNITY HAZARDS MAPS



VII. PRIORITIZED MITIGATION RECOMMENDATIONS

Executive Summary

As Central Georgia continues to see increased growth from other areas seeking less crowded and warmer climes, new development will occur more frequently on forest and wildland areas. The County will have an opportunity to significantly influence the wildland fire safety of new developments. It is important that new development be planned and constructed to provide for public safety in the event of a wildland fire emergency.

Over the past 20 years, much has been learned about how and why homes burn during wildland fire emergencies. Perhaps most importantly, case histories and research have shown that even in the most severe circumstances, wildland fire disasters can be avoided. Homes can be designed, built and maintained to withstand a wildfire even in the absence of fire services on the scene. The national Firewise Communities program is a national awareness initiative to help people understand that they don't have to be victims in a wildfire emergency. The National Fire Protection Association has produced two standards for reference: NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire. 2008 Edition and NFPA 1141 Standard for Fire Protection Infrastructure for Land Development in Suburban and Rural Areas.

When new developments are built in the Wildland/Urban Interface, a number of public safety challenges may be created for the local fire services: (1) the water supply in the immediate areas may be inadequate for fire suppression; (2) if the Development is in an outlying area, there may be a longer response time for emergency services; (3) in a wildfire emergency, the access road(s) may need to simultaneously support evacuation of residents and the arrival of emergency vehicles; and (4) when wildland fire disasters strike, many structures may be involved simultaneously, quickly exceeding the capability of even the best equipped fire departments.

The following recommendations were developed by the Jasper County CWPP Core team as a result of surveying and assessing fuels and structures and by conducting meetings and interviews with county and city officials. A priority order was determined based on which mitigation projects would best reduce the hazard of wildfire in the assessment area.

Proposed Community Hazard and Structural Ignitability Reduction Priorities

Primary Protection for Community and Its Essential Infrastructure		
Treatment Area	Treatment Types	Treatment Method(s)
1. All Structures	Create minimum of 30-feet of defensible space**	Trim shrubs and vines to 30 feet from structures, trim overhanging limbs, replace flammable plants near homes with less flammable varieties, remove vegetation around chimneys.
2. Applicable Structures	Reduce structural ignitability**	Clean flammable vegetative material from roofs and gutters, store firewood appropriately, install skirting around raised structures, store water hoses for ready access, and replace pine straw and mulch around plantings with less flammable landscaping materials.
3. Community Clean-up Day	Cutting, mowing, pruning**	Cut, prune, and mow vegetation in shared community spaces.
4. Driveway Access	Culvert installation	See that adequate lengths of culverts are installed to allow emergency vehicle access.
5. Road Access	Identify needed road improvements	As roads are upgraded, widen to minimum standards with at least 50 foot diameter cul de sacs or turn arounds.
Proposed Community Wildland Fuel Reduction Priorities		
Treatment Area	Treatment Types	Treatment Method(s)
1. Adjacent WUI Lands	Reduce hazardous fuels	Encourage prescribed burning for private landowners and industrial timberlands particularly adjacent to residential areas. County resolution to state recommending that the Ga Forestry Commission not charge for prescribed burning in WUI areas. Seek grant for WUI mitigation team.
2. Railroad Corridors	Reduce hazardous fuels	Encourage railroads to better maintain their ROW eliminating brush and grass through herbicide and mowing.

		Maintain firebreaks along ROW adjacent to residential areas.
3. Existing Fire Lines	Reduce hazardous fuels	Clean and re-harrow existing lines.
Proposed Improved Community Wildland Fire Response Priorities		
1. Water Sources	Dry Hydrants	Inspect, maintain and improve access to existing dry hydrants. Add signage along road to mark the hydrants. Locate additional dry hydrants as needed.
2. Fire Stations	Equipment	Wildland hand tools. Lightweight Wildland PPE Gear. Investigate need for "brush" trucks near communities at risk.
3. Water Sources	Drafting equipment	Investigate need for additional drafting pumps.
4. Personnel	Training	Obtain Wildland Fire Suppression training for fire personnel to include S130, S190, and S215.
**Actions to be taken by homeowners and community stakeholders		

Proposed Education and Outreach Priorities

1. Conduct "How to Have a Firewise Home" Workshop for County Residents
Set up and conduct a workshop for homeowners that teach the principles of making homes and properties safe from wildfire. Topics for discussion include defensible space, landscaping, building construction, etc. Workshop will be scheduled for evenings or weekends when most homeowners are available and advertised through local media outlets. Distribute materials promoting firewise practices and planning through local community and governmental meetings.
2. Conduct "Firewise" Workshop for Community Leaders

Arrange for GFC Firewise Coordinator to work with local community leaders and governmental officials on the importance of "Firewise Planning" in developing ordinances and codes as the county as the need arises. Identified "communities-at-risk" including: Turtle Cove and Falcon Ridge, should be sought after for inclusion in the National Firewise Communities Program.

3. Spring Clean-up Event

Conduct clean-up event every spring involving the Georgia Forestry Commission, Jasper County Fire Departments, City of Monticellor and local residence of Jasper County. Set up information table with educational materials and refreshments. Initiate the event with a morning briefing by GFC Firewise coordinator and local fire officials detailing plans for the day and safety precautions. Activities to include the following:

- Clean flammable vegetative material from roofs and gutters
- Trim shrubs and vines to 30 feet away from structures
- Trim overhanging limbs
- Clean hazardous or flammable debris from adjacent properties

Celebrate the work with a community cookout, with Community officials, GFC and Jasper County Fire Departments discussing and commending the work accomplished.

4. Informational Packets

Develop and distribute informational packets to be distributed by realtors and insurance agents. Included in the packets are the following:

- Be Firewise Around Your Home
- Firewise Guide to Landscape and Construction
- Firewise Communities USA Bookmarks

5. Wildfire Protection Display

Create and exhibit a display for the general public at the local events. Display can be independent or combined with the Georgia Forestry Commission display.

6. Press

Invite the local and regional news media to community "Firewise" functions for news coverage and regularly submit press releases documenting wildfire risk improvements in Jasper County.

VIII. ACTION PLAN

Roles and Responsibilities

The following roles and responsibilities have been developed to implement the action plan:

Role	Responsibility
Hazardous Fuels and Structural Ignitability Reduction	
Jasper County WUI Fire Council	Create this informal team or council comprised of residents, GFC officials, Jasper County Fire department officials, a representative from the city and county government and the EMA Director for Jasper County. Meet periodically to review progress towards mitigation goals, appoint and delegate special activities, work with federal, state, and local officials to assess progress and develop future goals and action plans. Work with residents to implement projects and firewise activities.
Key Messages to focus on	1 Defensible Space and Firewise Landscaping 2 Debris Burning Safety 3 Firewise information for homeowners 4 Prescribed burning benefits
Communications objectives	1 Create public awareness for fire danger and defensible space issues 2 Identify most significant human cause fire issues 3 Enlist public support to help prevent these causes 4 Encourage people to employ fire prevention and defensible spaces in their communities.
Target Audiences	1 Homeowners 2 Forest Landowners and users 3 Civic Groups 4 School Groups
Methods	1 News Releases 2 Personal Contacts 3 Key messages and prevention tips 4 Visuals such as signs, brochures and posters

Spring Clean-up Day	
Event Coordinator	Coordinate day's events and schedule, catering for cookout, guest attendance, and moderate activities the day of the day of the event.
Event Treasurer	Collect funds from residents to cover food, equipment rentals, and supplies.
Publicity Coordinator	Advertise event through neighborhood newsletter, letters to officials, and public service announcements (PSAs) for local media outlets. Publicize post-event through local paper and radio PSAs.
Work Supervisor	Develop volunteer labor force of community residents; develop labor/advisory force from Georgia Forestry Commission, Jasper County Fire Departments, and Emergency Management Agency. Procure needed equipment and supplies. In cooperation with local city and county officials, develop safety protocol. Supervise work and monitor activities for safety the day of the event.

Funding Needs

The following funding is needed to implement the action plan:

Project	Estimated Cost	Potential Funding Source(s)
1. Create a minimum of 30 feet of defensible space around structures	Varies	Residents will supply labor and fund required work on their own properties.
2. Reduce structural ignitability by cleaning flammable vegetation from roofs and gutters; appropriately storing firewood, installing skirting around raised structures, storing water hoses for ready access, replacing pine needles and mulch around plantings with less flammable material.	Varies	Residents will supply labor and fund required work on their own properties.
3. Amend codes and ordinances to provide better driveway access, increased visibility of house numbers, properly stored firewood, minimum defensible space brush clearance, required Class A roofing materials and skirting around raised structures, planned maintenance of community lots.	No Cost	To be adopted by city and county government.
4. Spring Cleanup Day	Varies	Community Business Donations.
5. Fuel Reduction Activities	$15 / acre	FEMA & USFS Grants

POTENTIAL FUNDING SOURCES:

As funding is questionable in these times of tight government budgets and economic uncertainty, unconventional means should be identified whereby the need for funding can be reduced or eliminated.

Publications / Brochures –

- FIREWISE materials are available for cost of shipping only at www.firewise.org.
- Another source of mitigation information can be found at www.nfpa.org.
- Access to reduced cost or free of charge copy services should be sought whereby publications can be reproduced.
- Free of charge public meeting areas should be identified where communities could gather to be educated regarding prevention and firewise principles.

Mitigation –

- Community Protection Grant:
    - USFS sponsored prescribed burn program. Communities with at risk properties that lie within 3 miles of the USFS border may apply with the GFC to have their forest land prescribed burned free of charge.
- FEMA Mitigation Policy MRR-2-08-01: through GEMA - Hazard Mitigation Grant Program (HMGP) and Pre Disaster Mitigation (PDM)
    - To provide technical and financial assistance to local governments to assist in the implementation of long term cost effective hazard mitigation measures.
    - This policy addresses wildfire mitigation for the purpose of reducing the threat to all-risk structures through creating defensible space, structural protection through the application of ignition resistant construction, and limited hazardous fuels reduction to protect life and property.
    - With a complete and registered plan (addendum to the State plan) counties can apply for pre-mitigation funding. They will also be eligible for HMGP if the county is declared under a wildfire disaster.
- GFC - Plowing and burning assistance can be provided through the Georgia Forestry Commission as a low cost option for mitigation efforts.
- Individual Homeowners –
    - In most cases of structural protection ultimately falls on the responsibility of the community and the homeowner. They will bear the cost; yet they will reap the benefit from properly implemented mitigation efforts.
    - GEMA Grant - PDM (See above)

Ultimately it is our goal to help the communities by identifying the communities threatened with a high risk to wildfire and educate those communities on methods to implement on reducing those risks.

Assessment Strategy

To accurately assess progress and effectiveness for the action plan, the Jasper County WUI Fire Council will implement the following:

- Annual wildfire risk assessment will be conducted to re-assess wildfire hazards and prioritize needed actions.
- Mitigation efforts that are recurring (such as mowing, burning, and clearing of defensible space) will be incorporated into an annual renewal of the original action plan.
- Mitigation efforts that could not be funded in the requested year will be incorporated into the annual renewal of the original action plan.
- Continuing educational and outreach programs will be conducted and assessed for effectiveness. Workshops will be evaluated based on attendance and post surveys that are distributed by mail 1month and 6 months following workshop date.
- The Jasper County WUI Council will publish an annual report detailing mitigation projects initiated and completed, progress for ongoing actions, funds received, funds spent, and in-kind services utilized. The report will include a "state of the community" section that critically evaluates mitigation progress and identifies areas for improvement. Recommendations will be incorporated into the annual renewal of the action plan.
- An annual survey will be distributed to residents soliciting information on individual mitigation efforts on their own property (e.g., defensible space). Responses will be tallied and reviewed at the next Jasper County WUI Council meeting. Needed actions will be discussed and delegated.

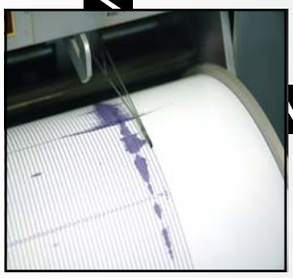
This plan should become a working document that is shared by local, state, and federal agencies that will use it to accomplish common goals. An agreed-upon schedule for meeting to review accomplishments, solve problems, and plan for the future should extend beyond the scope of this plan. Without this follow up this plan will have limited value

P. O. Box 819Macon, GA 312021-800-GA-TREESGaTrees.org

The Georgia Forestry Commission provides leadership, service, and education in the protection and conservation of Georgia's forest resources. An Equal Opportunity Employer and Service Provider

GEORGIA EARTHQUAKE

AWARENESS GUIDE







For Local Emergency Management Agency Directors

April 2011

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This publication is a project of the Georgia Emergency Management Agency (GEMA)/Homeland Security in cooperation with the Georgia Institute of Technology-School of Earth & Atmospheric Science, the Federal Emergency Management Agency (FEMA) National Earthquake Hazards Reduction Program (NEHRP) and the Ready Georgia Campaign. A downloadable guide is available at:

www.gema.ga.gov
www.ready.ga.gov
http://geophysics.eas.gatech.edu

For additional information, please contact GEMA or Georgia Institute of Technology, School of Earth & Atmospheric Sciences.

Agency	Website	Address	Phone Number
Georgia Emergency Management Agency/Homeland Security **Ready Georgia Campaign**	www.gema.ga.gov www.ready.ga.gov	P.O. Box 18055 Atlanta, Georgia 30316	1-800-TRY-GEMA
Georgia Institute of Technology-School of Earth & Atmospheric Sciences	http://www.eas.gatech.edu/schoo	311 Ferst Drive Atlanta, GA 30332-0340	404-894-3893
April 2011			

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GEORGIA AND EARTHQUAKES

According to Georgia Tech's School of Earth and Atmospheric Sciences, 15 percent of the world's earthquakes are scattered over areas like Georgia that lack clearly defined active faults. These earthquakes usually start with a jolt, build rapidly in amplitude within a couple of seconds, and then decay.

The total felt duration of the typical small Georgia earthquake is usually less than 10 seconds, and it sounds like a muffled dynamite explosion. Although earthquakes in Georgia are comparatively rare, scattered earthquakes have caused significant damage and can be an important consideration for homeowners (Source: www.ready.ga.gov).

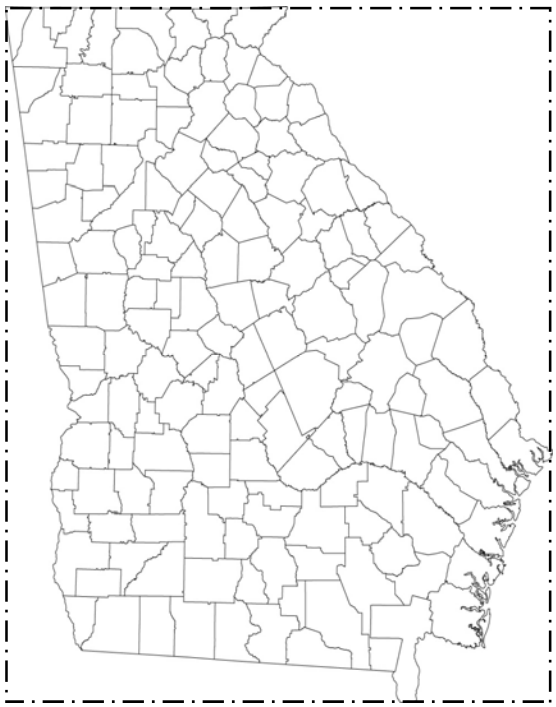
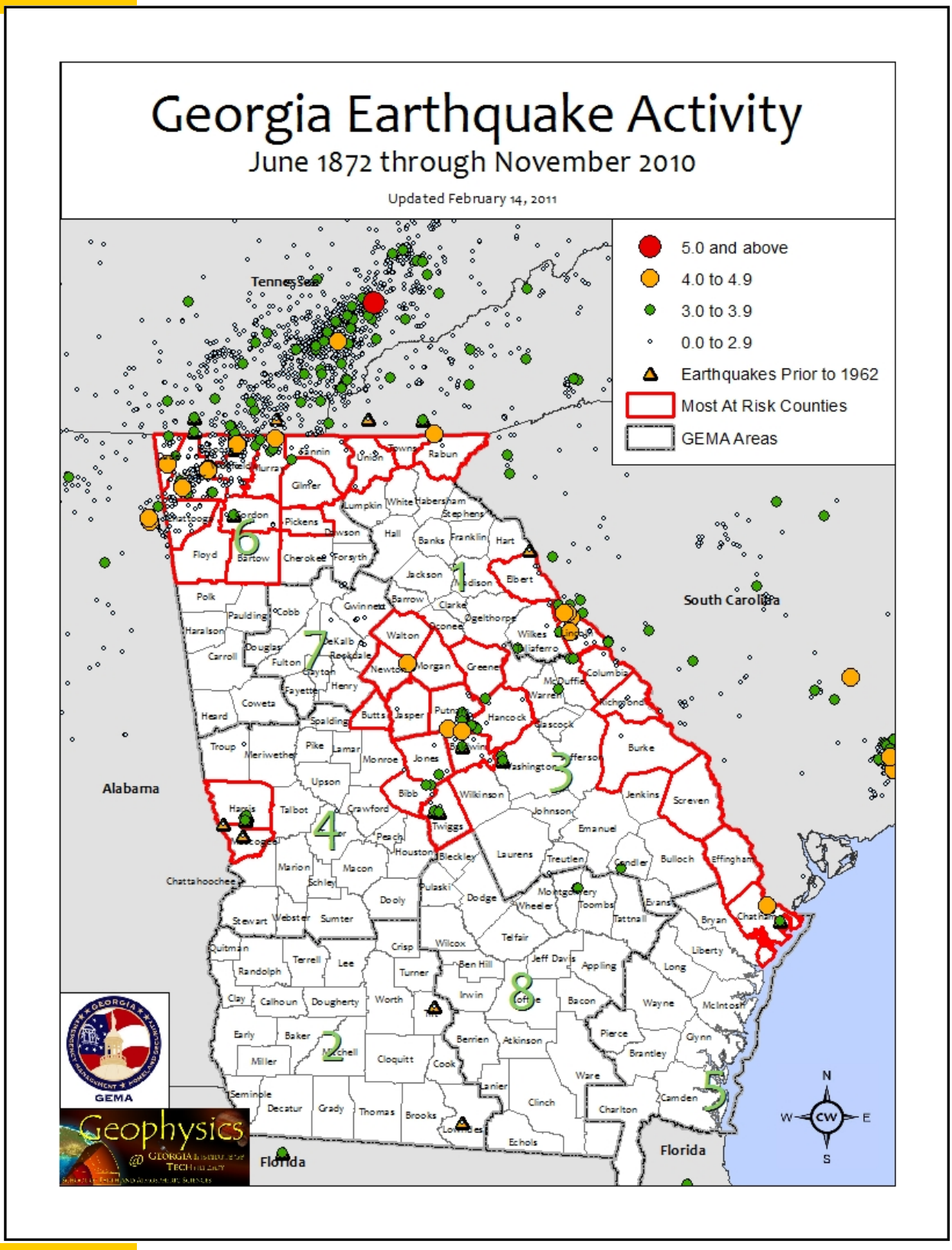


Figure 1.0: Georgia Counties at the Greatest Risk for Earthquakes

Area	Counties
Northwest Georgia Counties	Bartow, Catoosa, Chattooga, Dade, Fannin, Floyd, Gilmer, Gordon, Murray, Pickens, Rabun, Towns, Union, Walker, Whitfield
South Carolina Border Counties	Burke, Chatham, Columbia, Effingham, Elbert, Lincoln, Richmond, Screven
Central and West Central Georgia Counties	Twiggs, Bibb, Jones, Baldwin, Hancock, Greene, Putnam, Butts, Jasper, Newton, Morgan, Walton, Harris, Mucscogee
Source: **Georgia Tech School of Earth & Atmospheric Sciences, A.V. Newman, C.N. Gammans, 2010.**	


Georgia Earthquake Activity
June 1872 through November 2010
Updated February 14, 2011
5.0 and above
4.0 to 4.9
3.0 to 3.9
0.0 to 2.9
Earthquakes Prior to 1962
Most At Risk Counties
GEMA Areas
Tennessee
South Carolina
Alabama
Florida
Florida
GEMA
Geophysics
@ GEORGIA TECH
N
W
CW
E
S

EARTHQUAKE BASICS OVERVIEW

An earthquake is a sudden shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, telephone and power lines to fall, and cause fires, explosions and landslides. Earthquakes can also cause tsunamis, which can impact coastal areas far away from where earthquake shaking can be felt.

Earthquake Effects

Earthquakes often have significant social and economic impacts on communities, including:

- Disruption of business supply chains;
- Rise in insurance costs for certain types of buildings susceptible to earthquake damage;
- Cancellation of insurance policy after an earthquake;
- Loss of housing options (especially for low-income residents);
- Changes to neighborhoods, as residents often must relocate.

Causes of Earthquakes

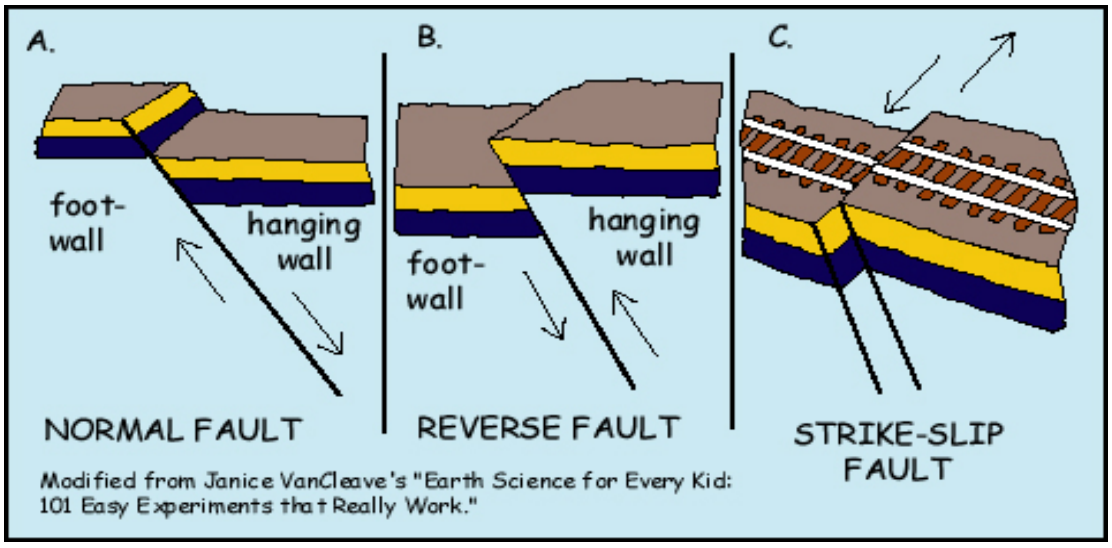
An earthquake is caused by a sudden slip on a fault, which results in a release of energy that travels away from the fault surface as seismic waves. Seismic waves are elastic shocks that travel through the earth. Faults slip to release stress that is created as tectonic plates move around the surface of the earth.

Faults

A fault is a weak zone in the earth's crust where two sections can shift.

- Normal fault movement occurs when the two sides move away from one another as the crust fails in extension.
- Thrust or reverse fault movement occurs when the two sides are pushed together due to compression.
- Strike-slip or lateral fault movement occurs when the pieces move horizontally past one another.

Figure 2.0: Types of Faults



Source: http://www.dnr.sc.gov/geology/earthquake.html

Seismic Waves

Earthquakes release energy that radiates away from the fault in the form of seismic waves.

The two main types of seismic waves are:

- Body waves
- Surface waves

Body Waves

- Travel through the Earth
- Are felt first after an earthquake
- Can be divided into:
    - **Compressional Waves** (also called primary or P waves) are the fastest seismic waves traveling as fast as 30 times the speed of sound in air.
    - **Shear Waves** (or secondary waves) are the second main arrival, traveling at about 60% the speed of P waves.

Surface Waves

- Travel along the Earth's surface
- Travel slower than either type of body wave
- Are larger then body waves for most earthquakes
- Cause most of the damage to buildings

Measuring Earthquakes

Seismographs record and measure vibrations produced by earthquakes as a wavy line called a seismogram. Modern seismographs record earthquakes digitally, rather than on paper allowing for greater research and storage capabilities.

Using the data recorded as seismograms by many recording stations, the following can be determined:

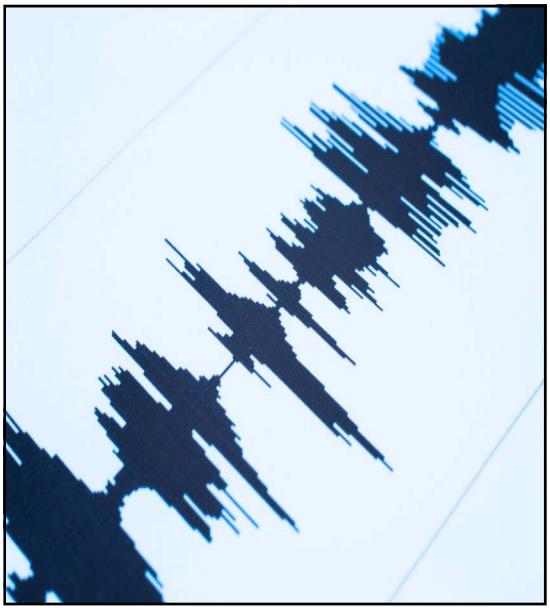
- Time the earthquake started
- Epicenter of the quake (where it started)
- Focal depth
- Amount of energy released (related to the magnitude)
- Fault area

Measuring Severity

Earthquake severity can be measured in two main ways:

- **Magnitude**, based on the amount of shaking or the size of the fault rupture. The Richter and Moment Magnitude Scales are each used to measure magnitude.
- **Intensity**, based on how strong the shock is felt and the damage done at the location of interest. An earthquake has many different intensities. The Modified Mercalli Scale is used to identify these various intensities.

Richter Magnitude Scale



The Richter Magnitude Scale expresses earthquake size as a magnitude in a numeric scale. The Richter Magnitude Scale is logarithmic, where each increase in whole numbers represents a tenfold increase in shaking and an increase in energy of 32 times.

Earthquakes with a magnitude of 2.0 or less (microearthquakes) are generally too small to be felt. According to the United States Geological Survey, microearthquakes are very common; approximately 8,000 occur worldwide each day. Large earthquakes that have caused significant damage have measured 7.0 or larger. In the United States, a magnitude of 5.5 or greater is capable of causing building and infrastructure damage. However, the Richter Magnitude Scale measures energy release, not damage.

Moment Magnitude Scale

The Moment Magnitude Scale supersedes the Richter Magnitude Scale and other magnitude scales to evaluate the size of the fault rupture. The Moment Magnitude Scale gives the most reliable estimate of earthquake size when the earthquakes exceed 6.0 on the Richter Magnitude Scale or are very distant from recording devices. The Moment Magnitude Scale is the preferred magnitude scale.

Modified-Mercalli Intensity Scale

The Modified Mercalli Intensity Scale is a measure of the strength of shaking of an earthquake at a specific location. It can also be described as the local effect of an earthquake as felt by people and resulting damage on the earth's surface. It is normally represented in Roman numerals.

Each earthquake has several intensities over the impacted area. Under this system, an area with an intensity of I is felt by a very few people, while a XII will cause total damage.

The Modified Mercalli Intensity Scale quantifies the results of an earthquake at various locations. It is not a measurement of an earthquake or any of its characteristics.

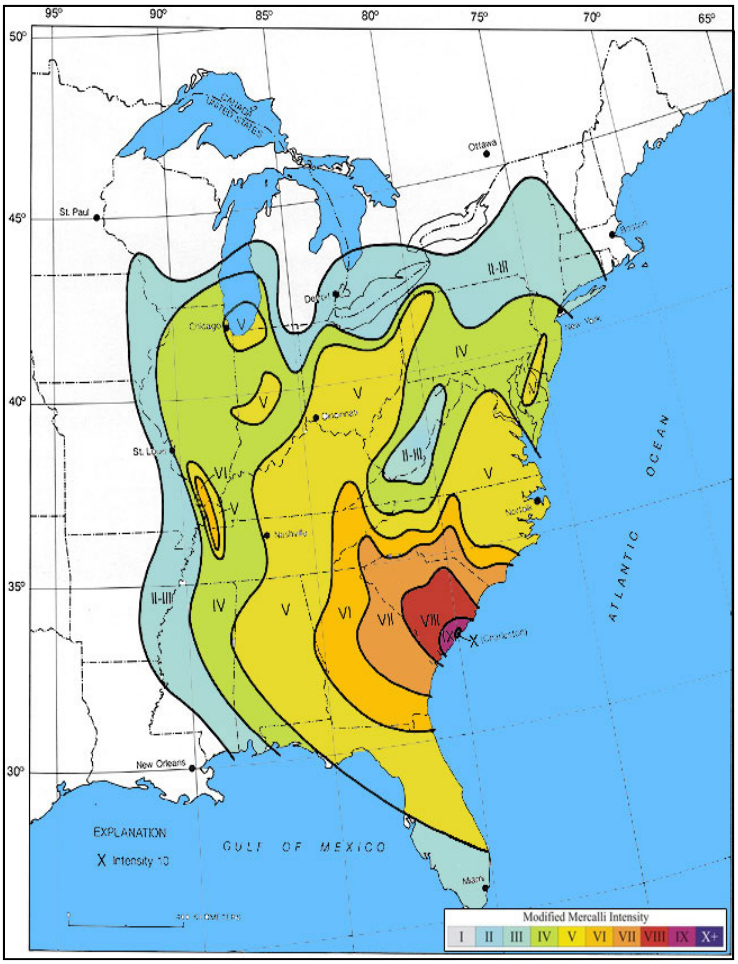


Figure 3.0:

Modified -Mercalli Intensity Map for the shaking and damage associated with the 1886 Charleston, South Carolina earthquake. A few chimneys fell even in Atlanta, and shaking was felt as far away as Chicago (McKinley, 1887). The precise magnitude of this event is unknown because seismometers did not yet exist, however, it is estimated to be between magnitude 6.6 and 7.3. (Image from Stover and Coffman, 1993.)

U.S. SEISMICITY

While earthquakes have occurred in nearly all of the 50 states and territories, there are areas of heightened earthquake activity. Some areas of the U.S. experience moderate to severe earthquakes every 30 to 50 years, while other areas may experience these size earthquakes approximately every 200 or more years.

Figure 4.0: U.S Earthquake Facts & Statistics

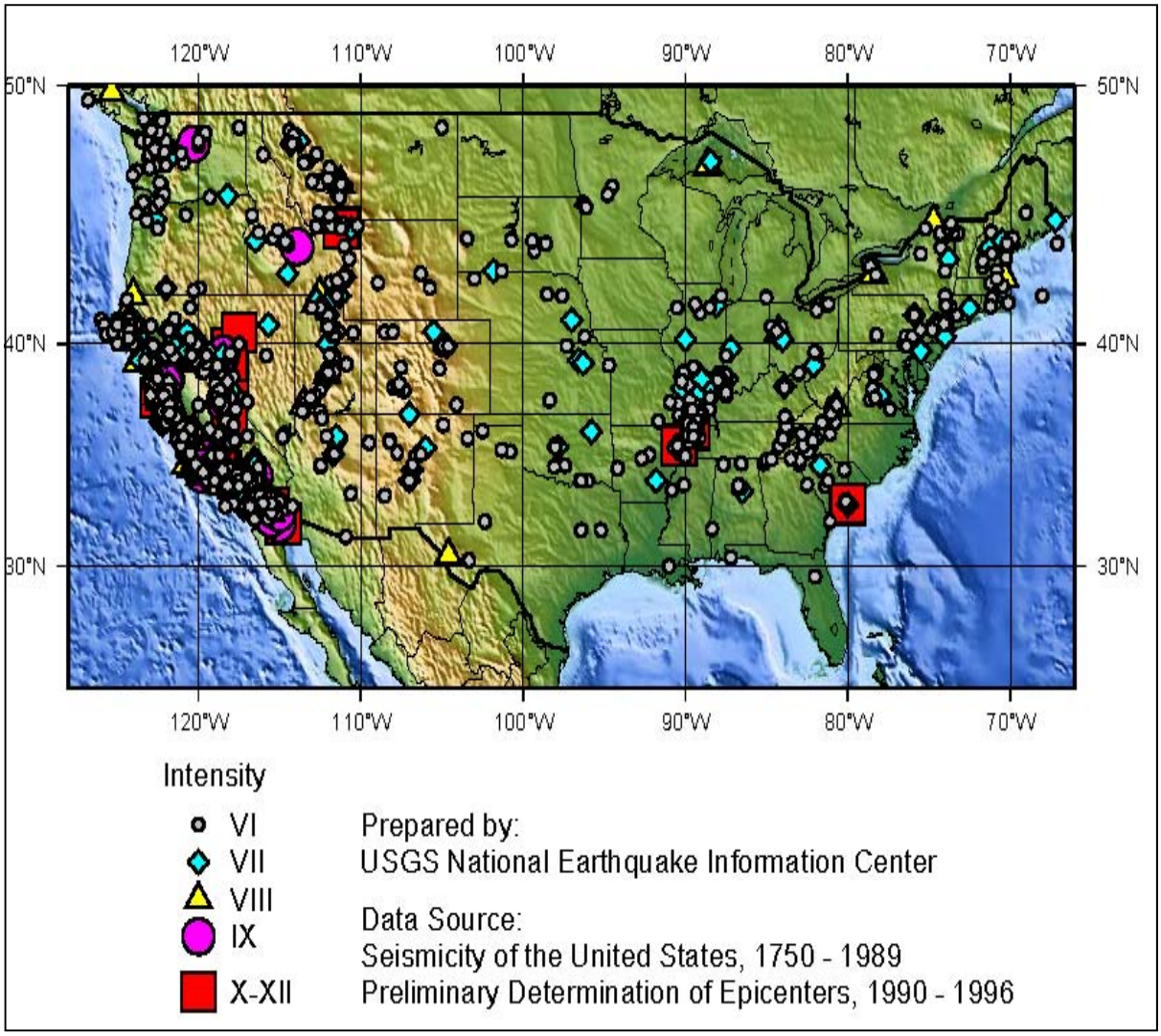
Number of Earthquakes in the United States 2000-2010											
Magnitude	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
8.0 to 9.9	0	0	0	0	0	0	0	0	0	0	0
7.0 to 7.9	0	1	1	2	0	1	0	1	0	0	1
6.0 to 6.9	6	5	4	7	2	4	7	9	9	4	7
5.0 to 5.9	63	41	63	54	25	47	51	72	85	59	52
4.0 to 4.9	281	290	536	541	284	345	346	366	432	288	523
3.0 to 3.9	917	842	1535	1303	1362	1475	1213	1137	1486	1492	2962
2.0 to 2.9	660	646	1228	704	1336	1738	1145	1173	1573	2378	3091
1.0 to 1.9	0	2	2	2	1	2	7	11	13	26	23
0.1 to 0.9	0	0	0	0	0	0	1	0	0	1	0
No Magnitude	415	434	507	333	540	73	13	22	20	14	13
Total	2342	2261	3876	2946	3550	3685	2783	2791	3618	* 4262	* 6672
Estimated Deaths	0	0	0	2	0	0	0	0	0	0	0

Source: http://earthquake.usgs.gov/earthquakes/eqarchives/year/eqstats.php. Located by the US Geological Survey National Earthquake Information Center (*As of November 1, 2010)

LARGEST U.S. EARTHQUAKES

Alaska experiences the majority of the earthquakes in the United States and is one of the most seismically active regions of the world. To date, the largest earthquake recorded in the United States was in 1964, when measured at a magnitude of 9.2 and occurred in Prince William Sound, Alaska. In addition, a series of large earthquakes occurred in 1811 and 1812 in New Madrid, Missouri, the largest of which is estimated between 7.4 and 7.8 magnitude. Below is a map that depicts where the most significant earthquakes occurred in the United States over the years.

Figure 5.0: US Earthquakes Causing Damage 1750-1996 , Modified-Mercalli Intensity VI-XII.



GEORGIA EARTHQUAKE HISTORY

The first notable earthquakes felt in Georgia were the great New Madrid series of 1811 - 1812. These shocks were felt over almost all of the eastern United States. In Georgia, that series of shocks reportedly shook some bricks from chimneys. Besides those initial earthquake rumblings between 1811-1812, Georgia was also impacted by the large Charleston, South Carolina Earthquake of 1886.; it caused severe shaking throughout the state. Georgians heard a low rumble then began feeling earthquake tremors on August 31 at 9:25 p.m.. The shock waves reached Savannah. The shaking was so significant that people had difficulty remaining standing, and one woman even died of fright as the shaking cracked walls, felled chimneys, and broke windows. Panic at a revival service left two injured and two more were injured when they leapt from upper story windows. Several more were injured by falling bricks. Ten buildings in Savannah were damaged beyond repair, and at least 240 chimneys were reported damaged. People spent the night outside. At the Tybee Island light station the 134-foot lighthouse was cracked near the middle where the walls were six feet thick, and the 1-ton lens moved an inch and a half to the northeast.

In Augusta, the shaking was the most severe (VIII on the Modified Mercalli Intensity Scale) in the state. An estimated 1,000 chimneys and many buildings were damaged. Businesses and social life was paralyzed for two days.

An earthquake on June 17, 1872, in Milledgeville had an intensity of at least V on the Modified Mercalli Intensity Scale, the lowest intensity in which some damage may occur. It was reported as a sharp shock, jarring brick buildings and rattling windows.

On November 1, 1875, at 9:55 p.m., an intensity VI earthquake occurred near the South Carolina border. It was felt from Sparatansburg and Columbia, South Carolina, to Atlanta and Macon, Georgia, from Gainesville to Augusta. The earthquake was felt over an area of 2,500 square miles.

A more local event occurred on October 18, 1902, with a sharp shock felt along the east face of Rocky Face Mountain west of Dalton with intensity VI and at La Fayette with intensity V. The felt area was about 1,500 square miles and included Chattanooga, Tennessee.

The Savannah area was shaken by an intensity VI earthquake on January 23, 1903. Centering near Tybee Island, it was felt over an area of 10,000 square miles including Savannah (intensity VI), Augusta (intensity III), Charleston (intensity IV-V), and Columbia (intensity III-IV). Houses were strongly shaken. Another shock was felt on June 20, 1912, in Savannah with intensity V.

On March 5, 1916, an earthquake centered 30 miles southeast of Atlanta was felt over an area of 5,000 square miles, as far as Cherokee County, North Carolina, by several people in Raleigh, and in parts of Alabama and Tennessee.

An earthquake of intensity V or over occurred on March 12, 1964, near Haddock, less than 20 miles northeast of Macon. Intensity V was recorded at Haddock, while shaking was felt in four counties over a 400 square miles.

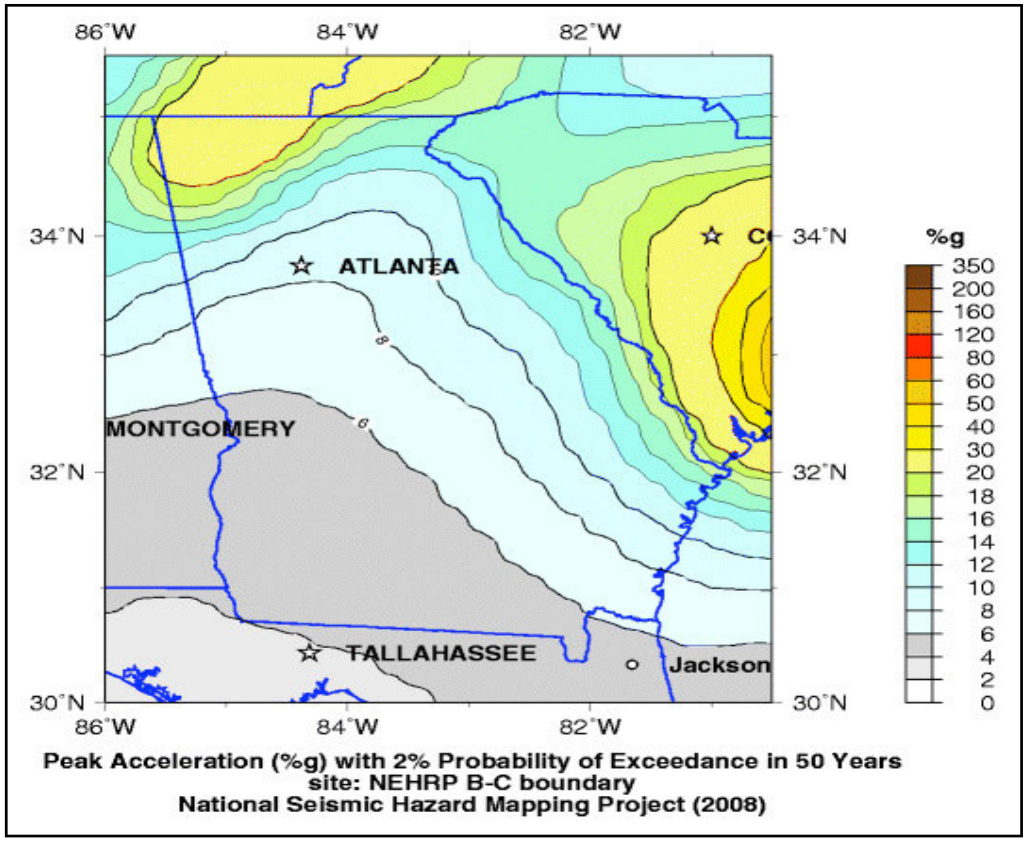


Figure 6.0: USGS estimated seismic hazards in and around Georgia. The map shows the low probability (2% in 50 years) of reaching a certain level of shaking. Only the northwestern section of the state is expected has more than a 1/50 chance of accelerations greater than 20% g (yellow region) in the next 50 years. (Source: USGS Hazard, 2010).

GEORGIA EARTHQUAKE RISK

Earthquakes are much less common in the eastern United States than in California, with most events imperceptible by the public. This leads to a dangerous complacency that may be unwarranted. Most Georgians are largely unaware of the last large event that struck Charleston, South Carolina in 1886, killing almost 60 people and causing complete devastation to the city. Unfortunately, earthquakes in the eastern United States are very efficient at transmitting seismic energy over large distances, such that the damage area of a magnitude 6.0 here is comparable to a magnitude 7.0 in the western United States.

Earthquakes may be felt in any area of Georgia, but northwestern Georgia has experienced the most earthquakes in recent history. Earthquakes large enough to cause damage could be felt in most, if not all, of Georgia's counties. Based on current and historical seismicity, three zones of somewhat distinct seismic activity are apparent in Georgia (Figure 1). The least active area extends from the Coastal Plain of South Georgia through Columbus and on past Montgomery Alabama, where almost no seismic activity is observed, besides a magnitude 3.6 earthquake that occurred near Jacksonville in 1900.

The northern half of Georgia is more seismically active, with earthquakes occurring primarily along two distinct bands. The most prominent is the Eastern Tennessee Seismic Zone. The second band is less active but extends along the Fall Line from Macon to the South Carolina border, just north of Augusta. The threat of a large earthquake from the Tennessee Valley Seismic Zone and a potential repeat of the Charleston earthquake pose the greatest risk to Georgia (Figure 7.0).

Earthquakes in Northwest Georgia occur primarily along the Eastern Tennessee Seismic Zone (ETSZ), which runs along the western Appalachian Mountains and extends from West Virginia down to the Alabama-Mississippi border. In the eastern United States, the ETSZ is second only to the New Madrid Seismic Zone in terms of seismic activity. Earthquakes here typically occur between approximately 3 km-25 km below the surface and outline a very long (200 miles or more) roughly linear active zone. These similarities between the ETSZ and the New Madrid suggest that ETSZ could sustain an event similar to the devastating 1811-1812 earthquakes. This area currently experiences about one magnitude 4.0 earthquake about every 5 to 10 years. Such an event is generally perceived as a startling vibration that may rock objects off shelves and may cause some cracking of plaster.

Earthquakes in Central and South Georgia are more scattered than in the ETSZ and do not define any convincing faults. Some large faults including the Brevard Fault that run through Atlanta, however these known faults are not considered to be active and show no ongoing microseismicity (small earthquakes). Instead, most of these events may be failing smaller faults that are buried beneath soil and can be affected by changes in reservoirs levels. Many of these earthquakes are very small but occur within 3 km of the surface making them more easily felt and heard. They often occur in an earthquake swarm, which may be felt for one to three months. In the Piedmont, they are most common in areas of weakly fractured granitic rock. The Piedmont may experience about one magnitude 4 event every 10 to 20 years, this will likely be both felt and heard, potentially with many foreshocks and aftershocks. In the immediate epicentral zone, plaster and cement block walls will be cracked, merchandise will fall off store shelves, and minor structural damage will occur in buildings not designed to withstand earthquake forces. Earthquakes in the Coastal Plain of Southern Georgia are too sparsely distributed to define a pattern but pose the second largest long-term risk to Georgians. This risk is dominated by the repeat of the 1886 Charleston earthquake. While scientists do not know the likelihood of such a repeat near or along coastal Georgia, the potential can not be entirely discounted.

Earthquakes outside Georgia's borders are a considerable threat to Georgians. The Charleston earthquake of 1886 and the New Madrid Earthquakes of 1811-1812 caused as much damage in Georgia as earthquakes that occurred within the borders. Current models for earthquake risk suggest that these distant earthquakes provide the greatest threat. In most of Georgia, the Charleston earthquake of August 1886, knocked over chimneys, broke windows and cracked plaster. The Charleston earthquake is estimated to have been between magnitude 6.6 and 7.3. This magnitude is similar in size to the "World Series," or Loma Prieta earthquake of October 18, 1989 (magnitude 6.9). A repeat of this event today would likely be far more devastating due to population growth. Such an earthquake would be felt far beyond Charleston, and possibly cause damage to unreinforced structures as far away as Atlanta. Though the precise magnitudes of the 1811-1812 New Madrid Earthquakes may never be known, many reports suggest that at least one of the four large earthquakes in the sequence was among the strongest felt intraplate earthquakes in the world. Magnitude estimated for the largest of these events is between 7.0 and 8.3, with newer estimates trending smaller. In any case, the events were devastating and caused massive changes to the landscape that are still visible today. The Mississippi River changed its course, the land surface sunk to form new lakes and violent shaking snapped off trees. At the time, the log cabin settlements were sparsely populated and the loss of life was minimal. However, if a similar event were to occur today, extensive damage would be expected throughout a large region, and, because population density is now significantly higher, the loss of life is likely to be

While these events are most likely to occur along zones of active seismicity (including the New Madrid, Eastern Tennessee and Charleston regions), it is possible that the next large event may occur outside of one of these zones. Again, residents of Georgia are fortunate that such devastating earthquakes are rare in the eastern United States. Major events like Charleston and New Madrid have occurred about once every 100 years in all of the eastern United States. The probability that such an event could cause at least some damage in Georgia within the next year is only about one in a thousand. The damage would be much like that experienced in Georgia during the 1886 Charleston earthquake if the event occurred in a neighboring state. However, near the epicenter of the large event, the damage would be like that experienced in Charleston or in the San Francisco Bay area on October 18, 1989. For such a major earthquake, the zone of extreme damage, Modified Mercalli Intensity VIII and higher, could be in excess of 100 miles in radius (See Appendix III).

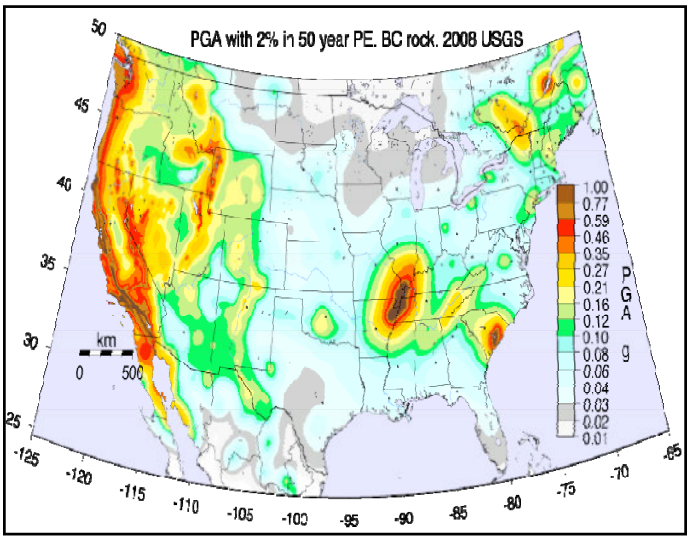


Figure 7.0: The National Seismic Hazard map defining the level of shaking that has a 2% probability of occurring in 50 years around the United States (the expected shaking an area might feel once every 2500 years).

Seismic Hazard Mapping is used to evaluate the long-term probability of risk from strong ground shaking any area may sustain. This is the only non-speculative means available to assess hazards. Hazard maps rely heavily on the historical and ongoing measurements of seismicity, though in some parts of the western United States new information about fault motions are now also being included. Because such fault motions are too small to be observed in the eastern United States, only prior earthquake information is used. In these maps, "hazard" is expressed in terms of the probability of experiencing a given level of shaking and are reported in terms of acceleration relative to the gravity, *g* (this is the same as the G-Force described during flight). earthquakes are also considered.

Seismic hazards are obviously greater in areas of higher seismic activity, but the effects of large distant earthquakes are taken into consideration. In a statistical sense, this is the level of vibration one should expect to experience once every 2,500 years. The United States Geological Survey seismic hazard maps are frequently being updated due to improved understanding of earthquake behavior and recent versions are used by the Building Seismic Safety Council to revise the seismic hazard maps used in building codes. The seismic hazard indicated by these maps is greatest in northwest Georgia if decreases in the Piedmont and is minimal in the Coastal Plain. Predicted seismic hazard is again greater toward and in South Carolina, showing the influence of the continuing activity near Charleston, South Carolina.

PLANNING FOR EARTHQUAKES

Emergency Response to Earthquakes can be divided into response efforts for those for small, moderate, strong, large and great earthquakes. In all cases, the first task is to determine the size and location of the event because these parameters will determine the extent and location of emergency services that will be needed. Unlike hurricanes and other weather-related disasters, there will be no opportunity for advanced preparation or mobilization. Following is an outline of potential impacts to communities based on estimated size variations of earthquake events.

Small earthquakes are of magnitude less than 2.5. These are typically felt only within 15 km of the epicenter and typically contained within one or two counties. These could generate calls to emergency response agencies, particularly in central Georgia where these events occur closer to the surface and are felt more strongly. If the event is part of a typical Piedmont earthquake swarm, such as in the Norris Lake Community swarm of 1993, the continuing occurrence of minor seismicity may cause alarm. Actions, such as town meetings, may be needed to explain the events to the population.

Also, the time following an earthquake or during a swarm provides a good opportunity to instruct the population in methods to minimize damage and injury during earthquakes, particularly because earthquake swarms are often followed by isolated events as large as the largest event in the swarm. Swarms are very rarely indicators of coming larger earthquakes.

Moderate earthquakes are those with magnitudes between 3 and 5. These will be noticed by almost everyone in the epicentral area and will be felt up to 200 miles away. The local 9-1-1 centers are likely to become swamped with calls, but the news media will usually be quick to distribute information on the identity and size of these earthquakes. Some weak structures may experience minor damage, such as cracked plaster and falling objects. In addition, in rare incidences, there may be some minor structural damage such as brick facade falling off buildings. Life threatening situations would be rare for these moderate events, and any associated emergencies should be easily handled as routine events.

Strong earthquakes are those with magnitudes between 5 and 6. These will be widely noticed and will cause widespread minor damage in well-built structures. A few structures will suffer major damage that could require safety inspections, but these will be rare. Again, life-threatening situations would be restricted to the immediate epicentral zone and to weak structures with poor foundation. These events will be felt up to 600 miles away. As with moderate earthquakes, the news media will distribute information. Traffic control may be needed in damaged areas. In rare cases, a bridge or road structure may be damaged. Fires are also a strong possibility following an earthquake. In the eastern United States, water heaters and furnaces are not routinely protected against falling over, which could start fires.

Large earthquakes are those with magnitude 6.5 and larger, such as the Charleston, 1886, and New Madrid, 1811-1812, earthquakes. Expect extensive damage and loss of life in a radius of 10 to 30 miles from the epicenter. Outside the epicentral zone of major damage, the effects, to 150 miles, will be like those of the large earthquakes. Safety inspections will need to be conducted because these large earthquakes may have aftershocks that cause more damage, particularly to weakened structures. Many people will be displaced from their homes, and field or tent communities will need to be established up to two months. Transportation may be interrupted by broken rail lines and

and bridges. Furthermore, clutter from buildings in the intensely damaged areas could inhibit rescue efforts. A systematic search for survivors of collapsed buildings will have to be conducted. The probability for the repeat of an event like Charleston, 1886, somewhere in the eastern United States is about 2.5 percent in the next 25 years. (one chance in 1,000 per year in Georgia). Such an event near any large metropolitan area in the southeastern United States and outside of Atlanta would likely see a rapid temporary to long-term influx of evacuees to Atlanta.

Seismic monitoring of significant earthquakes in the United States is coordinated by the United States Geological Survey (https://www.usgs.gov). This includes most earthquakes larger than magnitude 3.5 and those that are felt widely. For small local earthquakes, it is generally necessary to rely on data from a nearby regional network. In Georgia, Georgia Institute of Technology maintains a small network, including station ATL just south of Atlanta, and a distributed Educational Seismic Network (http://geophysics.eas.gatech.edu/GTEQ-see Figure 8.0). The University of Tennessee, University of North Carolina at Chapel Hill, and the University of South Carolina maintain seismic stations surrounding Georgia. In addition, the Center for Earthquake Research and Information at Memphis State University maintains a Southern Appalachian Regional Network. These networks generally record events of magnitude greater than 1.5 and routinely distribute information on these events directly to the public or over the Internet.

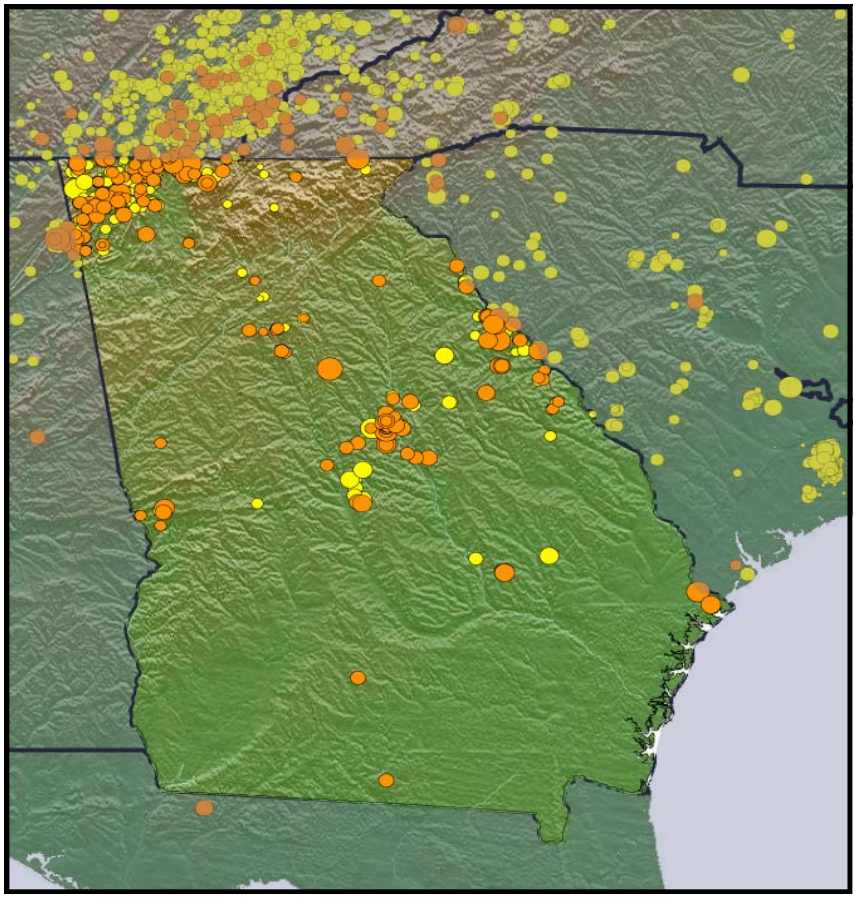


Figure 8.0: Earthquake activity in and around Georgia. Yellow events are those recorded since 1962 and reported in the global composite catalog (ANSS, 2010), Orange events are historic and locally recorded earthquakes. A continuously updated version of this map is available at: http://geophysics.eas.gatech.edu/GTEQ. Most events are between magnitude 2 and 3.

For more information on real-time seismic monitoring, please contact the Georgia Institute of Technology, School of Earth and Atmospheric Sciences-

Dr. Andrew V. Newman
Assistant Professor
Office: 404-894-3976
Fax: 404-894-5638

anewman@gatech.edu
http://geophysics.eas.gatech.edu/anewman

Additional Resources

- **Descriptive Comparisons of Earthquake Magnitude with Observed Effects**
- **Modified-Mercalli Intensity Scale of 1931**
- **Glossary of Terms**
- **Information Sources**

DESCRIPTIVE COMPARISON OF EARTHQUAKE MAGNITUDES WITH OBSERVED EFFECTS

The rate at which earthquakes have occurred in Georgia is shown in Figure 7.0. We experience a magnitude 3.0 every year or two and a magnitude 4.0 every 8 years. The best way to estimate the area of potential damage is to use the observed relation between magnitude and area of intensity VII. Modified Mercalli Intensity VII is the lowest level of shaking at which damage requiring some emergency response would be expected. The relation for the eastern United States is approximately, Log10 (AVII) = M - 2. The intensity VII area for a magnitude 4.0 is 100 square kilometer (a radius of 5.6 km or 3.5 mile) and a magnitude 6.0 is 10,000 square kilometer (a radius of 56 km or 35 mile).

MAGNITUDE:

0.0: Earthquakes that occur at shallow depths in the Piedmont are occasionally heard by people when they are within a few miles of the epicenter. Their sounds are like a distant cannon. These are usually ignored.

1.0: Earthquakes that occur at shallow depths in the Piedmont are usually heard by people when they are within a few miles of the epicenter. These and smaller earthquakes are rarely reported by people in areas of northwest Georgia where the earthquake focus is deeper.

2.0: (e.g. Norris Lake Community, Georgia, summer 1993) Earthquakes are typically described as a large quarry blast by residents in the Piedmont. Vibrations are felt near the epicenter. People in northwest Georgia occasionally report vibrations from events of this size.

3.0: (e.g. Heard County, Georgia, February 10, 1997, or the largest Norris Lake Community earthquakes) Earthquakes are maximum intensity III in northwest Georgia and V in the Piedmont. Vibrations are like a heavy truck. Their sounds and vibrations are like an explosion. Sometimes two shakes are felt, with the first a higher frequency vibration and the second following within a few seconds a rocking vibration. In the Piedmont, they sound like a cannon. The vibration decays with time.

4.0: Earthquakes (e.g. Clarks Hill Reservoir, Georgia, August 2, 1974) have maximum intensities in the VI to VII range. These events are just large enough to cause some minor damage in the epicenter area and groceries may off shelves. Felt over many counties, typically out to a distance of 100 miles.

5.0: Earthquakes (e.g. Sharpsburg, Kentucky, July 27, 1980) are noted for widespread damage. The Sharpsburg earthquake was particularly noted for damage to chimneys. Intensity VI and higher within a radius of 30 miles. Felt over many states, a radius of over 300 miles.

6.0: Earthquakes (e.g. Massena, New York, September 5, 1944) are characterized by intensity VIII and higher near the epicenter. The Massena earthquake was felt from Canada south to Maryland and from Maine west to Indiana. It caused property damage estimated at $2 million. Many chimneys required rebuilding, and several structures were unsafe for occupancy until repaired. Residents of St. Lawrence County reported that many water wells went dry. At Massena, 90 percent of the chimneys were destroyed or damaged and house foundations, plumbing, and masonry were damaged severely. Cracks formed in the ground and brick-masonry and concrete structures were damaged.

7.0: Earthquakes (Charleston, South Carolina, August 2, 1886) generate intensities of IX and above. Effects in the epicentral region include more than 1,300 square kilometers of extensive cratering and fissuring. Damage to railroad tracks, about 6 kilometers northwest of Charleston, included lateral and vertical displacements, formation of S-shaped curves and longitudinal movement. Strong alarming vibrations are felt. Many building will sustain damage, a few will fall or be rendered useless. Some lives will be lost in collapsed buildings or in fires following the earthquake. Communications and transportation will be interrupted significantly.

MODIFIED-MERCALLI INTENSITY SCALE	
Intensity	**What to Expect**
I.	Not felt except by a very few under especially favorable circumstances.
II.	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing
III.	Felt quite noticeably indoors, especially on upper floors of buildings, but most people do not recognize it as an earthquake. Standing motorcars rock slightly. Vibration like passing truck. Duration estimated.
IV.	During the day, felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, and doors disturbed; walls make creaking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.
V.	Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI.	Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII.	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures. Some chimneys broken. Noticed by persons driving motorcars.
VIII.	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motorcars disturbed.
IX.	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X.	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.
XI.	Few, if any (masonry), structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII.	Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

GLOSSARY OF TERMS

Acceleration: Rate of change in velocity with time. In earthquake ground shaking, acceleration is measured relative to the acceleration of gravity (g).

Active Fault or Active Seismic Zone: A fault that has exhibited movement in recent time and that is expected to move in the future. The movement may be indicated by earthquakes in a seismic zone or by displacements within the last 10,000 years of young soil or other deposits along a fault trace.

Aftershocks: Smaller earthquakes following a large event and occurring in the same fault zone. Generally, aftershocks decrease in magnitude and frequency-of-occurrence with time.

Aseismic Region: A region lacking earthquakes and also assumed to lack a potential for future earthquakes.

Capable Fault: A fault that is considered active for seismic hazard computations.

Creep: Slow slip along a fault without producing earthquakes.

Crust of the Earth: The top 30 km of the Earth that is brittle and the area of occurrence of most earthquakes. Mid-crustal depths represent the strongest part of the Earth's crust and are at depths of 10km to 20 km.

Duration: The duration of strong shaking is the time interval between the first and last peaks of strong (usually felt) ground motion.

Eastern United States: All states in the continental United States east of the Rocky Mountain Front, approximately Longitude 105° west.

Earthquake: The sudden release of stress along a fault and the resulting vibrations of the earth. The vibrations propagate away from the epicenter.

Earthquake Prediction: An earthquake prediction is a qualified determination of the magnitude, location, and time of a future earthquake. Such qualifications must be beyond the expectations from ongoing background activity. Predictions can be broken down into short-term (hours to days), intermediate-term (weeks to months), or long-term forecasts (years to decades).

Earthquake Swarm: An earthquake swarm is a prolonged series of small events. In a swarm, earthquake activity usually increases until the largest event occurs.

Epicenter: The location on the earth's surface directly above the focus (or hypocenter) for an earthquake.

GLOSSARY OF TERMS

Fault: (or Fault Zone) a zone of weakness or fractures in the earth along which the two sides have been displaced relative to each other parallel to the fracture. The total fault offset may range from centimeters to kilometers.

Focal Depth: The depth below the surface of the hypocenter, the point where an earthquake initiates movement.

Focal Plane: The area of movement on a fault during an earthquake. The Focus may be any place on the focal plane.

Focus: (or hypocenter) The place at which rock failure commences in an earthquake.

Foreshocks: Smaller earthquakes preceding a large event and occurring in the same fault zone.

Hazard Map: A map showing locations of areas where a defined level of vibration is expected to be felt in a given time period. For example, areas where an acceleration of 0.1 g or greater would be expected once every 450 years.

Hypocenter: see Focus.

Intraplate Earthquake: Earthquake that occurs in the interior of recognized tectonic plates, often not associated with major active fault zones. All eastern United States earthquakes are intraplate earthquakes.

Intensity: A measure of ground shaking obtained from the damage done to structures built by man, changes in the earth's surface and felt reports. The Modified Mercalli Intensity Scale measures intensity in Roman numeral units from I (felt slightly) to XII (total damage).

Isoseismal: Lines that surround zones in which an earthquake generated a given intensity.

Magnitude: Earthquake magnitude is an instrumental determination of the relative size of an earthquake. The Richter Magnitude was the first commonly used measure of earthquake size. All subsequent magnitude scales are tied to the Richter magnitude scale. Magnitudes released in news reports are often referred to as Richter Magnitude, although that term can only be applied strictly to southern California earthquakes.

Microseism: Weak, almost continuous seismic waves or earth noise; often caused by surf, ocean waves, wind, or industrial activity.

New Madrid Seismic Zone: An area of continuing seismic activity along the Mississippi River in Tennessee and Missouri. Also, the location of the epicenters of the four largest New Madrid earthquakes of 1811-1812.

GLOSSARY OF TERMS

P-wave: The primary or fastest wave traveling away from a seismic event through the earth and consisting of a train of compressions and dilatations of the material.

Plate Tectonics: The Earth's crust consists of many rigid plates, such as the North American Plate. Plate Tectonics is the description of plate movement and interaction that explains earthquakes, volcanoes, and mountain building as consequences of horizontal surface motions of rigid portions of the Earth's crust.

San Andrea fault zone: A zone of movement between the North American Plate and the Pacific Plate, extending through southern California.

S wave: The secondary, or shear, seismic wave, traveling more slowly than the P wave, and consisting of elastic vibrations that are transverse to the direction of travel. It cannot travel in a fluid.

Surface Waves: Seismic waves that are confined to the earth's surface. Surface wave velocities are less than S-wave velocities.

Seismicity: Generally, the occurrence of earthquakes in space and time. Usually given as the number of earthquakes of a given magnitude in a specified time, such as the number of zero magnitude events per year.

Seismogram: The record of an earthquake written by a seismograph.

Seismograph: An instrument for recording the motions of the Earth's surface.

Seismologist: Scientist trained in interpreting ground motion from earthquakes and in using the waves from explosions to determine the structure of the Earth. Seismologists are found in major universities and in the oil industry.

Seismology: The study of earthquakes, seismic sources, and wave propagation through the Earth.

Seismometer: The sensor part of the seismograph.

Tectonic Earthquakes: Earthquakes resulting from sudden release of energy stored by deformation of the Earth's tectonic plates.

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Web Resources

National Earthquake Hazard Reduction Program
http://www.fema.gov/plan/prevent/earthquake/nehrp.shtm

The Great Central US Shake-Out
http://www.shakeoout.org/centralus/

Disaster Assistance Website
www.disasterassistance.gov

Ready Georgia
www.ready.ga.gov

Federal Emergency Management Agency
www.fema.gov

United States Geological Survey
www.earthquake.usgs.gov/prepare/

Prepare Now
www.preparenow.org

Seven Steps on the Road to Earthquake Safety
http://www.earthquakecountry.info/roots/steps.html

Appendix D:

Worksheets Used in Planning Process

Date	Hazard Type	Deaths	Injuries	Total Damages
3/19/1996	Hail	0	0	$ -
4/21/1997	Hail	0	0	$ -
4/22/1997	Hail	0	0	$ -
10/25/1997	Hail	0	0	$ 58
11/1/1997	Hail	0	0	$ -
4/8/1998	Hail	0	0	$ -
4/21/1998	Hail	0	0	$ -
4/22/1998	Hail	0	0	$ -
6/16/1998	Hail	0	0	$ -
8/18/1998	Hail	0	0	$ -
5/13/1999	Hail	0	0	$ -
5/13/1999	Hail	0	0	$ -
6/4/1999	Hail	0	0	$ -
7/24/1999	Hail	0	0	$ -
2/22/2001	Hail	0	0	$ -
6/14/2001	Hail	0	0	$ -
6/27/2001	Hail	0	0	$ -
6/27/2001	Hail	0	0	$ -
5/3/2002	Hail	0	0	$ -
11/11/2002	Hail	0	0	$ -
5/2/2003	Hail	0	0	$ -
4/22/2005	Hail	0	0	$ -
7/3/2005	Hail	0	0	$ -
6/29/2007	Hail	0	0	$ -
3/15/2008	Hail	0	0	$ 106,638
3/15/2008	Hail	0	0	$ 69,314
5/20/2008	Hail	0	0	$ -
5/20/2008	Hail	0	0	$ -
2/18/2009	Hail	0	0	$ -
4/25/2010	Hail	0	0	$ -
9/27/2010	Hail	0	0	$ -
4/4/2011	Hail	0	0	$ -
9/27/2011	Hail	0	0	$ -
7/17/1962	Hail - Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 478
5/27/1963	Hail - Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 550
7/9/1967	Hail - Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 2,378
4/23/1971	Hail - Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 3,565
5/25/1960	Hail - Lightning - Wind	0	0	$ 488

Date	Hazard Type	Deaths	Injuries	Total Damages
5/16/1962	Hail - Lightning - Wind	0	0	$ 655
11/21/1965	Hail - Lightning - Wind	0	0	$ 229
6/2/1968	Hail - Lightning - Wind	0	0	$ 2,075
4/12/1965	Hail - Severe Storm/Thunder Storm	0	0	$ 657
2/10/1960	Hail - Severe Storm/Thunder Storm - Wind	0	0	$ 244
3/30/1960	Hail - Severe Storm/Thunder Storm - Wind	0	0	$ 244
5/25/1961	Hail - Severe Storm/Thunder Storm - Wind	0	0	$ 650
7/24/1962	Hail - Severe Storm/Thunder Storm - Wind	0	0	$ 427
3/17/1965	Hail - Wind	0	0	$ 6,876
3/1/2001	Heavy Rain	0	0	$ -
10/6/2002	Heavy Rain	0	0	$ -
9/7/2004	High Wind	0	0	$ 500,000
6/19/1972	Hurricane/Tropical Storm	0	0	$ 1,727
6/26/1992	Lightning	0	0	$ 818
7/6/2008	Lightning	0	0	$ 106,638
7/8/2011	Lightning	0	0	$ 255
6/28/2013	Lightning	0	0	$ 15,000
7/22/1967	Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 2,888
3/18/1970	Lightning - Severe Storm/Thunder Storm - Wind	0	0	$ 1,861
8/7/1962	Lightning - Wind	0	0	$ 3,249
6/29/1969	Lightning - Wind	0	0	$ 6,384
6/22/1970	Lightning - Wind	0	0	$ 29,587
2/18/1961	Severe Storm/Thunder Storm	0	0	$ 12,067
4/2/1964	Severe Storm/Thunder Storm	0	0	$ 42,878
5/2/1964	Severe Storm/Thunder Storm	0	0	$ 46,580
1/18/1969	Severe Storm/Thunder Storm	0	0	$ 8,192
3/1/1971	Severe Storm/Thunder Storm	0	0	$ 18,005
6/14/1971	Severe Storm/Thunder Storm	0	0	$ 1,783
6/15/1971	Severe Storm/Thunder Storm	0	0	$ 1,181
6/9/1972	Severe Storm/Thunder Storm	0	0	$ 450
6/28/1972	Severe Storm/Thunder Storm	0	0	$ 1,727
2/1/1973	Severe Storm/Thunder Storm	0	0	$ 16,261
4/6/1973	Severe Storm/Thunder Storm	0	0	$ 336
5/15/1975	Severe Storm/Thunder Storm	0	0	$ 4,890
6/6/1977	Severe Storm/Thunder Storm	0	0	$ 25,510
1/30/1991	Severe Storm/Thunder Storm	0	0	$ 31
1/18/1992	Severe Storm/Thunder Storm	0	0	$ 11
9/28/1965	Severe Storm/Thunder Storm - Wind	0	0	$ 2,315
2/13/1966	Severe Storm/Thunder Storm - Wind	0	0	$ 24,512

Date	Hazard Type	Deaths	Injuries	Total Damages
3/1/1966	Severe Storm/Thunder Storm - Wind	0	0	$ 24,512
3/21/1974	Severe Storm/Thunder Storm - Wind	0	0	$ 146,449
4/4/1989	Severe Storm/Thunder Storm - Wind	0	0	$ 92,578
8/2/1990	Severe Storm/Thunder Storm - Wind	0	0	$ 878
3/29/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 8,429
3/29/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 8,429
4/27/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 8,429
4/27/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 843
4/27/1991	Severe Storm/Thunder Storm - Wind	0	0	$ 843
6/26/1992	Severe Storm/Thunder Storm - Wind	0	0	$ 818
6/26/1992	Severe Storm/Thunder Storm - Wind	0	0	$ 818
2/12/1993	Severe Storm/Thunder Storm - Wind	0	0	$ 794
5/15/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 753,261
7/21/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 753
7/29/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 1,507
8/3/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 753
9/1/1995	Severe Storm/Thunder Storm - Wind	0	0	$ 753
6/13/1996	Severe Storm/Thunder Storm - Wind	0	0	$ 732
8/24/1996	Severe Storm/Thunder Storm - Wind	0	0	$ 2,195
5/3/1997	Severe Storm/Thunder Storm - Wind	0	0	$ 1,430
7/27/1997	Severe Storm/Thunder Storm - Wind	0	0	$ 4,291
7/28/1997	Severe Storm/Thunder Storm - Wind	0	0	$ 2,861
6/16/1998	Severe Storm/Thunder Storm - Wind	0	0	$ 2,817
7/20/1998	Severe Storm/Thunder Storm - Wind	0	0	$ 5,634
5/23/1999	Severe Storm/Thunder Storm - Wind	0	0	$ 1,378
6/29/1999	Severe Storm/Thunder Storm - Wind	0	0	$ 689
7/6/1999	Severe Storm/Thunder Storm - Wind	0	0	$ 1,378
8/13/1999	Severe Storm/Thunder Storm - Wind	0	0	$ 2,756
2/16/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 1,296
5/19/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 19,446
6/3/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 6,482
6/14/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 1,296
7/3/2001	Severe Storm/Thunder Storm - Wind	0	0	$ 1,945
5/3/2002	Severe Storm/Thunder Storm - Wind	0	0	$ 2,552
11/11/2002	Severe Storm/Thunder Storm - Wind	0	0	$ 8,934
2/22/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 1,248
3/22/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 1,248
5/2/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 6,239
5/2/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 6,239

Date	Hazard Type	Deaths	Injuries	Total Damages
7/1/2003	Severe Storm/Thunder Storm - Wind	0	0	$ 31,195
6/21/2004	Severe Storm/Thunder Storm - Wind	0	0	$ 3,646
11/24/2004	Severe Storm/Thunder Storm - Wind	0	0	$ 608
7/3/2005	Severe Storm/Thunder Storm - Wind	0	0	$ 3,527
8/29/2005	Severe Storm/Thunder Storm - Wind	0	0	$ 5,878
8/29/2005	Severe Storm/Thunder Storm - Wind	0	0	$ 3,527
8/29/2005	Severe Storm/Thunder Storm - Wind	0	0	$ 588
1/2/2006	Severe Storm/Thunder Storm - Wind	0	0	$ 1,139
8/4/2006	Severe Storm/Thunder Storm - Wind	0	0	$ 569
6/5/2007	Severe Storm/Thunder Storm - Wind	0	0	$ 3,322
6/25/2007	Severe Storm/Thunder Storm - Wind	0	0	$ 1,107
6/29/2007	Severe Storm/Thunder Storm - Wind	0	0	$ 2,215
3/15/2008	Severe Storm/Thunder Storm - Wind	0	0	$ 2,133
6/28/2008	Severe Storm/Thunder Storm - Wind	0	0	$ 800
7/21/2008	Severe Storm/Thunder Storm - Wind	0	0	$ 2,133
12/2/2009	Severe Storm/Thunder Storm - Wind	0	0	$ 10,702
12/9/2009	Severe Storm/Thunder Storm - Wind	0	0	$ 1,605
6/15/2010	Severe Storm/Thunder Storm - Wind	0	0	$ 5,265
6/16/2010	Severe Storm/Thunder Storm - Wind	0	0	$ 1,053
7/9/2010	Severe Storm/Thunder Storm - Wind	0	0	$ 31,587
9/27/2010	Severe Storm/Thunder Storm - Wind	0	0	$ 1,579
4/4/2011	Severe Storm/Thunder Storm - Wind	0	0	$ 4,083
6/15/2011	Severe Storm/Thunder Storm - Wind	0	0	$ 7,145
6/15/2011	Severe Storm/Thunder Storm - Wind	0	0	$ 1,021
7/8/2011	Severe Storm/Thunder Storm - Wind	0	0	$ 1,021
2/24/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 10,000
7/5/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 2,500
7/6/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 1,500
7/6/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 500
7/18/2012	Severe Storm/Thunder Storm - Wind	0	0	$ 1,500
7/20/1998	Thunderstorm Wind	0	0	$ 2,000
6/27/2001	Thunderstorm Wind	0	0	$ -
4/3/2002	Thunderstorm Wind	0	0	$ -
2/22/2003	Thunderstorm Wind	0	0	$ 1,000
8/29/2005	Thunderstorm Wind	0	0	$ 500
8/29/2005	Thunderstorm Wind	0	0	$ 5,000
3/4/2008	Thunderstorm Wind	0	0	$ 1,000
1/30/2013	Thunderstorm Wind	0	0	$ 1,500
6/28/2013	Thunderstorm Wind	0	0	$ 2,500

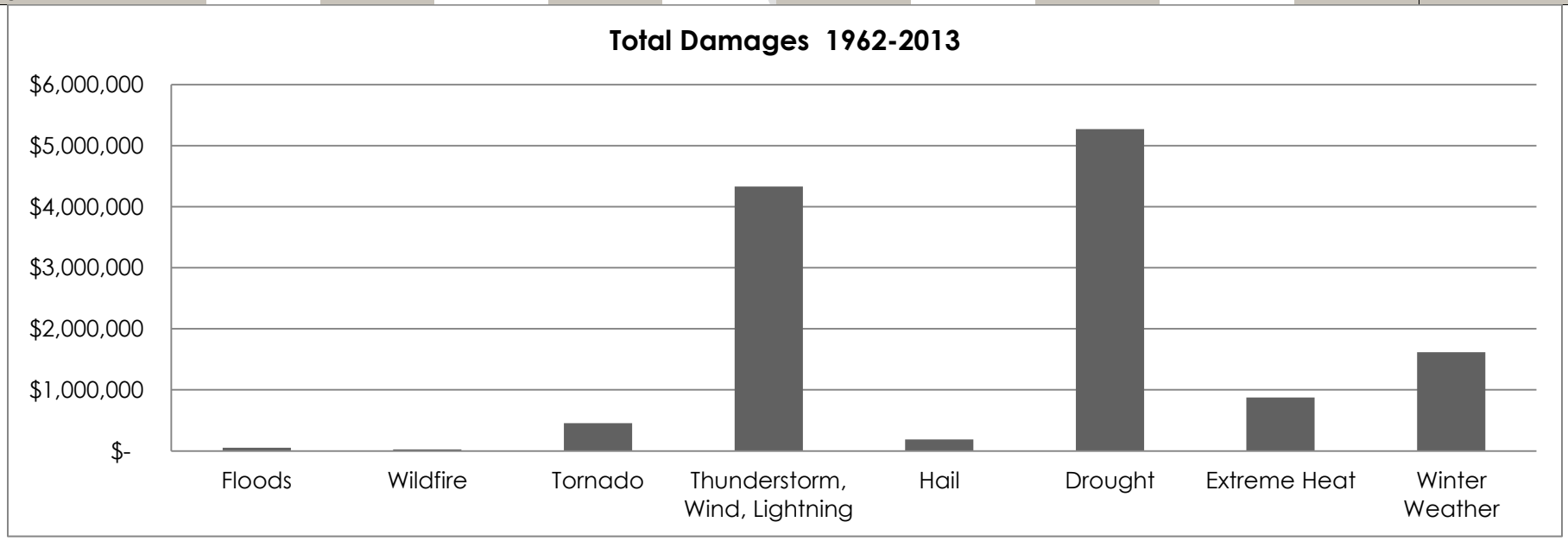
Date	Hazard Type	Deaths	Injuries	Total Damages
3/6/1967	Tornado	0	0	$ 34,370
5/8/1978	Tornado	0	0	$ 17,607
2/18/2009	Tornado	0	0	$ 267,546
2/18/2009	Tornado	0	0	$ 133,773
9/14/2002	Tropical Storm	0	0	$ -
7/1/2003	Tropical Storm	0	0	$ -
9/16/2004	Tropical Storm	0	0	$ -
9/26/2004	Tropical Storm	0	0	$ -
6/12/2005	Tropical Storm	0	0	$ -
7/6/2005	Tropical Storm	0	0	$ -
10/5/2005	Tropical Storm	0	0	$ -
8/21/2008	Tropical Storm	0	0	$ -
11/10/2009	Tropical Storm	0	0	$ -
9/4/2011	Tropical Storm	0	0	$ -
2/18/1960	Wind	0	0	$ 244
3/22/1968	Wind	0	0	$ 2,075
3/23/1969	Wind	0	0	$ 1,967
2/19/1972	Wind	0	0	$ 173
3/24/1975	Wind	0	0	$ 2,808
5/3/1975	Wind	0	0	$ 106,689
5/14/1975	Wind	0	0	$ 610
12/31/1975	Wind	0	0	$ 235
3/30/1977	Wind	0	0	$ 10,419
1/25/1978	Wind	0	0	$ 11,184
4/13/1979	Wind	0	0	$ 39,531
2/25/1980	Wind	0	0	$ 1,699
10/10/1982	Wind	0	0	$ 11,896
9/11/1983	Wind	0	0	$ 1,153
4/5/1985	Wind	0	0	$ 533
3/13/1993	Wind	0	0	$ 743,004
11/11/1993	Wind	0	0	$ 1,222
3/20/2001	Wind	0	0	$ 47,430
2/25/2004	Wind	0	0	$ 3,228
9/6/2004	Wind	0	0	$ 1,172,780
9/27/2004	Wind	0	0	$ 6,077
4/2/2005	Wind	0	0	$ 588
9/1/1997	Drought	0	0	$ 397,359
5/1/1999	Drought	0	0	$ -
8/1/1999	Drought	0	0	$ -

Date	Hazard Type	Deaths	Injuries	Total Damages
2/1/2000	Drought	0	0	$ -
4/1/2000	Drought	0	0	$ -
5/1/2000	Drought	0	0	$ -
6/1/2000	Drought	0	0	$ 4,215,697
7/1/2000	Drought	0	0	$ -
10/1/2000	Drought	0	0	$ -
10/1/2001	Drought	0	0	$ -
11/1/2001	Drought	0	0	$ -
12/1/2001	Drought	0	0	$ -
4/1/2002	Drought	0	0	$ -
8/1/2002	Drought	0	0	$ -
1/1/2003	Drought	0	0	$ -
3/1/2004	Drought	0	0	$ -
5/1/2007	Drought	0	0	$ -
9/1/2007	Drought	0	0	$ -
10/1/2007	Drought	0	0	$ -
11/1/2007	Drought	0	0	$ -
12/1/2007	Drought	0	0	$ -
9/1/2011	Drought	0	0	$ -
7/1/1986	Drought - Heat	1	2	$ 658,753
9/3/2002	Excessive Heat	0	0	$ -
8/1/2007	Excessive Heat	0	0	$ -
6/29/2012	Excessive Heat	0	0	$ -
7/1/2012	Excessive Heat	0	0	$ -
7/1/1980	Heat	0	0	$ 876,205
8/1/1980	Heat	0	0	$ -
7/20/1999	Heat	0	0	$ -
8/1/1999	Heat	0	0	$ -
11/1/2001	Heat	0	0	$ -
12/1/2001	Heat	0	0	$ -
1/24/2002	Heat	0	0	$ -
3/15/2002	Heat	0	0	$ -
4/16/2002	Heat	0	0	$ -
4/21/2009	Wildfire	0	0	$ 161
3/5/2012	Wildfire	0	0	$ 25,000
7/31/2012	Wildfire	0	0	$ 1,500
2/3/1996	Extreme Cold/Wind Chill	0	0	$ -
6/1/1997	Extreme Cold/Wind Chill	0	0	$ -
4/9/2000	Extreme Cold/Wind Chill	0	0	$ -

Date	Hazard Type	Deaths	Injuries	Total Damages
6/7/2000	Extreme Cold/Wind Chill	0	0	$ -
10/8/2000	Extreme Cold/Wind Chill	0	0	$ -
12/1/2000	Extreme Cold/Wind Chill	0	0	$ -
9/26/2001	Extreme Cold/Wind Chill	0	0	$ -
10/27/2001	Extreme Cold/Wind Chill	0	0	$ -
2/26/2002	Extreme Cold/Wind Chill	0	0	$ -
3/1/2002	Extreme Cold/Wind Chill	0	0	$ -
5/18/2002	Extreme Cold/Wind Chill	0	0	$ -
1/11/2003	Extreme Cold/Wind Chill	0	0	$ -
1/23/2003	Extreme Cold/Wind Chill	0	0	$ -
12/16/2005	Freezing Fog	0	0	$ -
4/7/2007	Frost/Freeze	0	0	$ -
12/18/1996	Heavy Snow	0	0	$ -
1/2/2002	Heavy Snow	0	0	$ -
2/12/2010	Heavy Snow	0	0	$ -
2/25/1965	Wind - Winter Weather	0	0	$ 2,292
12/17/2000	Winter Storm	0	0	$ -
2/26/2004	Winter Storm	0	0	$ -
1/9/2011	Winter Storm	0	0	$ -
3/1/1960	Winter Weather	0	0	$ 538,650
1/25/1961	Winter Weather	0	0	$ 2,415
12/12/1962	Winter Weather	0	0	$ 2,415
1/23/1963	Winter Weather	0	0	$ 472
12/31/1963	Winter Weather	0	0	$ 235,946
1/13/1964	Winter Weather	0	0	$ 23
3/30/1964	Winter Weather	0	0	$ 23,523
1/29/1966	Winter Weather	0	0	$ 4,457
1/8/1970	Winter Weather	0	0	$ 1,861
2/9/1973	Winter Weather	0	0	$ 206,841
1/1/1977	Winter Weather	0	0	$ 119,141
2/17/1979	Winter Weather	0	0	$ 18,118
2/5/1980	Winter Weather	0	0	$ 1,531
1/20/1983	Winter Weather	0	0	$ 12,006
3/13/1993	Winter Weather	0	0	$ 226,984
1/15/1994	Winter Weather	0	0	$ 799
1/28/2000	Winter Weather	0	0	$ 44,443
1/25/2004	Winter Weather	0	0	$ 34,069
1/28/2005	Winter Weather	0	0	$ 115,110
3/1/2009	Winter Weather	0	0	$ 28,039

Date	Hazard Type	Deaths	Injuries	Total Damages
12/25/2010	Winter Weather	0	0	$ -
2/9/2011	Winter Weather	0	0	$ -
3/7/1996	Flash Flood	0	0	$ -
7/1/2003	Flash Flood	0	0	$ -
3/8/1980	Flooding	0	0	$ 3,765
8/16/1994	Flooding	0	0	$ 22,132
2/16/1995	Flooding	0	0	$ 9,039
3/8/1998	Flooding	0	0	$ 17,607

Hazard	Number of Events in Historic Record	Number of Years in Historic Record	Number of Events in Past 10 Years	Number of Events in Past 20 Years	Number of Events in Past 50 Years	Historic Recurrence Interval (years)	Historic Frequency % chance/ year	Past 10 Year Record Frequency Per Year	Past 20 Year Record Frequency Per Year	Past 50 Year Record Frequency Per Year	Total Damage in Past 50 Years
Floods	6	53	0	2	6	8.83	11.3%	0.0	0.1	0.1	$52,543
Severe Thunderstorms, Wind :	129	53	38	74	129	0.41	243.4%	3.8	3.7	2.6	$4,329,834
• Hail	47	53	12	33	47	1.13	88.7%	1.2	1.7	0.9	$189,450
• Tornado	4	53	2	2	4	13.25	7.5%	0.2	0.1	0.1	$453,296
Droughts	23	53	7	22	23	2.30	43.4%	0.7	1.1	0.5	$5,271,810
Winter Storms/Ice Storms/Heavy Snow	44	53	8	28	44	1.20	83.0%	0.8	1.4	0.9	$1,619,133



The historic frequency of a hazard event over a given period of time determines the historic recurrence interval. For example: If there have been five Winter Weather Events in Jasper County in the past ten years, statistically you could expect that there will be 1 event every two years.

Realize that from a statistical standpoint, there are several variables to consider:
1) Accurate hazard history data and collection are crucial to an accurate recurrence interval and frequency.
2) Data collection and accuracy has been much better in the past 10-20 years (NCDC weather records).
3) It is important to include all significant recorded hazard events which will include periodic updates to this table.

By updating and reviewing this table over time, it may be possible to see if certain types of hazard events are increasing in frequency.

STAPLEE Criteria	S		T			A			P			L			E				E				
	(Social)		(Technical)			(Administrative)			(Political)			(Legal)			(Economic)				(Environmental)				
Considerations for Alternative Actions	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance / Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land / Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental Goals	Consistent With Federal Laws
Construct a shelter in manufactured home parks	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Continue to promote the use of CodeRed mass notification system to alert the public in the case of immediate threats	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Use local newspapers and social media to encourage the public to purchase weather radios	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Continue to raise awareness of tornado siren protocol through local newspapers and social media	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Conduct regular assessments of zoning and building codes' ability to mitigate severe thunderstorm damage and update as needed	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Develop a prioritized list of critical facilities in need of backup power sources and provide new sources as needed	0	0	+	+	+	0	0	0	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0

STAPLEE Criteria	S		T			A			P			L			E				E				
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Develop and conduct regular educational programs about water conservation, especially in regards to the effects of water shortages on the agricultural community	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Explore working with Farm Bureau on feed supply sharing programs during droughts	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Create and implement fire safety awareness programs for county/city employees.	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Inform the public through newspaper ads and flyers of the importance of clearing underbrush a safe distance from house.	0	0	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Inform the public through newspaper ads and flyers of 911 signs available through the Jasper County Fire Department.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Collaborate with state and county agencies to develop and conduct regular educational programs addressing the risks of wildfire and potential mitigation actions	0	0	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0

STAPLEE Criteria	S		T			A			P			L			E				E				
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Work to increase public awareness of the Community Wildfire Protection Plan and its provisions	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Purchase truck with skid unit for local wildland firefighting	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Create and implement fire safety awareness programs for county/city employees.	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Inform the public through newspaper ads and flyers of the importance of clearing underbrush a safe distance from house.	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Inform the public through newspaper ads and flyers of 911 signs available through the Jasper County Fire Department.	+	+	+	+	+	-	-	-	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+
Collaborate with state and county agencies to develop and conduct regular educational programs addressing the risks of wildfire and potential mitigation actions	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0
Identify and implement new ways to educate the public on earthquake preparedness	+	+	+	+	+	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

STAPLEE Criteria	S		T			A			P			L			E				E				
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Continue to evaluate building codes' ability to protect against earthquake damage and update as needed	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Organize and conduct regular educational outreach activities through a variety of channels, including schools, churches, radio PSAs, refrigerator magnets, pamphlets, flyers, and social media	0	0	+	+	+	+	+	+	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+
Develop a county-wide sheltering plan in coordination with DFACS and the Red Cross	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Develop a storm spotter training program for county employees	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Develop emergency response training programs for all appropriate county employees	0	0	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Develop a county-wide social media policy	+	+	+	+	+	-	-	-	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+
Develop a county-wide policy for using Facebook, Twitter, and other social media for public education about hazards	+	+	+	+	+	-	-	-	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+

STAPLEE Criteria	S		T			A			P			L			E				E				
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After developing a county-wide social media and internet policy, develop a public awareness site with information on emergencies, including contact numbers, shelters, and home safety procedures	0	0	+	+	+	+	+	+	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+
Provide weather radios to elderly citizens and those in high-risk areas	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Place signs along the roadway to alert people of to the County's emergency preparedness information	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Run a coordinated campaign to significantly increase the percentage of County residents registered for CodeRed alerts	0	0	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Work with Tax Assessors Office to update critical facilities values, square footage and GIS information	+	+	+	+	+	-	-	-	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+
Offer hazardous material operations and technician training to emergency personnel	0	0	+	+	+	+	+	+	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+
Do annual tabletop exercise involving all responding organizations on hazardous material spills	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

STAPLEE Criteria	S		T			A			P			L			E				E				
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Purchase two extra-large Hazwik Chemical Spill Truck Kits to store on the Special Ops Trailer	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Purchase a fully equipped hazardous materials response truck	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Continue to evaluate and review hazardous materials response plan	0	0	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Offer hazardous material operations and technician training to new emergency personnel	+	+	+	+	+	-	-	-	0	0	0	+	+	+	+	+	+	+	+	+	+	+	+

Appendix E:

Planning Process Documentation

Public Hearing Notice

A public hearing will be held for the Jasper County Pre-Disaster Mitigation Plan Update on Thursday, February 20, 2014, at 5:00pm in the Jasper County Chamber of Commerce at 119 W. Washington St. Monticello, GA.

The purpose of this hearing will be to inform citizens of the planning process and to obtain input into the development of the plan update. Representatives from the Northeast Georgia Regional Commission will present information and receive comments.

Questions concerning the Jasper County Pre-Disaster Mitigation Plan Update should be directed to Taylor Baxter, Planner, (706) 369-5650 or email tbaxter@negrc.org.

Public Hearing Notice

A public hearing will be held for the Jasper County Pre-Disaster Mitigation Plan Update on Thursday, June 26, 2014, at 4:00pm in the Chamber of Commerce Meeting Room at 119 W. Washington St. Monticello, GA.

The purpose of this hearing will be to present a draft for the Plan Update to citizens and to obtain feedback prior to submission to the Georgia Emergency Management Agency (GEMA). The draft will be available for download by the public by at www.negrc.org. Comments on the draft Plan Update will be accepted through Monday, July 7, 2014.

Questions concerning the Jasper County Pre-Disaster Mitigation Plan Update should be directed to Justin Crighton, Planner, (706) 369-5650 or email jcrighton@negrc.org.

1/24/12

Jasper County Hazard Mitigation Planning Committee Sign In Sheet

Agency	Name	Address	Phone #	e-mail
JASPER COUNTY	GREG WOOD	126 W GREENE ST MONTICELLO GA 31064	(706) 468-4900	gwood@jaspercountyga.org
So. Crescent Tech	Linda Simmons	112 Industrial Plt Dr. monticello	706 468 9930	lsimmons@sctech.edu
Jasper Co BOE	ERIC ARENA	1411 College St	706.318.4647	EARENA@jasper.k12.ga.us
Jasper Memorial Hospital	Julie Howell	898 college St	404-783-1453	emergprep@jaspermemorial.com
Jasper Health Dept.	David Mercer	336 East Green ST	706-468-6850	dtmercer@dhr.state.ga.us
Georgia Forestry Comm	Russell Fowler	112 Juliette Rd	478-986-3593	rFowler@gfc.state.ga.us
Jasper Co. Fire	Jarret Slocumb	PO Box 670 monticello GA	706-468-4943	jcfs904@bellsouth.net
Jasper Co EMA	Ronnie Payne	2598 Ga Hwy 212 E Monticello, GA	6789775807	jrpayne ronnie@bellsouth.net
GFC	ERIC MOSLEY	119 ITLEY ST MILLEDGEVILLE GA	478-445-5164	emosley@gfc.state.ga.us
Planning & Zoning	Sherry Braley	126 W Greene St Monticello GA 31064	7064684909	sbraley@jaspercountyga.org
City of Monticello	Richard L Martin	123 W Washington St.	706-468-6062	monticellogas@bellsouth.net
Chamber of Commerce	Anna Mickle	119W. Washington St	706 468-8994	jasperschamber@bellsouth.net
EMS/Fire	Bratcher, Jeffery	73 bluebird ct	4405220385	JasperEms@YAHoo.com
Jasper EMA	Melissa Slocumb	P.O. Box 670	706-468-4930	jaspercountyema@bellsouth.net

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Jasper County Hazard Mitigation Planning Committee Sign In Sheet

Agency	Name	Address	Phone #	e-mail
JASPER Cty BOC	ALAN W. COX	867 BEAR CREEK PT.	678-342-3147	AWCATLANTA@hotmail.com
Monticello PD	Bobby Norris	224 Funderburg DR	706-468-6911	bnorris42@bellsouth.net
Jasper County BOC	Lorri Smith	126 Greene St.	706-468-4900	Lsmith@jaspercountyga.org
CITIZEN	Chuck Jones	721 E MOURNING DOVE	770 941-2342	SKIPPCHUCK@AOL.COM
JASPER CO S.O.	CHARLES ROPER	1551 HWY 212 W.	706-468-4912	Sheriffsroper@jaspersheriff.com

2/28/12

Jasper County Hazard Mitigation Planning Committee Sign In Sheet

(6)

Agency	Name	Address	Phone #	e-mail
Jasper County Fire Svcs	Sabrina Westbrook	1109 Church St.	706-319-2496	shadydalefc@bellsouth.net
J.C. Bd. of Comm	Alan Cox	867 Bear Creek Pt.	678-342-3147	AWCATLANTA@Hotmail.com
Chamber of Commerce	Anna Mickle	PO Box 133 119 W. Wash. St.	706-468-8994	jasperchamber@bellsouth.net
Jasper Co Fire	Jarret Slocumb	PO Box 670	706-468-4943	jcfs904@bellsouth.net
Jasper Co.	Ronnie Payne		7064680249	payneronnie@bellsouth.net
Jasper Co.	[illegible]	199 [illegible]	706-468-[illegible]	[illegible]@jaspercountyga.org
GFC	Eric Mosley	119 Hwy 49 Milledgeville	478 445 5164	emosley@gfc.state.ga.us
Jasper Memorial Hosp	Julie Howell	898 College St Monticello	(404) 783-1453	emergprep@jaspermemorial.com
Jasper EMS	Jeff Batchelor	Station 1	4045202385	EMS
Jasper DFCS	Valerie Goolsby	226 Funderburg Dr	706 819 8844	vgbraswell@dhr.state.ga.us
So. Crescent Tech	Linda Simmons	112 Industrial Pk. Dr	706 468 9930	lsimmons@sctech.edu
City Shady Dale	Gabby Champion	1444 N Railroad St	706-476-0078	
Monticello News	Kathy Mudd	P.O. Box 288, Monticello	706-318-7396	editor@themonticellonews.com
Jasper Co. BOC	Lorri Smith	126 W. Green St.	706-468-4900	lsmith@jaspercountyga.org
Jasper Co BOC	Greg Wood	"	"	gwood@jaspercountyga.org
Chuck Jones		721 E Mourning Dove	770 841-7342	SKIPCHUCK@AOL.com
Sherry Braley	Jasper Co. P&Z	126 W Green St	7064684905	sbraley@jaspercountyga.org
R. W. Elkins	Monticello Police	224 Funderburg Dr.	706 468 6911	YCARTER42@BELLSOUTH.NET
Charles Roper	Jasper Co. SO.	1551 Hwy 212 W.	706-468-4912	sheriffroper@jaspercosheriff.com
David Mercer	Jasper H. Dept.	336 East Green St.	706-468-6850	dtmercer@dhr.state.ga.us
Richard L. Martin	City of Monticello Gas	123 W Washington St	706-468-6062	monticellogas@bellsouth.net
Jasper Co EMA	Melissa Slocumb	PO Box 670	706 4684930	jaspercountyema@bellsouth.net

3/27/12

Jasper County Hazard Mitigation Planning Committee Sign In Sheet

Agency	Name	Address	Phone #	e-mail
Jasper Co. EMA	Melissa Slocumb	P.O. Box 670	706-468-4930	jaspercountyema@bellsouth.net
Jasper Co. EMA	Jessica Poundstone	" "	" "	" "
Chamber of Commerce	Anna Mickle	PO Box 133	706-468-8994	jasperchamber@bellsouth.net
Jasper Co. EMA	Ronnie Payne	2598 GA Hwy 212 E Monticello, GA 31064	678 977 5887	payneronnie@bellsouth.net
Jasper Co Fire/EMS	[illegible]	PO Box 670	706-468-4943	jcfs904@bellsouth.net
Southern Crescent Tech	Linda Simmons	112 Industrial Pk. Dr.	706 468 9930	lsimmons@sctech.edu
Jasper County BOC	Lorri Smith	126 W. Greene St.	706.468.4900	Lsmith@jaspercountyga.org
Jasper County PW	William Brown	199 Mack Tillman	706-468-4910	Wbrown@jaspercountyga.org
Jasper County	Greg Wood	126 W Greene St	706-468-4900	gwood@jaspercountyga.org
Board of Commissioners	Alan Cox	867 Bear Creek Rd. Mansfield	(770)342-3147	AWCATLANTA@Hotmail.com
Jasper Co. DFCS	Valerie Goolsby	226 Funderburg Dr.	706 819 8844	vgolsby@dhr.state.ga.us
Jasper DFCS	Earline Hall	226 Funderburg Dr.	706-468-6441	elhall@dhr.state.ga.us
The Monticello News	Kathy Mudd	PO Box 30	706-468-6511	editor@themonticellonews.com

3/27/12

Jasper County Hazard Mitigation Planning Committee Sign In Sheet

Agency	Name	Address	Phone #	e-mail
Jasper Health Dept.	David Mercer	336 E Green ST.	468-6850	dtmercer@dhr.state.ga.us
~~Julie~~ Jasper Memorial Hospital	Julie Howell	898 College St. Mont. 30414	404-783-1453	emergprep@jaspermemorial.com
Georgia Forestry	Russell Fowler	112 B. Jullictte Rd	478-986-3593	rFowler@gfc.state.ga.us
City of Monticello	Richard Martin	123 N. Washington St.	(706) 819-0308	monticellogas@bellsouth.net
Jasper Co. Planning + Zoning	Sherry Braley	126 W Greene St Ste 17	7064684905	sbraley@jaspercountyga.org
DNR - LE	Billy Bryant		678-588-3111	billy.bryant@dnr.state.ga.us
~~Melissa Slocumb~~				
Jasper Co EMA	Melissa Slocumb	PO Box 670	706-468-4930	jaspercountyema@bellsouth.net

04/29/12

Jasper County Hazard Mitigation Planning Committee Sign In Sheet

Agency	Name	Address	Phone #	e-mail
Jasper Co. EMA	Jessica Poundstone	77 Mack Tillman Dr	704-632-6111	Jaspercoema@bellsouth.net
Georgia Forestry	Russell Fowler	112 Round oak Rd	478-986-3593	rFowler@gfc.state.ga.us
Jasper Co Fire	Jarret Slocumb	PO Box 670	706-468-4943	jcfs704 ~~jslocumb~~@bellsouth.net
~~Ed Westbrook~~				
GEMA	Ed Westbrook	1109 Church St Shady Dale	706-468-6380	ed.westbrook@gema.ga.gov
So. Crescent Tech	Linda Simmons	112 2nd. Pk Dr.	706 468 9930	lsimmons@sctech.edu
Anna Middle &	Chamber of Commerce	PO Box 133 Monticello	706-468-8994	jasperchamber@bellsouth.net
GREG WOOD	JASPER COUNTY	126 W GREENE ST	706 468-4900	gwood@jaspercountyga.org
Jasper Co P&Z	Sherry Braley	126 W Greene St	7064684905	sbraley@jaspercountyga.org
Jasper County BOC	Lorri Smith	126 W Greene St	7064684900	lsmith@jaspercountyga.org
GA DNR	Billy Bryant	2618 Shurling Dr Macon	678-388-3111	billy.bryant@dnr.state.ga.us
Jasper Memorial	Hospital Julie Howell	898 College St	706-468-6411	emergprep@jaspermemorial.com
City of Monticello	Richard L. Morton	123 W. Washington St.	706-468-6062	monticellogas@bellsouth.net
Kathy Mudd	Monticello News	PO Box 288, Monticello	706-468-6511	editor@thenonticellonews.com
Will Brown	Jasper Public Works	199 Mack Tillman dr.	706-468-4910	wbrown@jasperco.ga.org

06-29-12

Jasper County Hazard Mitigation Planning Committee Sign In Sheet

Agency	Name	Address	Phone #	e-mail
Jasper Co EMA	Melissa Slocumb	77 Mack Tillman Dr	704-632-6111	jaspercoema@bellsouth.net
Jasper Co EMA	Jessica Poundstone	" " "	" " "	" " "
Jasper Co Fire/EMS	Jarret Slocumb	185 Hwy 212 W	706-468-4943	jslocumb@jaspercountyga.org
Jasper Co BOC	Greg Wood	126 W Greene St	706 468 - 4900	gwood@jaspercountyga.org
Jasper Cty BOC	Alan Cox	126 W. Greene St. Mont.	678-342-3147	awcatlanta@Hotmail.com
Jasper Co. PW	Will Brown	159 Mack Tillman Rd	706 468-4944	wbrown@jaspercountyga.org
Jasper Co SO	Jerry Robinson	1537 Hwy 212 W Mont	706-468-4912	jrobinson@jaspercosheriff.com
Jasper Memorial Hospital	Julie Howell	898 College St Monticello	4047831453	emergprep@jaspermemorial.com
Monticello Police	R. W. Elkins	224 Funderburg Dr Monticello	706-468-6911	ycarter42@bellsouth.net
Jasper Co. BOC	Lorri Smith	126 W. Greene St.	706-468-4900	lsmith@jaspercountyga.org
Jasper Co. P&Z	Sherry Braley	126 W Greene St	706 468 4905	sbraley@jaspercountyga.org
~~Anna~~ Chamber	Anna Mickle			
DNR LE	Billy Bryant	Macon	478-751-6415	
Jasper Co EMA	Melissa Slocumb			

Jasper County Hazard Mitigation Planning Committee Sign In Sheet 7/31/12

Agency	Name	Address	Phone #	e-mail
Public Works (Jasper Co)	William Brown	199 Maddox Rd	4910	bbrown@jaspercountyga.org
	Ronnie Payne	2598 Gaithy 212 East	6789775807	payneronnie@bellsouth.net
Jasper County	Greg Wood	126 W Greene St (706)	468-4900	gwood@jaspercounty-ga.org
Jasper City BOC	Alan Cox	867 Bear Creek Pt.	678-342-3147	AWCATLANTA@HOTMAIL.COM
So. Crescent Tech	Linda Simmons	112 Industrial Pk Dr.	706 468 9930	lsimmons@sc.tech.edu
Chamber of Commerce	Anna Nickles	PO Box 133 Monticello	706-468-8994	jasperchamber@bellsouth.net
Jasper Co Health Dept.	David Mercer	336 East Green St.	706-468-6850	dtmercer@dhr.state.ga.us
Jasper County BOE	Morad El-Jourbagy	1411 College St.	706-468-6350	meljourbagy@jasper.k12.ga.us
Georgia Forestry	Russell Fowler	112 Jailette Rd	478-986-3593	rfowler@gfc.state.ga.us
Jasper Co Fire	Jarret Slocumb	185 Hwy 212 W.	706-468-4943	vgbrasswell@dhr.state.ga.us
Jasper Co. DFCS	Valerie Goolsby	226 Funderburg Dr	706 468 6460	
" "	Earlene Hall	" "	" "	
The Monticello News	Kathy Madd	PO Box 30	706-468-7651	editor@themonticellonews.com
Jasper Co P&Z	Sherry Braley	126 W Green St Ste 17	7064684905	sbraley@jaspercountyga.org

09/25/13

Jasper County Hazard Mitigation Planning Committee Sign In Sheet

Agency	Name	Address	Phone #	e-mail
Jasper DFCS	Valerie Braswell	226 Funderburg Dr	706 468 6464	vgbraswell@dhrstate.ga.us
Jasper Drug	Earline Hall	226 Funderburg Dr.	706-468-6461	ehall@dhr.state.ga.us
Jasper Co Health Dept	David Mercer	336 East Green St	706-468-6850	dtmercer@dhr.state.ga.us
Jasper Co. Emergency Ser.	Jarret Slocumb	185 Hwy 212 W.	706-468-4943	jslocumb@jaspercountyga.org
Jasper Health Svcs	Julie Howell	868 College St.	706468 6411	emergprep@jasper memorial.com
Southern Crescent	Linda Simmons	112 Ind park DR.	706468 9432	lsimmons@scttech.edu
Jasper City BOC	ALAN COX	867 BEAR CREEK AT. 30055	678-342-3147	AWCATLANTA@Hotmail.Com
Jasper County BOE	Morad El-Jourbagy	1411 College St	706.468.6330 ext 111	meljourbagy@jasper.K12.ga.us
Chamber of Commerce	Anna Nickle	114 W. Washington St.	706-468-8994	jasperchamber@bellsouth.net
City of Monticello	Richard Martin	123 W. Washington St	706-468-6062	monticellagas@bellsouth.net

Pre-Disaster Hazard Mitigation Public Meeting

Jasper County **Date: February 20, 2014**

Name	Organization	Phone	Email
Taylor Baxter	N.C.E.R.C.	—	———
Donnie Pope	Sheriff's Office		
Julie Jackson	Jasper Mem Hosp.		
James Gregory	Jasper Co Emergency Services	706-816-3431	
Jarret Slocumb	Jasper Co. Emergency Services	706-468-4943	
Hamm Pace	Monticello News	706-468-0571	
Angela Walsh	County Tax Office	706-468-4902	
Melissa Slocumb	Jasper Co. EMA	706-468 4930	mslocumb@jaspercountyga.org

Jasper County Hazard Mitigation Plan Committee

March 27th, 2012

This was the second gathering of the Hazard Mitigation Plan Committee. Beginning at 1:40pm, the meeting opened with the appointing of the chair and vice chair of the committee.

The committee made a motion to approve the meetings' agenda, second by Alan Cox and Greg Wood closed the vote.

Next, the committee nominated Melissa Slocumb as chairperson, second by Kathy Mudd and closed by Linda Simmons.

The vice chair nomination went to Kathy Mudd, second by Greg Wood and Ronnie Payne closed the vote.

The committee then focused on its goals and objectives, which came to the conclusion that the paragraph in the plan was to remain as is with the exception of adding "Jasper County and its municipalities" to the wording; the motion to accept was made by Alan Cox and closed by Ronnie Payne.

The bulk of the meeting consisted of the prioritizing of hazards in the county. The committee was given a task to rank the hazard that would be most damaging as well as cost affected. The committee came to the conclusion that tornados/wind/thunderstorms were priority 1, followed by wildfire/drought/extreme heat. All hazards that were presented will end up in the updated plan. Further research will be conducted to assure accurate data of past events.

Inventory of assets was the final discussion for the committee. Most of the record keeping has already been completed by GMIS, and only a few updates need to be added to the system; some of the critical structures will be added such as the E911 Center, the Health Department, and the new high school.

Lastly, the committee discussed the scheduling of the next meetings, which will remain on the basis of the last Tuesday of every month. The next meeting will fall on Tuesday April 24th, 2012.

Meeting was adjourned at 2:30pm.

Jasper County Hazard Mitigation Plan Committee

April 24th, 2012

In this third gathering of the Hazard Mitigation Plan Committee, Chairperson Melissa Slocumb was unable to attend due to family illness; attending to the meeting in her place was GEMA Area 4 Field Coordinator and former Jasper County EMA Director Ed Westbrook. Vice Chair Kathy Mudd was in attendance.

The meeting began at 1:35pm, opening with the review of the minutes from the latest meeting on March 27th. A motion was made by Greg Wood to change the wording of "medical clinic" to Health Department and accept the minutes as amended, Richard Martin seconded the motion. A unanimous vote was passed to accept the March 27th, 2012 meeting minutes.

The bulk of the meeting was subjected on Jasper County's Critical Facilities. The committee concluded that the addresses on the list supplied would need to be verified along with numerous additions to the list itself. The committee agreed to add the following locations to the list of Critical Facilities:

E911 Center, Jasper County Health Department, Farrar Fire Station as well as station numbers to all the other fire station sites, Public Works Department, the senior center, all power substations and cell towers with their longitude and latitude locations and owners of the towers, Jasper County High School, Turtle Cove Water System, and the City of Monticello Treatment Plant and Water System.

Also, the committee made changes to the locations already on the list, including: Jasper County Middle School (being the address is correct), showing the city water towers and naming the "Unnamed water tower" to City of Monticello Water Tower, and the committee concluded that Jasper Co SR 212 (SL) was the airport which shall remain on the list.

The committee will rank the top ten critical facilities in the next meeting on Tuesday, May 29th, 2012. Greg Wood made a motion to adjourn the meeting, Kathy Mudd seconded the motion. The meeting concluded at 2:20pm.

Jasper County Hazard Mitigation Plan Committee

July 31st, 2012

This was the fifth gathering of the Hazard Mitigation Plan Committee. Beginning at 1:25 pm, the meeting opened with the review and approval of the previous minutes and the agenda.

Alan Cox made a motion to approve the minutes, second by Greg Wood and committee unanimously approved.

Greg Wood made a motion to accept the agenda, Valerie Goolsby second and the committee unanimously approved.

The first order of business the committee attended to was the discussion of the rough draft of the plan. Kathy Mudd made the suggestion to change the name of the "Community Center" on the list of Critical Structures. It was also suggested by Brian Laughlin (GEMA Hazard Mitigation Planer) to prioritize the list of critical structures; Chair Melissa Slocumb also suggested having another meeting to list, prioritize, and set time frames for specific projects on critical structures.

Next, the committee determined that the whole project was under budget, which led to further discussions of what projects needed to be added to the Scope of Work plan.

One project of discussion was the upgrading of the 911 database, it was determined that there were no concise maps of Jasper County that all the agencies can follow, thus needing the installation and upgrade of GPS/GIS software that will tie all the information of these agencies together.

William Brown made a motion to accept the Scope of Work for GIS upgrade, the motion was seconded by Alan Cox, and the committee unanimously approved of the project.

Lastly, Melissa suggested to the committee that when the draft of the plan is submitted to the committee for review, she will also send a copy of the Review Tool Kit, which is a checklist to make sure the plan has all the requirements and is ready for FEMA review. William Brown made a suggestion to review the plan in sections, rather than the whole plan at once. In addition, Alan Cox suggested breaking down certain number of objectives from the Review Kit to certain agencies to reduce work load and ensure a thorough review of the plan.

The committee then determined the next meeting will be on Tuesday, September 26th, 2012.

A motion was made by Ronnie Payne for the meeting to be adjourned, second by Jarret Slocumb. The committee was dismissed at 2:10 pm.

Jasper County Hazard Mitigation Plan Committee

September 25, 2012

This was the 6th gathering of the Hazard Mitigation Plan Committee. Beginning at 1:20 pm, the meeting opened with the review and approval of the previous minutes and the agenda.

Alan Cox made a motion to approve the minutes, second by Valerie Goolsby and committee unanimously approved.

Valerie Goolsby made a motion to accept the agenda, Alan Cox second and the committee unanimously approved.

The first order of business the committee attended to was a review and discussion of the Hazard Data sheet showing data of all the recorded disasters that occurred in the county since 1960. The purpose of reviewing this data sheet was to show the committee members the frequency of certain disasters that the county has experienced through the decades. The database that keeps this information is called Sheldus based in the University of South Carolina

Next topic was the main focus of the meeting, the committee began to discuss ideas about the objectives and actions on GEMA Hazard Worksheet #4; This worksheet covered the objectives and actions that the committee would take to lessen the loss of property and life from these disasters. Discussions of building shelters, back-up generators, weather radios, and even having a radio station and website to ensure the public is aware of what threats they could face. The committee also discussed whether the community and politicians would approve of these projects, as well as any economic/environmental percussion.

Committee chair Melissa Slocumb stated there will not be a mitigation meeting next month. She also made a motion to adjourn, seconded by Jarrett Slocumb; the committee unanimously agreed and the meeting was closed at 2:35pm.