

Gadsden County Local Mitigation Strategy, 2010 Update

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2010 Update

Authored by
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The Florida Division of Emergency Management (DEM) and the Florida Planning and Development Lab at the Florida State University (FSU) partnered to establish an internship program to assist local governments in updating Local Mitigation Strategies. The two-year program began in 2009 and was funded through FEMA's Hazard Mitigation Grant Program. The program provides graduate students to Florida counties for a 12-week period to update the local plan. Peter Koeppel, Senior Planner for the Department of Urban and Regional Planning at FSU, managed the program and supervised interns with the assistance of Joshua Wickham, a graduate of the Master of Science in Planning program at FSU. Harrison Higgins, Associate Director of cityLAB at the University of California Los Angeles, developed and presented the training curriculum. Laura Herbert held the role of DEM liaison for the internship program.

Office space and resources for the interns were provided at the Gadsden County Sheriff's Office under Sheriff Morris Young.

The Gadsden County Appraiser Clay VanLandingham provided county property data for the vulnerability assessment. Taylor Moore, GIS Coordinator for the Appraiser's Office, assisted in interpreting the data.

Numerous individuals aided in the gathering of information and participation in the development of this plan.

Adoption Resolutions

§201.6(c)(5): The plan shall include “documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g. City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.”

Attached hereafter are the adoption resolutions and/or ordinances from each the county and the six municipalities addressed in this plan. The Gadsden County resolution of adoption applies to all the unincorporated areas of the county while the resolution of adoption for each town or city includes those areas incorporated into that jurisdiction. The order of the resolutions attached is as follows, with the date of adoption for each jurisdiction in parenthesis:

Gadsden County (aaa x, xxxx)

City of Chattahoochee (aaa x, xxxx)

Town of Greensboro (aaa x, xxxx)

City of Gretna (aaa x, xxxx)

Town of Havana (aaa x, xxxx)

City of Midway (aaa x, xxxx)

City of Quincy (aaa x, xxxx)

FEMA Crosswalk

Attached hereafter is the FEMA Plan Review Crosswalk, which is consistent with the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* as amended by Section 322 of the *Disaster Mitigation Act of 2000*, the *National Flood Insurance Act of 1968*, as amended by the *National Flood Insurance Reform Act of 2004*, and *44 Code of Federal Regulations Part 201 – Mitigation Planning*. The plan writers, State plan reviewers, and FEMA plan reviewers utilize this Crosswalk to assure the local mitigation plan satisfactorily fulfills code requirements.

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Executive Summary

This updated Local Mitigation Strategy is a plan to reduce the vulnerability of people and structures from natural and human-caused hazards that occur in Gadsden County and its six municipalities. This plan is required by the Federal Emergency Management Agency (FEMA) in order for the local government agencies to receive funding for mitigation projects and must be updated every five years.

(purpose)

(context)

(public process)

(risk assessment/vulnerabilities)

(goals/projects)

(maintenance)

Section 1.0: Introduction

The first Gadsden County Local Mitigation Strategy (LMS) was created in 1997 as a result of funding provided by the Florida Department of Community Affairs, Division of Emergency Management (DEM). The Capital Area Chapter of the American Red Cross updated the original LMS in 1999. In 2005, Disaster Strategies and Ideas Group, LLC revised the LMS, under contract from DEM. This document is the result of the five-year update cycle that began in 2010. This section describes the purpose and organization of this plan.

1.1 Purpose

The local mitigation plan is the representation of a jurisdiction's commitment to reduce risks from natural hazards and serves as a guide for decision makers as they commit resources to reducing the effects of natural hazards. The plan also serves as the basis for the State to provide technical assistance and to prioritize project funding (Local Mitigation Plans Rule, 2002).

The *Disaster Mitigation Act of 2000* was adopted by the United States Congress to amend the *Robert T. Stafford Disaster Relief and Emergency Assistance Act*, authorizing a program for pre-disaster mitigation, among other purposes. The purpose of the program is to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters and to provide a source of pre-disaster hazard mitigation funding. The funding is to assist state and local governments in implementing effective hazard mitigation measures that are designed to ensure the continued functionality of critical services and facilities after a natural disaster. Approval of a mitigation plan for the jurisdiction is required in order to receive funding for hazard mitigation. The mitigation plans for local governments, such as this document, must describe actions to mitigate hazards, risks, and vulnerabilities identified in the plan and establish a strategy to implement those actions.

The Federal Emergency Management Agency (FEMA) is tasked with implementation of the pre-hazard mitigation programs. The specific requirements for local mitigation plans are located in Section 201.6 of Title 44, Chapter 1 of the Code of Federal Regulations, the federal law that regulates FEMA. The plan is required in order to receive Hazard Mitigation Grant Program (HMGP) funds and grants through the Pre-Disaster Mitigation (PDM) grant program. The plan is required to include documentation of the planning process, a risk assessment, a mitigation strategy, a plan maintenance process, and documentation of adoption by each jurisdiction for which the plan describes. Approval of the plan is subject to review by the State Hazard Mitigation Office and by the Region IV FEMA Office. Plans are required to be updated on a five-year cycle. The approval and update processes are further described in [Section 6.0](#).

The State of Florida provides requirements in addition to FEMA requirements that must be met in order to obtain HMGP funding. The state requirements are set forth in Section 9G-22 of the Florida Administrative Code (Hazard Mitigation Grant Program, 2002) and require establishment of a Local Mitigation Strategy Working Group. The LMS Working Group is tasked with development and revision of a Local Mitigation Strategy, a plan to reduce identified hazards within a county. LMS is the term used in Florida for the local hazard mitigation plans developed to meet FEMA requirements. The Florida Division of Emergency Management (DEM)

develops a statewide hazard mitigation plan and acts as the local government’s liaison to FEMA, reviewing LMS documents to ensure compliance with the State plan as well as Federal requirements.

1.2 Organization of the Plan

The organization of this plan is adapted from the plan content requirements of §201.6 44 CFR Chapter 1(c). Sections 3.0 through 6.0 of this plan are modeled upon the code requirements while the remainder of the plan provides relevant information supporting the required content. Throughout this plan there is reference made to specific code requirements to aid the reader in understanding the organization and purpose of the plan sections. Table 1.1 provides a description of the contents for each section and appendix contained in this plan. The changes in plan organization from the 2006 LMS have been made to better reflect the plan content requirements and present supporting information in an orderly manner. Appendix A details how the 2006 LMS was reviewed, analyzed, and revised to create this updated plan.

Table 1.1: Description of Plan Contents

Plan Section	Contents
Section 1.0: Introduction	Describes the purpose of this plan, including the history, authorization, and requirements for developing this plan.
Section 2.0: Jurisdictional Context	Describes the context of Gadsden County and the six incorporated communities within the county that are included in this multi-jurisdictional plan. The section includes information on climate, population demographics, and growth trends.
Section 3.0: The Planning Process	Outlines the process used to develop this plan, identifies the key participants and their participation, and reviews the existing documents referred to during development of this plan.
Section 4.0: Risk Assessment	This section identifies and profiles all the hazards that may be experienced in Gadsden County and its communities and assesses vulnerability to each of the hazards.
Section 5.0: Mitigation Strategy	The Mitigation Strategy includes the goals, objectives, and actions for mitigation, provides a capability assessment, and outlines an implementation strategy to fund and achieve mitigation actions.
Section 6.0: Plan Maintenance Process	Describes how to monitor, evaluate, and update this plan, including continued public involvement.
Appendix A: Review and Revision Documentation	Contains a table that documents how each section of the 2006 version of the LMS was reviewed and where corresponding information can be found in this updated plan.
Appendix B: Public Meeting Documentation	Contains documentation of the public participation process for development of this plan.
Appendix C: Critical Facility Inventory	Contains a list of the critical facilities within Gadsden County.
Appendix D: Current Mitigation Strategies in Support Documents	Summarizes the hazard mitigation goals, objectives, and actions from jurisdictional comprehensive plans and other plans.
Appendix E: Project Prioritization Method	Outlines the project prioritization method used.

Section 2.0: Jurisdictional Context

A critical step in any planning effort is first understanding local conditions. Most planning efforts occur locally because every place is unique. When developing a plan to achieve a set of goals there are many actions that can be taken to achieve a desired end state, however local conditions determine which actions are appropriate and which will not work for a particular place or community. This section summarizes the local condition of Gadsden County and its municipalities and describes anticipated development for each locality. This information is important for understanding the communities vulnerabilities, as identified in [Section 4.3](#), and development of mitigation actions that will reduce the effects of hazards, as identified in [Section 5.2](#).

2.1 Gadsden County Context

(location and geography) Gadsden County is located between the Ochlocknee and Apalachicola rivers in the Florida panhandle. Just northwest of Tallahassee, Gadsden County borders Georgia and is not a coastal county. Gadsden County borders the Florida counties of Leon to the east, and Jackson and Liberty on the west. The Georgia counties of Decatur, Seminole, and Grady are to the north. Gadsden County contains about 512 square miles and spans about 38 miles from east to west and 22 miles from north to south at its widest points (Rupert, 1990).

(geology) Gadsden County lies within an area of Florida called the Northern Highlands, a geologic area distinguished from the Coastal Lowlands. The hilly topography is the result of erosion by running water. The elevation ranges from about 100 feet above mean sea level at the southern tip of the county to about 330 feet near Georgia. Gadsden County is located in a relatively geologically stable area (Rupert, 1990). The probability of an earthquake or other serious geologic hazards is low. However the county is susceptible to localized geologic hazards such as seasonal flooding, landslides, and sinkholes. Each hazard that may occur in Gadsden County is profiled in [Section 4.0](#).

(climate) Gadsden County is located in the humid subtropical climate zone, which is typified by long hot, humid summers and mild, wet winters. The Florida Panhandle experiences two wet seasons: one in the winter when cold fronts move across the area from the north and another during the summer when convective coastal storms develop (National Climatic Data Center, n.d.). Hurricane season officially begins June 1 runs through the end of November with a season peak in August and September. July is the hottest month with an average high of 91°F and also receives the maximum average precipitation at 6.68 inches, which results in high humidity. The highest temperature experienced in Gadsden County is 102°F and has occurred during both June and July (The Weather Channel Interactive, Inc., 2010). January is the coldest month with an average low of 39°F and record low of 4°F. Snow is a rare occurrence, although freezes generally occur each year.

(population and demographics) The U.S. Census Bureau Population Estimates Program estimates a total population of 47,560 for Gadsden County as of July 1, 2008. However local expertise suggests that the total population of the county may be closer to 60,000. The disparity between the Census Bureau's records and the actual local condition are due to a lack of reporting. The overall response rate for the 2000 Census was 67%, leaving a lot of room for

error. Particular populations are hard to capture and include the poor, elderly, disabled, and immigrants. Local knowledge, supported by Census data, suggests these populations are relatively high in Gadsden County. They are often the same populations that are particularly susceptible to the impacts of hazards. For these reasons, it is particularly important for Gadsden County to give attention to these populations in matters of hazard mitigation and other public services.

(vulnerable populations statistics) Hazard mitigation is especially important for Gadsden County because a large proportion of the population is considered to be vulnerable. Vulnerable populations, also known as at-risk populations, include those persons who are physically and/or financially less able or unable to prepare, evacuate, and recover from natural hazards. The populations generally considered as vulnerable include the elderly, disabled, young, poor, and institutionalized. The 2006-2008 American Community Survey provides estimates based on data gathered from three years of annual surveys. This data set estimates that 22.8% of families and 27.6% of individuals in Gadsden County are below the poverty level, rates more than twice that of the U.S. as a whole. The data also indicates that about 15% of housing units are vacant, the median home value is \$93,800, and 5.5% of the population is foreign born.

(economy)

(summary) Gadsden County

2.2 Participating Jurisdictions

§201.6(a)(4): "Multi-jurisdictional plans (e.g. watershed plans) may be accepted as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan."

This is a multi-jurisdictional plan that includes all unincorporated areas of Gadsden County and the six incorporated municipalities within the county. All jurisdictions were represented in previous versions of the LMS and have continued their participation in the development of this plan. Each jurisdiction has at least one representative member on the LMS Working Group as detailed in [Table 3.1](#). A discussion of each jurisdiction's participation is located in [Section 3.3.2](#). A copy of each jurisdiction's ordinance or resolution adopting this plan is located in the preface of this document. The following is a general summary of each town or city within Gadsden County. Throughout this plan, each jurisdiction is identified as the content applies to specific towns or cities.

Chattahoochee is the second largest jurisdiction within Gadsden County with a population of 3,695 on July 1, 2008, according to the U.S. Census Bureau Population Estimates Program. The city is located at the northwestern most portion of the county and is home to Jim Woodruff Dam on the Apalachicola River and the Florida State Hospital. The Jim Woodruff Dam forms Lake Seminole near the confluence of the Chattahoochee and Flint rivers. Dedicated in 1957, the dam was constructed for hydroelectric power, flood control, and navigation (U.S. Army Corps of Engineers, 2008). Although the dam provides flood control measures, it is important to realize the possibility of dam failure and understand the consequences. The Florida State Hospital has been in operation since 1876 and currently serves 1,042 patients with mental illness and/or development disabilities. The 620-acre campus includes 223 buildings and maintains its own power, utility, and fire services. This facility is of particular interest to this

plan because of the concentration of a vulnerable population that is institutionalized and disabled. Furthermore, the facility is important to Florida’s history and contains buildings listed on the National Register of Historic Places (Florida Department of Children and Families, 2010).

Greensboro is the smallest incorporated jurisdiction in Gadsden County with a July 1, 2008 estimated population of 600 people. The town is located in the western portion of the county, south of U.S. Interstate 10. According to the 2000 Census, a remarkably high proportion of Greensboro’s population is Hispanic or Latino at 37.8 percent. It is then unsurprising to find that 23.7% of the population is foreign born and 36.9% of the population speaks a foreign language at home. These statistics indicate the need to provide hazard mitigation information in both English and Spanish.

Gretna is located northwest of Quincy on Highway 90. The estimated July 1, 2008 population for the city was 1,609 people. The 2000 Census recorded that only 6.1% of Gretna’s population is white, 31.6% of the population is disabled, and 30.6% of individuals are below the poverty level. With such high rates of poverty and disabilities, the population of Gretna may be particularly vulnerable to hazards.

The Town of Havana is located in the northeast portion of the county. The moderate sized town had an estimated population of 1,695 on July 1, 2008. Havana has the highest proportion of elderly at 18.2% of the population, but has the lowest poverty rates in the county. Known for its antique shops and art galleries, Havana is dependant upon its retail economy that needs to be protected from hazards.

Midway is the youngest jurisdiction in the county, incorporated in 1987. As its name implies, the city is mid-way between Tallahassee and Quincy in the southeastern area of Gadsden County. The population estimate for July 1, 2008 was 2,752 people, making Midway the only jurisdiction within the county that has grown compared to the 2000 Census population record. Midway is also unique in that it has the lowest white population at just 4.6% and the highest poverty rates. However, because Midway is developing, it has the highest median home values in the county. Because there is active development in Midway, it is especially important to ensure that building and development regulations incorporate hazard mitigation measures.

Quincy is the Gadsden County seat and largest city in the county with a July 1, 2008 estimated population of 6,858. Centrally located in the county, Quincy’s population reflects that of Gadsden County as a whole.

Table 2.1: 2000 Census Demographic Summaries for Gadsden County Jurisdictions

	Chattahoochee		Greensboro		Gretna		Havana		Midway		Quincy	
	#	%	#	%	#	%	#	%	#	%	#	%
Total Population	3,287	-	619	-	1,709	-	1,713	-	1,446	-	6,982	-
Pop. < 5 Years	179	5.4	58	9.4	129	7.5	97	5.7	127	8.8	527	7.5
Pop. > 65 Years	551	16.8	64	10.3	137	8.0	312	18.2	120	8.3	1,145	16.4
White	1,667	50.7	311	50.2	105	6.1	717	41.9	67	4.6	2,203	31.6
Black/African American	1,536	46.7	201	32.5	1,511	88.4	972	56.7	1,365	94.4	4,479	64.2
Hispanic/Latino	84	2.6	234	37.8	165	9.7	21	1.2	12	0.8	481	6.9

Group Quarters	957	29.1	0	0.0	0	0.0	9	0.5	0	0.0	63	0.9
Housing Units	1,188	-	230	-	553	-	762	-	559	-	2,917	-
Vacancy Rate	-	12.9	-	10.0	-	9.0	-	8.1	-	14.0	-	8.9
Disabled	549	24.7	128	22.7	484	31.6	435	27.7	335	25.3	1,563	24.8
Foreign Born	36	1.1	147	23.7	116	6.8	4	0.2	18	1.2	329	4.8
Foreign Language at Home	165	5.4	208	36.9	130	8.5	13	0.8	11	0.8	492	7.7
Families Below Poverty	142	21.0	23	15.3	102	25.9	51	11.1	99	26.2	304	16.8
Individuals Below Poverty	633	26.1	150	24.3	519	30.6	271	16.3	455	31.3	1,301	19.1
Median Home Value	\$51,100		\$48,600		\$41,100		\$69,900		\$73,900		\$60,000	

Source: U.S Census Bureau Fact Finder

2.3 Land Uses and Development Trends

§201.6 (c)(2)(ii)(C): The plan should provide “a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.”

Gadsden County is primarily rural in character with the majority of its unincorporated lands identified as agriculture, silviculture, and conservation. There are also significant areas identified as rural residential and mining. During the years from 2000 to 2008 Gadsden County municipalities annexed fairly extensive numbers of acres and expanded their tax bases while at the same time increasing the need to expand existing infrastructure to meet the needs of new construction. Like the majority of Florida during this period, Gadsden County realized a countywide building boom that was particularly focused in the Gretna and Midway communities. The year 2006 was significant in that property appraiser data reflects the addition of 447 new single-family homes compared to 98 new homes in 2000 and 148 in 2009. In that same year, application was made to DCA for land use changes to the county’s FLUM to convert more than 900 acres from “Agricultural” to Rural Residential” (Transmittal letter 1/3/2006). This type of land use change has declined significantly, according to Director of Planning and Zoning, Anthony Mellamy, the emphasis being on infilling within jurisdictional Urban Service Areas using appropriate land use categories. At the same time pressure for land use changes to accommodate large-scale development has decreased given recent economic trends (2009 GC EAR, page 12).

Currently Gadsden County has an excess of vacant properties to meet the needs of current and projected populations; either new homes having never been sold, properties made vacant by foreclosures or rental properties that have remained empty due to a decrease in demand. Vacant land evaluations derived from property appraiser data reveal that the majority of vacant properties are “Rural Residential” land use designations. The second largest category of vacant lands is “Agriculture 2” and “Agricultural 3”. Ag lands, Florida Managed lands and Conservation lands (including wetlands and flood prone areas) are not considered appropriate

for development currently (2009 EAR, page 13). See Table 3 for available developable acreage in the county as of 2009 Property Appraiser data.

To understand development trends in the six municipalities local officials from Chattahoochee, Greensboro, Gretna, Havana, Midway and Quincy, all members of the LMS Work Group, were asked for development projections in their jurisdictions for the next 5-10 years. Gretna, Havana, Midway and Quincy anticipate slow continued growth in residential construction. City managers in Greensboro and Chattahoochee see little to no residential construction partly due to fluctuating populations: Greensboro has seen some decline in local Hispanic populations, possible due to a reduction in workforce at a major local employer, Prime Mushroom. Similarly, the Florida State Hospital in Chattahoochee has experienced some reduction in staff and may be undergoing further changes. The primary development goals for each of the municipalities were said to be –

Chattahoochee – Continued improvements to the Jim Woodruff Dam are being made utilizing stimulus funds. The Dam was retrofitted with new generators by the Army Corps of Engineers in 2007: current improvements are cosmetic and ongoing. Continued improvements to River Walk Park are being made including the addition of a boat ramp with funds provided by Florida Fish & Wildlife.

Greensboro – The new fire department will be built and operational in the next few years. The town would like to continue to annex lands up to Interstate 10 and potentially take advantage of an economic development project being undertaken by Gretna to the east of the interstate. Greensboro has an agreement in place with Gretna to hook into their water supply which will resolve a major concern. The town has applied for and been granted funds to restore the historic Greensboro Train Station and will continue restoration of the Arts and Crafts Dezell House.

Gretna – An “entertainment multi-plex” will be built and operational within the next five years according to the to City Manager, Antonio Jefferson. This site is located on recently annexed lands that extend to the westerly boundary of the I-10 entrance. Economic development is a primary focus of the town as is improving and extending water, wastewater and drainage infrastructure to support existing and future development. Gretna has plans to annex additional lands to support its projects.

Havana – Two uncompleted subdivisions within Havana will be built-out and occupied within the next few years, according to Havana’s City Manager. These subdivisions will house approximately 215 people, a fairly significant increase for the small town. It is anticipated the town’s new stormwater drainage plan will be implemented and functioning within that period. The town is extending a water line a mile and a half to the north and inviting residents in that direction to tap into the town’s central water system. The historic district will continue to be an economic focus for Havana.

Midway – Midway has been the site of the largest increase in residential construction over the last five years. In the next five years the town would like to expand its commercial base to provide amenities and employment for residents, possibly converting some residential land uses to commercial. A functional central wastewater treatment system is a primary goal to support commercial development. The city manager in Midway would like to see a judicial complex in the town as well as a police station and second fire department operational in the

next five years. Another goal is for the town to open a charter school for residents, pre-k to fifth with the goal of adding one grade per year over 3 years.

Quincy – Waiting for comment

Centrally located in the Florida Panhandle, Gadsden County has approximately 330,368 acres or 516.2 sq miles, spread throughout its six municipalities. Historically known for its acres of shade tobacco and as the original home of Coca Cola, Gadsden County remains a predominately rural county.

In general, population growth in Gadsden County has continued to increase in the last decade averaging 1.3% from 2000-2007 (2009 Ear, page 2). The county experienced a 2.5% increase in 2007, consistent with the numbers of new housing added to the tax rolls in that year and the year previously. Population figures differ according to the inclusion of inmates in the county's correctional facilities and State Hospital but were projected as being approximately 49,398 persons in 2007 (BEBR). See Table 2 for population projections through 2030 taken from the Data and Analysis Section of the Comp Plan Public School Element.

Section 3.0: The Planning Process

§201.6 (b): “An open public involvement process is essential to the development of an effective plan.”

§201.6 (c)(1): The plan shall include “documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.”

The opportunity for the public and other interests to participate in the process establishes the comprehensive approach necessary to reduce the effects of natural disasters. This section outlines the process, participation, and resources used in development of this Local Mitigation Strategy (LMS) update.

3.1 Plan Preparation

*narrative description of the process followed to prepare the updated plan (4A)

The process

3.1.1 Organizing Resources

3.1.2 Assessing Risks

3.1.3 Developing the Mitigation Plan

3.1.4 Implementing the Plan and Monitoring Progress

3.2 Plan Developers

*who was involved in the current planning process (4B)

3.2.1 Local Mitigation Strategy Working Group

Each county that elects to participate in the Hazard Mitigation Grant Program (HMGP) must have a formal LMS Working Group as established by the State Hazard Mitigation Grant Program Rule (2002), specifically, Florida Administrative Code §9G-22.004. The LMS Working Group is responsible for the development and implementation of the LMS. The group includes representation from various agencies of county government, all interested municipalities within the county, and other interested organizations and groups. The membership of the LMS Working Group during the development of this plan update is indicated in **Table 3.1**.

Table 3.1: 2010 LMS Working Group Membership

Member	Title	Organization
Shawn Wood, Sr., Chairman	Emergency Management Director	Gadsden County Sheriff’s Office
Charles Brinkley, Vice-Chair	Emergency Management Coordinator	Gadsden County Sheriff’s Office
Don Crump	Director	Gadsden County EMS
Andre Walker	Coordinator	Gadsden County Fire Services
Marlon Hunter	Administrator	Gadsden County Health

		Department
Robert Presnell	Director	Gadsden County Public Works
Elmon "Lee" Garner	City Manager	City of Chattahoochee
William "Buddy" Pitts	Mayor	Town of Greensboro
Antonio Jefferson	City Manager	City of Gretna
Howard L. McKinnon	Town Manager	Town of Havana
Agatha Muse-Salters	City Manager	City of Midway
Jack L. McClean, Jr.	City Manager	City of Quincy
Howard Smith	Fire Chief	City of Quincy Fire Department

Source: LMS Working Group as of May 2010

3.2.2 Planning Team

The planning team consisted of the Gadsden County Emergency Management staff and interns.

Table 3.2: Planning Team

Name	Title	Organization
Shawn Wood, Sr.	Emergency Management Director	Gadsden County Sheriff's Office
Charles Brinkley	Emergency Management Coordinator	Gadsden County Sheriff's Office
Cheryl Dippre	LMS Intern, Master's Candidate	Florida State University Department of Urban and Regional Planning
Anne Rokyta	LMS Intern, Master's Candidate	Florida State University Department of Urban and Regional Planning

3.3 Participation

§201.6(b)(1) & (2): The planning process shall include "an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process."

The LMS Working Group held two public meetings at which the development of the LMS was discussed and decisions were made regarding the content of the plan. All of the meetings were publicly noticed and interested parties were invited to attend. [Appendix B](#) contains the list of attendees and minutes for each of the meetings. The following summarizes the topics discussed at each meeting regarding the development of this LMS.

June 10, 2010: Review of the purpose of the plan and requirements for five-year revisions to the plan, discussion of hazards to be included in the plan, and review of the critical facilities list to be included in the plan.

July 8, 2010: Discussion of updates to goals, objectives, and action strategies, and prioritization of mitigation strategies.

3.3.1 Public Participation

*how the public was involved (4C)

All meetings of the LMS Working Group are public meetings, which must be noticed and recorded according to the requirements of the Sunshine Law, §286.011 of the Florida Statutes (2009). For each of the meetings held, public notice was provided through publication in the local newspapers, posted on the Gadsden County web page, and physically posted at the Gadsden County Sheriff's Office at least one week before the date of the meeting.

In addition to the public meetings, input was invited in writing.

3.3.2 Jurisdictional Participation

*describe how jurisdictions participated; identify new, continuing or withdrawn communities (3A, 3B)

Each municipality within Gadsden County is represented by at least one member of the LMS Working Group. In addition to regular member representation, departments of each jurisdiction were directly notified of the meetings by email or post mail two weeks prior to each meeting. A list of the jurisdictional departments that were contacted directly for one or more of the meetings is located in Appendix X.

3.3.3 Other Participation

*opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties involved in the planning process (4D)

The emergency management agencies for each of the surrounding counties were also directly notified of the meetings. Other

3.4 Review of Existing Plans, Studies, Reports, and Technical Information

§201.6(b)(3): The planning process shall include "review and incorporation, if appropriate, of existing plans, studies, reports, and technical information."

*describe the review and incorporation of existing plans, studies, reports and technical information (4E)

reference Appendix D

Section 4.0: Risk Assessment

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

This section identifies all the natural hazards that may affect Gadsden County as well as the human-caused hazards of particular concern in the county. Historic documentation of each hazard is described in terms of type, location, and extent in [Section 4.2](#). [Section 4.3](#) summarizes the vulnerabilities and impacts of each hazard on the community in terms of existing and future structures and an estimate of potential losses. Throughout this chapter, consideration is given to specific jurisdictions as they vary from the entire planning area.

4.1 Hazard Identification

[Table 4.1](#) summarizes the Presidential Declarations of major disaster and emergency in which Gadsden County has been eligible for federal relief dollars. A Presidential Major Disaster Declaration puts into motion long-term federal recovery programs that aid disaster victims, businesses, and public entities. An Emergency Declaration is more limited in scope, providing assistance for a specific emergency need or to prevent a major disaster (FEMA, 2010).

Table 4.1: Presidential Major Disaster and Emergency Declarations, 1953 to 2009

Date	Declaration Number	Disaster Description	Statewide Federal Relief (2009 Dollars)	President
Major Disaster Declarations				
12/03/1985	756	Hurricane Kate	\$15,661,739	Regan
04/03/1990	862	Severe storms and flooding	\$3,306,237	Bush
07/10/1994	1035	Severe storms and flooding, Tropical Storm Alberto	\$43,923,764	Clinton
01/06/1998	1195	Severe storms, high winds, tornadoes	\$125,737,701	Clinton
06/18/1998	1223	Extreme fire hazard	\$21,812,532	Clinton
09/28/1998	1249	Hurricane Georges	\$164,487,222	Clinton
06/17/2001	1381	Tropical Storm Allison	\$25,742,095	GW Bush
09/04/2004	1545	Hurricane Frances	\$1,790,470,157	GW Bush
09/16/2004	1551	Hurricane Ivan	\$1,498,824,552	GW Bush
08/24/2008	1785	Tropical Storm Fay	\$146,710,895	GW Bush
04/21/2009	1831	Severe storms, flooding, tornadoes, and straight-line winds	\$38,236,892	Obama
Emergency Declarations				
07/08/1994	3114	Tropical Storm Alberto	\$3,941,610	Clinton
09/25/1998	3131	Hurricane Georges	\$44,238,063	Clinton
04/27/1999	3139	Florida Fires	\$1,430,629	Clinton
09/05/2005	3220	Hurricane Katrina Evacuation	\$4,095,760	GW Bush

Date	Declaration Number	Disaster Description	Statewide Federal Relief (2009 Dollars)	President
08/21/2008	3288	Tropical Storm Fay	\$54,933,664	GW Bush

Source: Public Entity Risk Institute (PERI), n.d.; FEMA Disaster Information, 2010

The LMS Working Group originally reviewed emergency management materials and conducted their own analysis based on recent disasters and personal knowledge of the county to identify hazards to the county and its communities. As a part of the 2010 update process, the planning team reviewed the hazards identified in the 2006 LMS and revised them to reflect the order and grouping of hazards identified by the Draft Enhanced State Hazard Mitigation Plan 2010 (DEM). Hazards that do not occur in Gadsden County were omitted from this plan. [Table 4.2](#) outlines the various hazard events addressed by this plan.

Natural events become hazards when they negatively affect people and property. Although this section describes natural events, it is the components of the events that are the hazards. For example, hazards that occur with strong storms include flooding and wind. [Table 4.2](#) identifies the particular hazards that occur with each event identified in this plan.

Table 4.2: Hazard Identification

Hazard Event	How Identified	Why Identified	Associated Hazards
Flooding and Dam Failure	Presidential declarations Review of Federal Flood Insurance Rate Maps (FIRMs) Historical record Presence of Jim Woodruff Dam	Flooding is a hazard event that occurs with heavy rains from commonly occurring tropical and strong storms Floods have caused extensive damage and loss of life in past events Public and private water systems are susceptible to failure Dam failure could cause extensive damage and loss of life	Inundation Debris Flow Erosion Health Structural
Hurricanes and Tropical Storms	Presidential declarations Historical record Identified as Hurricane-Susceptible Region on Wind Zone map, Figure 4.6	Tropical storms commonly affect the Gulf Coast and eastern seaboard of the United States Official hurricane season June through November	Heavy rain Flooding High winds Lightning Tornadoes (Storm surge)
Severe Storms and Tornadoes	Presidential declarations Historical record	Thunderstorms are a regular occurrence in late spring and summer	Lightning Heavy rain and flooding High winds Hail Tornadoes
Wildfire	Presidential declarations Historical record	Wildfire is a year-round hazard with the highest risk in March and early spring Wildfire can occur due to the natural cause of lightning, but more often occurs	Fire Air Quality

Hazard Event	How Identified	Why Identified	Associated Hazards
		to human error and negligence	
Drought and Extreme Heat	Historical record	Periods of drought and extreme heat provide conditions ripe for wildfire and are damaging to crops	Fire Health Agricultural damage
Winter Storms and Freezes	Historical record		Health Flooding
Geological Hazards	Historical record		Agricultural damage Flooding
Hazardous Materials	Historical record Identified transportation routes		
Human Caused	Inherent potential in urbanized areas		

Source: LMS Working Group, authors' research

4.2 Hazard Profiles

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

Part of what makes hazard events dangerous is that they are relatively unpredictable, not only in when they will occur, but also in how bad they will be. Understanding each type of hazard event, where they can occur, how strong they can be, and the historical record can help us be better prepared for the most likely scenario.

The descriptions of the hazards are primarily sourced from the Federal Emergency Management Agency (FEMA) and the National Weather Service (NWS) a division of the National Oceanic and Atmospheric Administration (NOAA). These descriptive explanations are relatively straightforward; however identifying historical events poses a challenge. Hazard events are only hazard events if they harm human life or property, can only be recorded if a witness reports them, and those records are only as good as the witness' information. With technological advances and widespread resident populations, recent historical records are now fairly reliable, however there are so many events, that most database resources qualify the events of which they maintain record. Other than local knowledge and records, the historical record relies on two data sources: the National Climatic Data Center (NCDC) Storm Events Database and the Spatial Hazard Events and Losses Database for the United States (SHELDUS).

The NCDC Storm Events Database provides records of weather events from 1993 to the present and is updated regularly with about a 120-day lapse between the occurrence and entry into the database. Because most events are widespread and do not respect jurisdictional boundaries, property and crop damage figures are estimates recorded as the total damage for the event, not limited to Gadsden County. Dollar amounts are not adjusted for inflation.

The SHELDUS 7.0 is a product of the Hazards & Vulnerability Research Institute (2009). Data is collected for the county level of analysis and includes all monetary or life causing events from 1960 to 1975, and 1995 to 1998. Between the years of 1976 and 1995 data was collected only for events that caused loss of life or damage in excess of \$50,000. Future versions of SHELDUS will contain more detailed data for the years between 1976 and 1995. Property damage for SHELDUS data is calculated by evenly distributing the total losses between the counties affected by the event. Deaths and injuries are reported in the same manner.

The Storm Events Database is the primary resource for historical data for most of the hazard events described in this plan. SHELDUS and local sources were used to corroborate and expand upon this data therefore property damage is reported twice in the instances that both NCDC and SHELDUS recorded the event. Events sourced solely from the 2006 LMS plan are identified with an asterisk (*). The events and property damage reported only by SHELDUS and are denoted with a tilde (~).

4.2.1 Flooding and Dam Failure

Flooding is the general or temporary condition of partial or complete inundation of normally dry land by surface water runoff from any source. Floods are one of the most common hazards, but can have very different attributes. Flooding often occurs due to heavy rains with tropical and severe storms, snowmelt, water or sewer infrastructure failure, and dam failure. Property damage, injury, and death are the primary effects of flooding events and often occur due to strong flood currents and inundation of sediment or debris filled water.

Although dam failure is a rare occurrence, its impacts can be devastating. Because dams hold back significant amounts of water, sudden release of the water is likely to cause flash flood conditions. Flooding may occur well above regulatory floodplain levels, fast flowing water can cause extensive damage to structures, severe erosion, and threaten lives by catching people unaware.

Flooding

The floodplain locations in Gadsden County are primarily along the low-laying rivers and creeks that flow through the county. Even though the flooding risks to Greensboro, Gretna, and Havana are low because streams flow away from or around the municipalities, all jurisdictions in Gadsden County are subject to flood events because other low-lying and poorly drained areas may also experience flooding.

The National Flood Insurance Program (NFIP) was established by the *National Flood Insurance Act of 1968*. In order to provide flood insurance, the NFIP must assess and reduce the flood risk to minimize costs. The assessment of risks is done through mapping. Flood Insurance Rate Maps (FIRMs) identify the geographic location and probability of flooding risks. Because extent of flooding is measured in depth, elevation and probability of occurrence are linked. The national standard for identifying flood risks is the 1% annual chance flood, also known as a 100-year flood. FIRMs identify Special Flood Hazard Areas (SFHAs) that are susceptible to the 1% annual flood as well as the 0.2% annual flood, or 500-year flood, and floodways. [Table 4.3](#) identifies the zones associated with SFHAs and other flood areas. Gadsden County's FIRMs were updated on February 4, 2009. [Figure 4.1](#) shows the 100-year floodplains as determined by

FEMA’s National Flood Insurance Program. The largest floodplain areas are associated with the Apalachicola, Little, and Ochlocknee rivers. The creeks of primary concern are Attapulcus, Bear, Ocklawaha, Quincy, Richlander, and Swamp.

Table 4.3: Flood Insurance Rate Map (FIRM) Flood Zones

Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance Flood	The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.	
	A	No Base Flood Elevations determined.
	AE	Base Flood Elevations determined.
	AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
	AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
	AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
	A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
	V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.	
Floodway Areas in Zone AE	The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.	
Other Flood Areas	X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
Other Areas	X	Areas determined to be outside the 0.2% annual chance floodplain.
	D	Areas in which flood hazards are undetermined, but possible.

Source: Gadsden County Flood Insurance Rate Map Legend, 2009

obtain and insert image

Figure 4.1: Gadsden County 100-year Floodplains

Source: National Flood Insurance Program Flood Insurance Rate Maps for Gadsden County, 2009

Table 4.4 summarizes flooding events recorded by NCDC and SHELDUS. Some records included in the 2006 LMS, which were collected from NCDC, did not appear in the query for this plan update. Also, the Location names have been changed. The reasoning for the omissions and changes of “Location” names is unknown. In order to keep the most comprehensive and useful records, Table 4.4 includes the records from the 2006 LMS that have been removed from the NCDC records and “Location” field names have been modified by the authors to provide a more useful description of the event. Events sourced solely from the 2006 LMS plan are identified

with an asterisk (*). The events and property damage reported only by SHELDUS and are denoted with a tilde (~).

Table 4.4: Historical Flooding Events for Gadsden County, Florida

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
1. Gadsden County~	09/21/1969	Flooding – Severe Storm/ Thunder Storm	0.00	0.00	\$2,135,000	\$650,000
2. Gadsden County~	09/12/1979	Flooding – Severe Storm/ Thunder Storm	0.00	0.04	\$74,627	\$0
3. Gadsden County~	10/03/1992	Flooding	0.00	0.00	\$3,125	\$0
4. Tropical Storm Alberto/NW Florida Panhandle*	07/05/1994	Flood	0.00	0.00	\$100,000	\$0
5. Peninsular; Tropical Wave/Panhandle	09/15/1994	Flooding	0.00	0.00	\$500,000 \$926	\$0
6. West-central Fl; Tropical Depression #10	10/02/1994	Flood	0.00	0.00	\$5,000,000 \$31,250	\$0
7. FLZ007 - 009>019 – 026>029 – 034; El Nino/Statewide	03/10/1998	Flood	0.00	0.00	\$367,000,000 \$21,588,235~	\$0
8. Excessive Rainfall/ Panhandle*	08/06/2001	Minor Flood	0.00	0.00	\$25,000	\$0
9. East Portion; Gadsden County – excessive rainfall	09/14/2002	Flash Flood	0.00	0.00	\$10,000 \$10,000~	\$0
10. Quincy	04/02/2009	Flash Flood	0.00	0.00	\$0	\$0
11. Midway	12/02/2009	Flood	0.00	0.00	\$0	\$0

Sources: National Climatic Data Center Storm Events Database, 2010; Gadsden County LMS, 2006(*); and Hazards & Vulnerability Research Institute, 2009 (~)

(mitigation) There are several factors that may affect the severity of flooding events and should be considered for incorporation into mitigation strategies. Surface conditions affect stormwater runoff characteristics. Solid, or impermeable, surfaces, steep slopes, and saturated soil conditions prevent absorption of rainwater into the ground and contribute to stormwater management concerns and increase the potential for flash flooding. Obstructions or encroachments into the floodplain reduce the capacity of the floodway resulting in greater flood depths and velocities. Debris and contamination cause additional damage with flooding events. Debris contributes to losses and may create a damming effect in combination with obstructions. Contamination from various industrial or commercial uses and sewer treatment facilities exacerbate damage to property and public health.

[hazards remedied by not building in floodplains and improving drainage – which include projects such as channelization, drainage ditches, and storm water retention; impact to environment] (

Floodplain Management

“Floodplain management is the operation of a community program of corrective and preventative measures for reducing flood damage” (FEMA, 2009b). [measures generally include requirements for zoning, subdivision or building and special-purpose floodplain ordinances]

NFIP

CRS

Repetitive Loss

Dam Failure

There are 28 dams located throughout Gadsden County. The dams are located in unincorporated areas, but several municipalities may be affected by a dam failure. Chattahoochee, Midway, and Quincy all have streams running through them with dams upstream from the municipal boundaries. Table 4.5 provides a list of the dams identified by the Army Corp of Engineers. The National Inventory of Dams (NID) was updated in 2009 and includes those dams that meet the following criteria: 1) high hazard classification – loss of one human life is likely if the dam fails; 2) significant hazard classification – possible loss of human life and likely significant or environmental damage; 3) equal or exceed 25 feet in height and exceed 15 acre-feet in storage; or 4) equal or exceed 50 acre-feet in storage and exceed 6 feet in height (NID, 2009). The “Hazard” field in Table 4.5 does not refer to the NID hazard classification, but instead is a generalized and assumed extent of flooding potential based solely on the storage capacity of the dam. This field does not represent the potential of the dam to fail or consider loss of life or property damage in the case of dam failure. Four categories are utilized: 1) “Low” for storage up to 100 acre-feet; 2) “Moderate” for 100 to 999 acre-feet; 3) “High” for 1,000 to 99,000; and 4) “Severe” for more than 100,000 acre-feet.

Table 4.5: Gadsden County Dams

Dam Name (owner type)	NIDID	River	NID Height (feet)	NID Storage (acre-feet)	Primary Purpose	Hazard*
1. Suber Cattle Co. Dam (private)	FL00104	Tributary - Telogia Creek	24	680	Irrigation	Moderate
2. Imperial Nursery (private)	FL00106	Vote Creek	18	143	Irrigation	Moderate
3. Tallavana Dam (private)	FL00109	Hurricane Creek	25	1250	Recreation	Moderate
4. Lake Yvette Dam (private)	FL00110	Little Monroe Creek	28	233	Recreation	Moderate
5. Peavy Dam (private)	FL00111	Tributary - Mill Creek	21	70	Recreation	Low

Dam Name (owner type)	NIDID	River	NID Height (feet)	NID Storage (acre-feet)	Primary Purpose	Hazard*
6. Butler Dam No. 1 (private)	FL00112	Tributary - Attupulgus Swamp	27	89	Fire protection, stock, or small fish pond	Low
7. Butler Dam No. 2 (private)	FL00113	Tributary - Ochlockonee River	24	238	Irrigation	Moderate
8. Jim Woodruff Dam (Federal)	FL00435	Apalachicola River	92	406,200	Navigation, hydroelectric, Flood control	Severe
9. Monroe Estates Dam (private)	FL00502	Tributary - Double Branch	18	90	Fire protection, stock, or small fish pond	Low
10. Suber Dam (private)	FL00507	Telogia Creek	13	64	Recreation	Low
11. White Farm Pond (private)	FL0509	Tributary - Richlander Creek	22	51	Fish and wildlife pond	Low
12. Maxwell Dam (private)	FL00510	Cox Creek	16	122	Flood control	Moderate
13. F. Smith Dam (private)	FL00511	Tributary - Attapulgus	17	113	Recreation	Moderate
14. Timber Dam (private)	FL00512	Unnamed	20	66	Recreation	Low
15. Delancy Pond Dam (private)	FL00513	Tributary - Mill Creek	15	65	Recreation	Low
16. Dover Dam (private)	FL00514	Holley Branch	15	69	Flood control	Low
17. Williams & Shelt (private)	FL00517	Tributary - Little River	21	69	Irrigation	Low
18. Touchton Dam (private)	FL00519	Hurricane Creek	20	80	Irrigation	Low
19. DNR Dam (State)	FL00520	Tributary - Little River	35	196	Recreation	Moderate
20. Anderson Dam ()	FL00521	-	30	12,000	Recreation	High
21. Coastal Lumber Dam (private)	FL00524	Tributary - Little River	18	59	Recreation	Low
22. F. Butler Dam (private)	FL00525	Long Branch	15	60	Flood control	Low
23. Womac Dam (private)	FL00527	Quincy Creek	15	460	Recreation	Moderate
24. King Edward Dam (Private)	FL00528	Rocky Comfort Creek	20	53	Fish and wildlife pond	Low

Dam Name (owner type)	NIDID	River	NID Height (feet)	NID Storage (acre-feet)	Primary Purpose	Hazard*
25. Hospital Pond Dam ()	FL00543	North Mosquito Creek	10	132	Water supply	Moderate
26. No name 1 ()	FL00587	Tributary - Little River	30	149	Fire protection, stock, or small fish pond	Moderate
27. Fryer Dam (private)	FL01003	Vote Creek	13	128	Irrigation	Moderate
28. None	FL01004	Tributary - Rocky Comfort Creek	18	54	Irrigation	Low

Source: National Inventory of Dams (2010), authors' analysis

There have been no recorded dam failures within the county. This does not mean that no failures have or will occur. Most dams in Gadsden County are privately owned earthen dams that serve for irrigation or recreation purposes and could fail without widespread impact or knowledge of the occurrence. The concern lies with the dams that hold back significant amounts of water. Only two dams are ranked in the "High" or "Severe" hazard category as defined by this plan. Anderson Dam, east of Havana, holds about 12,000 acre-feet of water and would likely flood Concord Road (County Road 157) if it were to fail. It would flow toward the Ochlocknee River and may impact Iron Bridge Road (County Road 153). The largest dam, by far, is Jim Woodruff Dam located northeast of Chattahoochee on the Apalachicola River. Jim Woodruff Dam creates Lake Seminole at the confluence of the Chattahoochee and Flint rivers. This is a federally owned dam which provides hydroelectric power, recreation, and flood control. Failure of this dam would have a huge impact in Gadsden County as well as all locations along the Apalachicola River to the Gulf of Mexico. Based on the lack of historical record and knowledge that major dams are properly engineered and maintained, the probability of dam failure is very slim.

4.2.2 Hurricanes and Tropical Storms

A tropical cyclone is a low-pressure system with an organized circulation that forms over tropical or subtropical waters. The terms "hurricane," "typhoon," and "severe cyclonic storm" are regionally specific names for tropical cyclones with maximum sustained surface winds of 74 mph (Atlantic Oceanographic and Meteorological Laboratory, n.d.). "Hurricane" is the term used for such intense tropical storms that occur in the Atlantic Basin and are experienced along the Gulf of Mexico and eastern seaboard of the United States. Tropical cyclones that have maximum sustained surface winds of less than 39 mph are called "tropical depressions." If the storm exceeds 39 mph it is called a "tropical storm" and assigned a name. Each of these events can bring several hazards including storm surge, strong winds, heavy rains, inland flooding, tornadoes and lightning.

All jurisdictions within Gadsden County are equally susceptible to the direct and indirect effects of hurricanes and tropical storms. A typical hurricane-strength tropical cyclone is about 300 miles wide, but tropical storms can vary from less than 100 miles wide to over 1,000 miles wide (Cooper & Cain, 2010). The hurricane force winds (74 mph) and gale force winds (39 mph) can extend 150 to 300 miles out, respectively, from the center of a hurricane causing wide

swaths of damage even far from the eye of the storm (Cooper & Cain, 2010) **Figure 4.1** shows the tracks (estimated path of storm center) of 96 tropical cyclones since 1851 that have passed within 50 statute miles of zip code 32351 (Quincy, FL) (NOAA Coastal Services Center, 2010). Because storms vary in size, many other storms have affected the area, but their centers were more than 50 miles away. The areas susceptible to flooding that may occur with the heavy rains associated with tropical storms are described in **Section 4.2.1** of this document. Because Gadsden County is landlocked, there is no risk of storm surge within the county.



Figure 4.2: Historical Hurricane Tracks within 50 Statute Miles of Zip Code 32351 (Quincy, FL), 1851 through 2009

Source: NOAA Coastal Services Center, 2010

Hurricanes are classified into five categories based on the Saffir-Simpson Hurricane Wind Scale as summarized in **Table 4.6**. The scale does not address the potential for hurricane-related impacts other than wind. Earlier versions of this scale, known as the Saffir-Simpson Hurricane Scale, incorporated components of central pressure and storm surge into the categories; however, wind speed and storm surge are not directly correlated. The scale was updated in 2010 to reduce public confusion about the impacts associated with the various hurricane categories. Generally, damage rises by about a factor of four for every category increase (NOAA National Hurricane Center, 2010).

Table 4.6: Saffir-Simpson Hurricane Wind Scale

Category	Winds (1 minute sustained winds)	Summary
1	74-95 mph	Very dangerous winds will produce some damage.
2	96-110 mph	Extremely dangerous winds will cause extensive damage.
3	111-130 mph	Devastating damage will occur.
4	131-155 mph	Catastrophic damage will occur.

Source: NOAA National Hurricane Center, 2010

Table 4.7 summarizes the intensity of the 52 tropical cyclones that have passed within 50 statute miles of zip code 32351 (Quincy, FL) since 1851 as queried from the NOAA Coastal Services Center Historical Hurricane Tracts Tool (2010). The query returned 96 records, several of which listed the same storm with slightly different data. We consolidated the list and have reported the first occurrence of each storm. The tracks of these storms are shown in **Figure 4.2**. Just over half of the recorded storms for the area were first classified as tropical storms. Thirty percent of the storms whose centers passed over or within 50 miles of Gadsden County were first identified as hurricane force storms. The storms may have been downgraded prior to hitting Gadsden County. None of the storms were Category 4 or 5 hurricanes. The strongest recorded storm was a unnamed Category 3 storm in October 1894 that reached wind speeds of 105 mph. **Table 4.8** lists the storms that have passed within 50 statute miles of Quincy since 1990.

Table 4.7: Summary Classification of Tropical Cyclones Passing within 50 Statute Miles of Zip Code 32351 (Quincy, FL), 1851 through 2009

Classification	Description	Number of Storms
Tropical Depression	Wind speed <39 mph	7
Tropical Storm	Wind speed 39 to 73 mph	27
Category 1 Hurricane	Wind speed 74 to 95 mph	7
Category 2 Hurricane	Wind speed 96 to 110 mph	7
Category 3 Hurricane	Wind speed 111 to 130 mph	2
Category 4 Hurricane	Wind speed 131 to 155 mph	0
Category 5 Hurricane	Wind speed >155 mph	0
Extratropical Storm	Cyclone that has lost its tropical characteristics. Implying a move out of the tropics and a changed energy source. Hurricane force winds can be sustained despite the change in classification.	1
Subtropical Depression	Subtropical storm with wind speeds <39 mph.	1
Total		52

Source: NOAA Coastal Services Center, 2010

Table 4.8: Tropical Cyclones Passing within 50 Statute Miles of Zip Code 32351 (Quincy, FL), 1990 through 2009

Date	Storm Name	Wind Speed (mph)	Pressure (MB)	Classification
08/16/1994	Beryl	50	1000	Tropical Storm
06/05/1995	Allison	60	990	Tropical Storm
09/03/1998	Earl	70	987	Category 1 Hurricane
09/30/1998	Georges	25	1002	Tropical Depression
08/12/2004	Bonnie	45	1002	Tropical Storm
09/06/2004	Frances	50	982	Tropical Storm

Because tropical cyclones need sea surface temperatures of at least 80°F to form, they tend to have a seasonal occurrence. For the Atlantic Basin, hurricane season starts June 1 and ends November 30, however tropical cyclones may occur outside of the season (Cooper & Cain, 2010). The typical peak season is from August to October. Based on the historical record described above, the months in which tropical cyclones occurred most frequently near Gadsden County were August and September, with 16 storms each. **Table 4.9** shows the probability of various tropical cyclone storms making landfall in Gadsden County for 2010 and the 50-year probability.

Table 4.9: Tropical Cyclone Landfall Probabilities for Gadsden County, 2010 and 50-year

Classification	2010 Probability		50-year Probability
	Current County Data	Climatology	50-year County Data
1 or More Named Storms	3.9%	2.5%	72.0%
1 or More Hurricanes	1.7%	1.1%	42.1
1 or More Intense Hurricanes	0.2%	0.1%	5.6%
Tropical Storm-Force Wind Gusts (≥ 40 mph)	32.6%	21.9%	$>99.9\%$
Hurricane-Force Wind Gusts (≥ 75 mph)	9.9%	6.3%	96.5%
Intense Hurricane-Force Wind Gusts (>115 =mph)	2.5%	1.6%	55.4%

Source: United States Landfalling Hurricane Web Project, 2010

4.2.3 Severe Storms and Tornadoes

The National Weather Service defines severe thunderstorms as those that produce a tornado, winds of at least 58 mph (50 knots), and/or hail at least $\frac{3}{4}$ inch in diameter. A thunderstorm is “approaching severe” if it has winds in excess of 40 mph (35 knots) and/or hail at least $\frac{1}{2}$ inch in diameter (2009). Although by definition lightning occurs during a thunderstorm, lightning is not a criterion for defining severe storms despite the hazard it poses. Rainfall is also not a criterion for defining severe storms or thunderstorms, but often occurs with such storms and can cause flooding.

Some thunderstorms and tropical cyclones may spawn tornadoes. A tornado is a violently rotating column of air that extends from a thunderstorm to the ground (FEMA 386-2, 2001). Tornadoes are formed when cold air overrides warm air, causing the warm air to rise rapidly. The wind speeds found in tornadoes can be double that found in hurricanes, but their size is a fraction of the area of a tropical cyclone. The concentrated wind hazard contained in tornadoes is devastating to anything in one’s path, while nearby structures can be unharmed.

Severe Storms

Severe storms can affect all locations in Gadsden County anytime of day or year. Thunderstorms are common, but are particularly dangerous because they have the capability of producing lightning, heavy rain, high wind, hail and also have the potential to form tornadoes. Thunderstorms are very common in Florida and occur almost daily during the late spring and

summer months. **Figure 4.3** shows that the Gadsden County area has about 80 thunderstorm days per year. Because they are so common, people have a tendency to underestimate the risks associated with these storms. Lightning kills an average of 80 people every year (FEMA, 2010), which is more than the annual average killed by flooding (Cooper & Cain, 2010). **Table 4.10** lists the Gadsden County lightning events that have resulted in injury, death, and/or property damage. Lightning also has the potential to start wildfires, which are discussed in **Section 4.2.4**.

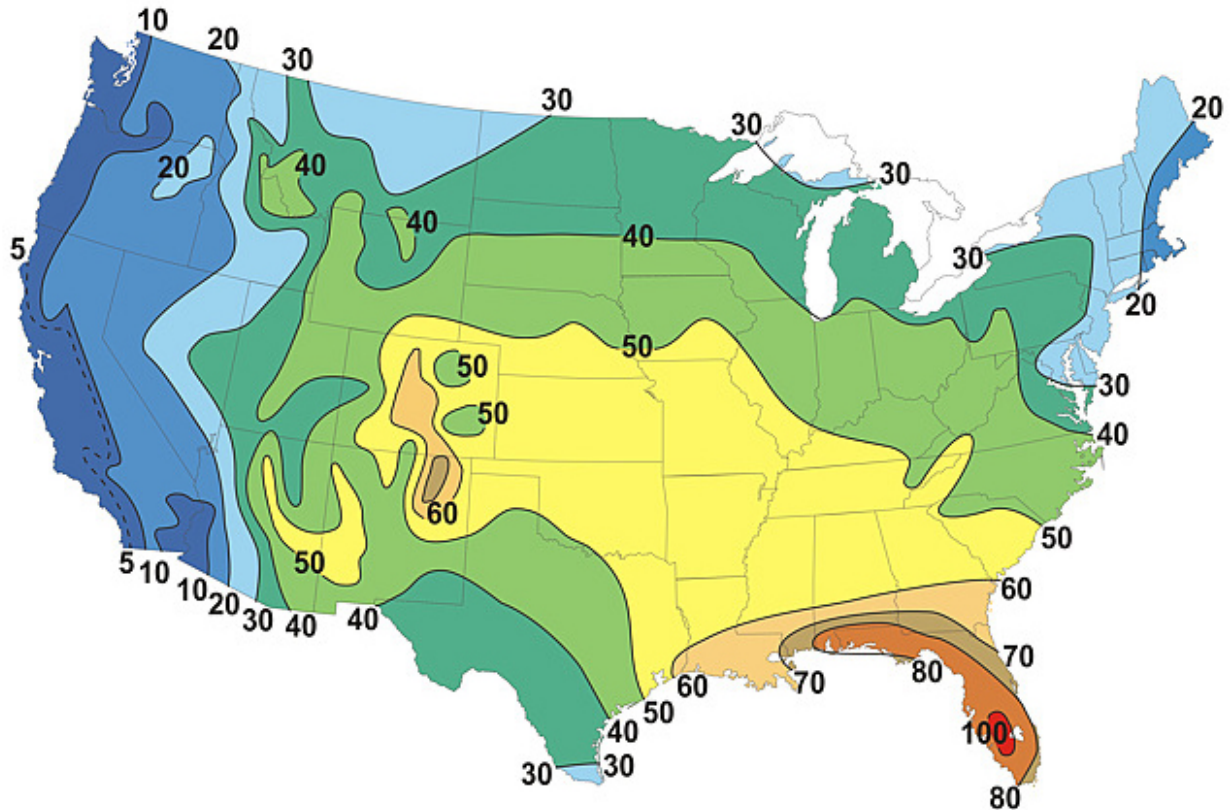


Figure 4.3: United States Thunderstorm Days per Year
Source: Cooper & Cain, 2010

Table 4.10: Gadsden County Lightning Events with Reported Injuries, Deaths, or Damage, 1950 through 2009

Location	Date	Deaths	Injuries	Property Damage	Crop Damage
1 Gadsden	07/11/1960	1	2	\$0	\$0
2 Gadsden	02/06/1962	0	0	\$5,000	\$0
3 Gadsden	06/10/1963	2	21	\$0	\$0
4 Gadsden	08/21/1968	1	0	\$0	\$0
5 Gadsden	02/07/1971	0	0	\$735	\$74
6 Gadsden	06/15/1971	1	4	\$0	\$0
7 Gadsden	08/20/1975	0	0	\$5,000	\$0
8 Gadsden	05/25/1980	0	0	\$7463	\$7463
9 Havana	06/29/1997	1	2	\$0	\$0

10	Chattahoochee	06/27/2004	0	0	\$10,000	\$0
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Source: Hazards & Vulnerability Research Institute, 2009; National Climatic Data Center, 2010

One criterion for severe thunderstorms is wind speeds of at least 58 mph (50 knots). **Table 4.11** provides a list of thunderstorms that have meet this criterion since 1950. **Figure 4.4** shows wind days per year for wind speeds of each 50 knots (58 mph) and 65 knots (74 mph). The Gadsden County area can expect about four or five 50 knot wind days per year and has less than 0.25% annual chance of having a 65 knot wind day. Strong winds have the ability damage buildings that are not properly constructed and airborne debris can cause injury and death.

Table 4.11: Gadsden County Thunderstorm Wind Events, 1950 through 2009

	Location	Date	Magnitude (knots)	Deaths	Injuries	Property Damage	Crop Damage
1	Gadsden	02/27/1958	0	0	0	\$0	\$0
2	Gadsden	08/16/1958	0	0	0	\$0	\$0
3	Gadsden	04/01/1959	0	0	0	\$0	\$0
4	Gadsden	06/20/1961	0	0	0	\$0	\$0
5	Gadsden	08/16/1965	0	0	0	\$0	\$0
6	Gadsden	07/12/1968	60	0	0	\$0	\$0
7	Gadsden	11/11/1968	0	0	0	\$0	\$0
8	Gadsden	12/28/1968	0	0	0	\$0	\$0
9	Gadsden	07/03/1970	0	0	0	\$0	\$0
10	Gadsden	07/16/1970	0	0	0	\$0	\$0
11	Gadsden	02/08/1971	0	0	0	\$0	\$0
12	Gadsden	03/28/1972	0	0	0	\$0	\$0
13	Gadsden	05/15/1975	0	0	0	\$0	\$0
14	Gadsden	05/21/1985	0	0	0	\$0	\$0
15	Gadsden	04/19/1988	55	0	0	\$0	\$0
16	Gadsden	01/13/1992	0	0	0	\$0	\$0
17	FLZ001>023; multi-county episode	03/12/1993	0	25	0	\$1,600,000,000	\$2,500,000
18	Ormond Beach; Tropical Storm Beryl	08/15/1994	0	0	0	\$5,000	\$0
19	Tlh; Gretna	07/09/1995	0	0	0	\$0	\$0
20	Tlh; Havana	07/13/1995	0	0	0	\$0	\$0
21	Greensboro	04/12/1997	0	0	0	\$5,000	\$0
22	Chattahoochee	05/03/1997	0	0	0	\$7,000	\$0
23	Juniper	11/01/1997	50	0	0	\$5,000	\$0
24	Countywide	07/28/1998	0	0	0	\$5,000	\$0
25	Havana	08/14/1999	0	0	0	\$2,000	\$0
26	Countywide	01/24/2000	0	0	0	\$10,000	\$0

	Location	Date	Magnitude (knots)	Deaths	Injuries	Property Damage	Crop Damage
27	Central Portion	03/11/2000	0	0	0	\$100,000	\$0
28	Countywide	08/25/2000	0	0	0	\$1,000	\$0
29	Northeast Portion	03/15/2001	0	0	0	\$10,000	\$0
30	Quincy	07/03/2001	0	0	0	\$1,000	\$0
31	Countywide	06/02/2004	50	0	0	\$2,000	\$0
32	Hardaway	06/27/2004	50	0	0	\$1,000	\$0
33	Countywide	05/10/2006	55	0	0	\$1,000	\$0
34	Havana	03/02/2007	55	0	0	\$1,000	\$0
35	Chattahoochee	06/09/2008	60	0	0	\$5,000	\$0
36	Quincy	07/13/2008	50	0	0	\$0	\$0
37	Altschul	06/29/2009	55	0	1	\$30,000	\$0
38	Hardaway	12/09/2009	55	0	0	\$0	\$0

Note: Knot is the unit of speed used in meteorology. To convert knots to mph multiply by 1.151.

Source: National Climatic Data Center, 2010

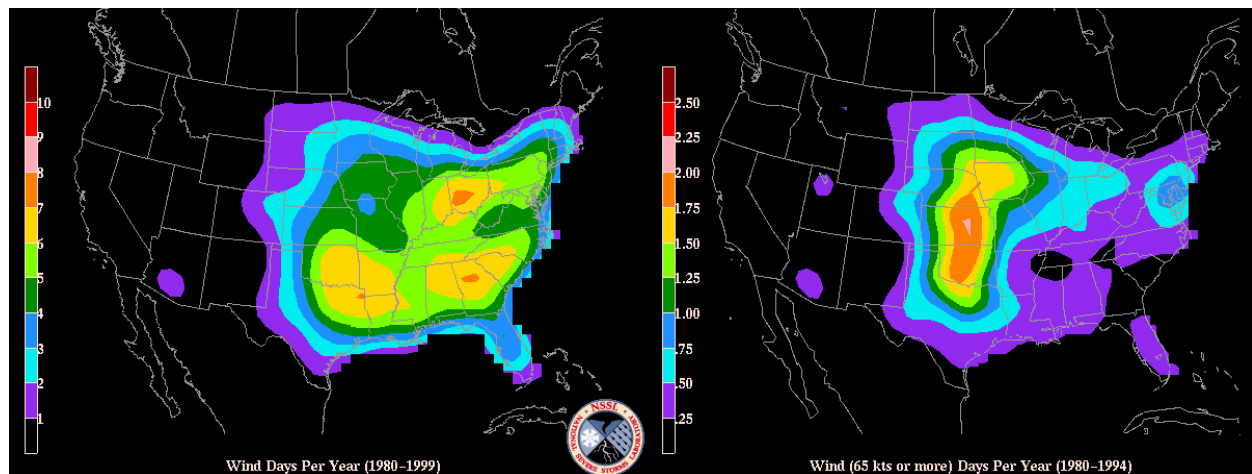


Figure 4.4: Total Wind Threat, Wind Days per Year for 50 and 65 knot Wind Speeds

Source: Brooks, 2003

Another criterion for severe thunderstorms is hail that is at least $\frac{3}{4}$ of an inch in diameter. Hail is precipitation in the form of pellets or balls of ice. Although normally small and harmless, can be large as citrus fruits and cause extensive damage and even death. [Table 4.12](#) lists Gadsden County hail events that produced hail of 0.75 inch or greater since 1950. [Figure 4.5](#) shows hail days per year. Gadsden County can expect one or two 0.75-inch hail days per year while the probability of experiencing a two-inch hail event nears zero.

Table 4.12: Gadsden County Hail Events 0.75 Inch Diameter or Greater, 1950 through 2009

	Location	Date	Magnitude (inches)	Deaths	Injuries	Property Damage	Crop Damage
1	Gadsden	05/27/1968	1.75	0	0	\$0	\$0

	Location	Date	Magnitude (inches)	Deaths	Injuries	Property Damage	Crop Damage
2	Gadsden	06/12/1968	1.00	0	0	\$0	\$0
3	Gadsden	12/29/1983	1.75	0	0	\$0	\$0
4	Gadsden	05/10/1985	1.75	0	0	\$0	\$0
5	Gadsden	05/21/1985	1.75	0	0	\$0	\$0
6	Gadsden	06/08/1985	1.75	0	0	\$0	\$0
7	Gadsden	03/26/1987	1.25	0	0	\$0	\$0
8	FLZ001>023	03/12/1993		25	0	\$1,600,000,000	\$2,500,000
9	Gretna	03/18/1995	1.50	0	0	\$0	\$0
10	Havana	05/15/1997	0.75	0	0	\$0	\$0
11	Chattahoochee	03/08/1998	1.00	0	0	\$0	\$0
12	Quincy	03/11/2000	1.75	0	0	\$0	\$0
13	Quincy	07/03/2001	1.50	0	0	\$0	\$0
14	Greensboro	04/03/2002	2.75	0	0	\$0	\$0
15	Quincy	06/04/2002	1.00	0	0	\$0	\$0
16	Greensboro	05/08/2006	0.75	0	0	\$0	\$0
17	Concord	06/27/2006	1.00	0	0	\$0	\$0
18	Midway	02/13/2007	0.88	0	0	\$0	\$0
19	Midway	08/24/2007	0.75	0	0	\$0	\$0
20	Juniper	04/13/2009	0.88	0	0	\$0	\$0
21	Quincy	04/13/2009	1.75	0	0	\$0	\$0

Source: National Climatic Data Center, 2010

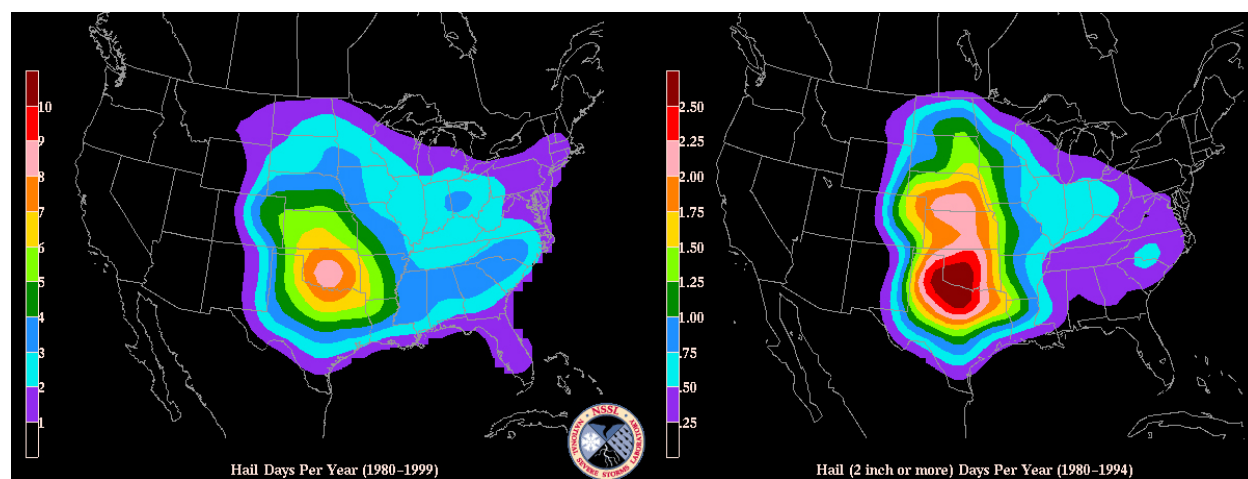


Figure 4.5: Total Hail Threat, 0.75 and 2.00 inch Hail Days Per Year

Source: Brooks, 2003

Tornadoes

Tornado wind speeds can reach over 300 mph and damage paths can exceed one mile wide and 50 miles long. They have also been known to form from hurricanes and large

wildfires. Although the typical season is from March through August, tornadoes are very unpredictable and can occur at any time of year and anywhere with the right conditions. All jurisdictions in Gadsden County are at risk of a tornado event. As seen in Figure 4.6, all of Florida is classified in the Wind Zone III with a 200 mph design wind speed for a three-second gust and is also within the Hurricane-Susceptible Region (FEMA 320, 2008).



Figure 4.6: Wind Zones in the United States

Source: FEMA Document 320 Taking Shelter from the Storm, 2008

Tornados are categorized based on damage patterns and the associated estimated wind speeds. The Fujita Tornado Damage Scale, developed in 1971 and shown in Table 4.13, has six categories F0 through F5. The Fujita Scale was used until February 1, 2007 when the Enhanced F Scale for Tornado Damage, shown in Table 4.14, was implemented to include three-second gust estimates. It is important to note that the wind speeds used in these scales are estimates and are not scientific measurements. Different wind speeds may cause similar-looking damage from place to place; therefore actual wind speeds of tornado events are unknown (Edwards, 2009).

Table 4.13: Fujita Tornado Damage Scale, Used 1971 to 2007

Scale	Wind Estimate (mph)	Typical Damage

F0	<73	Light Damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate Damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable Damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	Severe Damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	Devastating Damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	Incredible Damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur.

Source: Edwards, 2009

Table 4.14: Enhanced F Scale for Tornado Damage, Used 2007 to Present

Fujita Scale			Derived EF Scale		Operational EF Scale	
F Number	Fastest ¼-Mile (mph)	3-Second Gust (mph)	EF Number	3-Second Gust (mph)	EF Number	3-Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: Edwards, 2009

Table 4.15 summarizes 28 tornado events that have occurred in Gadsden County since 1950. The events numbered 19 and 20 were both larger storm events that produced tornadoes and occurred in multiple counties, therefore there is no magnitude for these events. The event numbered 19 was sourced from SHELDUS (Hazards & Vulnerability Research Institute, 2009), which divides the deaths, injuries, and damage amounts evenly among the affected counties. Entries and data from SHELDUS that was different from the data provided by NCDC are denoted by a tilde (~). NCDC reports deaths, injuries, and damage for the entire event.

Table 4.15: Gadsden County Tornado Events, 1950-2010

	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
1	Gadsden	11/14/1957	F2	0	0	\$3,000	\$0
2	Gadsden	06/20/1961	F2	0	0	\$250,000 \$50,000~	\$0
3	Gadsden	11/23/1961	F2	0	0	\$250,000 \$50,000~	\$0

4	Gadsden	06/01/1967	F2	0	0	\$25,000	\$0
5	Gadsden	06/12/1968	F1	0	0	\$250,000	\$0
6	Gadsden	02/15/1969	F1	0	0	\$25,000	\$0
7	Gadsden	12/25/1969	F2	0	0	\$250,000 \$50,000~	\$0
8	Gadsden	06/27/1970	F2	0	0	\$3,000	\$0
9	Gadsden	06/25/1972	F1	0	0	\$3,000	\$0
10	Gadsden	06/25/1972	F1	0	0	\$3,000	\$0
11	Gadsden	10/27/1972	F2	0	0	\$25,000	\$0
12	Gadsden	10/27/1972	F2	0	0	\$25,000	\$0
13	Gadsden	04/25/1973	F1	0	0	\$25,000	\$0
14	Gadsden	01/30/1974	F2	1	4	\$250,000 \$50,000~	\$0
15	Gadsden	05/11/1974	F1	0	0	\$25,000	\$0
16	Gadsden	02/17/1975	F0	0	0	\$3,000	\$0
17	Gadsden	07/02/1976	F1	0	0	\$25,000	\$0
18	Gadsden	04/04/1979	F1	0	0	\$250,000 \$50,000~	\$0
19	Gadsden~	02/01/1983		0.06	0.48	\$74,627	\$0
20	FLZ001>023; Multi-county storm event	03/12/1993		25	0	\$1,600,000,000	\$2,500,000
21	Wetumpka	11/11/1995	F1	0	0	\$0	\$0
22	Mt. Pleasant	12/19/1995	F2	1	1	\$30,000	\$0
23	Hinson	12/19/1995	F1	0	0	\$20,000	\$0
24	Greensboro	01/16/1997	F1	0	0	\$1,000	\$0
25	Midway	10/24/1997	F1	0	0	\$200,000	\$0
26	Quincy	03/11/2000	F0	0	0	\$0	\$0
27	Mt. Pleasant	02/18/2008	F1	0	1	\$200,000	\$0
28	River Junction	04/02/2009	F0	0	0	\$0	\$0
	Quincy*	04/08/2010	F0				

Sources: National Climatic Data Center Storm Events Database, 2010; Hazards & Vulnerability Research Institute, 2009 (~);The Tornado Project, 1998; and National Weather Service Tallahassee Significant Weather Events, 2010 (*).

Florida is one of two areas within the United States that has a proportionally high number of tornado events. The other is known as “Tornado Alley,” in the southern plains of the Midwest. The annual average number of tornadoes in Florida from 1953 to 2004 is 55 or 9.4 tornadoes per 10,000 square miles (NCDC, 2008). The cause of Florida’s high number of tornadoes is due to the near daily occurrence of thunderstorms and the regular impact of tropical cyclones. Despite the violent nature of tropical cyclones, resulting tornadoes are not as strong as those formed from the rotating thunderstorms, known as supercells, that impact inland areas. Most tornadoes that occur in the United States are considered to be weak, EF0 or EF1. Only about five percent of the tornadoes that occur nationwide are considered to be

violent, EF3 or above (NCDC, 2008). According to the historical record summarized in [Table 4.15](#), there has been no known occurrence of a tornado stronger than an F2 (EF2) in Gadsden County since 1950 and there is about a 0.5% annual chance of a tornado event occurring within the county. Prediction of tornadoes is extremely difficult and warnings are issued when conditions are ripe for an occurrence, only minutes or hours before a potential event with aid from Doppler radar.

4.2.4 Wildfire

It is a misnomer to believe wildfire is only associated with forested lands. Wildfire can occur anywhere vegetative fuel is available with just a spark. All jurisdictions are at some risk from the hazards of wildfire, but the unincorporated areas of Gadsden County are more susceptible to wildfire because of the rural nature of development. Although wildfire can occur at anytime of year in Florida, the majority of wildfires occur during the month of March as the weather begins to warm and the dry winter season is coming to a close. Summer brings many thunderstorms, which are the natural cause of wildfire, but the accompanying heavy rains often suppress fires that may be started by lightning strikes. Dry, hot weather in combination with overgrown vegetation creates a high hazard condition for wildfire.

Wildfire, once solely a naturally occurring phenomenon, is now primarily human-caused. [Table 4.16](#) summarizes the cause of wildfires in Gadsden County since 1980. Lightning has caused less than two percent of the recorded fires and is responsible for less than five percent of the acres burned. Debris burning, of various types, is the most common cause of wildfire in Gadsden County, accounting for nearly 40 percent of the recorded fires.

Table 4.16: Gadsden County Wildfire by Cause, 1980 to June 2010

Cause	Number of Fires	Percent of Fires	Number of Acres	Percent of Acres
Campfire	12	0.92%	57.2	0.61%
Children	53	4.07%	303.7	3.23%
Debris Burn*	521	39.98%	3,579.9	38.07%
Equipment Use*	65	4.99%	355.1	3.78%
Incendiary	86	6.60%	906.7	9.64%
Lightning	25	1.92%	456.6	4.86%
Miscellaneous*	121	9.29%	660.3	7.02%
Railroad	86	6.60%	472.0	5.02%
Smoking	157	12.05%	1,123.7	11.95%
Unknown	177	13.58%	1,488.0	15.82%
Total	1,303	100.00%	9,403.2	100.00%

*These causes summarize several, more detailed, subcategories.

Source: Florida Division of Forestry Fire Data Reports, 2010

[Table 4.17](#) shows that over 50 percent of the recorded fires in Gadsden County since 1980 have been grass fires. Fortunately, grass fires tend to be less intense and can be controlled before they burn large areas of land. Forested and shrubby areas (identified as Dense Pine and Palmetto-Galberry in [Table 4.17](#)) are more likely to result in intense and widespread fires

because of the large amounts of fuel and the difficulty in controlling fire in dense and tall vegetation. Wildfire behavior is based on fuel, topography, and weather (FEMA 386-2, 2001). The amount and type of fuel contributes to fire intensity through amount of fuel available to consume, whether it is dry and easily combustible materials, and whether it allows spread of fire through tree canopy or dense cover. Topography affects how quickly a fire may spread; it travels uphill much more quickly than on flat ground. Weather affects how easily a fire may start and how much it may spread. Weather factors directly affecting fire conditions include wind, precipitation, relative humidity, and temperature. High winds, low moisture, and high temperatures create a high hazard condition for wildfire.

Table 4.17: Gadsden County Wildfire Fuel Sources, 1980 to June 2010

Fuel Type	Number of Fires	Percent of Fires	Total Acres Burned	Percent of Acres	Average Size of Fires (acres)
Palmetto-Galberry	9	0.69%	113.1	1.20%	12.6
Dense Pine	196	15.04%	1,896.0	20.16%	9.3
Swamp	19	1.46%	113.7	1.21%	6.0
Blow Leaf	295	22.64%	2,422.8	25.77%	8.2
Grass	684	52.49%	4,297.0	45.70%	6.3
Muck	5	0.38%	31.5	0.34%	6.3
Other	87	6.68%	513.3	5.46%	5.9
Unspecified	8	0.61%	15.8	0.17%	2.0
Total	1,303	100.00%	9,403.2	100.00%	7.2

Source: Florida Division of Forestry Fire Data Reports, 2010; author's calculations

There have been 1,303 recorded wildfires in Gadsden County since 1980 (Florida Division of Forestry, 2010). Based on this record, there have been few large fires. Table 4.18 shows there have only been nine fires in the past three decades that have been larger than 100 acres in size; the largest fire to occur was an E Class fire at 384 acres. Table 4.19 reports the 58 recorded wildfires in Gadsden County since 2003. Figure 4.7 shows the frequency of fire ignitions based on historic data. Areas in red indicate areas of frequent fire occurrences and tend to be concentrated along highways.

Table 4.18: Gadsden County Wildfire Size by Class, 1980 to June 2010

Class	Size (acres)	Number of Fires	Total Acres	Average Acres
A	0.1-0.2	225	27.0	0.1
B	0.3-9.9	848	2,328.7	2.7
C	10.0-99.9	221	5,380.5	24.3
D	100.0-299.9	8	1,283.0	160.4
E	300.0-999.9	1	384.0	384.0
F	1000.0-4999.9	0	0.0	N/A
G	5000.0+	0	0.0	N/A

Table 4.19: Gadsden County Wildfires, 2003 to June 2010 [*check and update before final draft]

Incident Number	Start Date	Section/Township/Range	Acres	Cause	
1	2003-04-0027	02/13/2003	Not recorded	136.0	Miscellaneous—Other
2	2003-04-0028	02/04/2003	Not recorded	1.0	Unknown
3	2003-04-0044	05/14/2003	Not recorded	5.0	Miscellaneous—Other
4	2003-04-1241	12/05/2003	23 33S 18E	0.1	Unknown
5	2004-04-0023	01/14/2004	10 5S 4W	0.1	Incendiary
6	2004-04-0079	03/03/2004	14 5S 4W	3.0	Debris Burn—Nonauth—Yard Trash
7	2004-04-0183	04/05/2004	13 1N 7W	0.1	Equipment—Agriculture
8	2004-04-0234	05/07/2004	35 1S 6W	2.0	Debris Burn—Nonauth—Piles
9	2004-04-0249	05/18/2004	7 1S 6W	5.0	Lightning
10	2004-04-0252	05/23/2004	18 2S 5W	4.0	Lightning
11	2004-04-0259	05/26/2004	29 5S 4W	60.0	Equipment—Agriculture
12	2004-04-0260	05/26/2004	29 5S 4W	4.0	Equipment—Agriculture
13	2005-04-0113	02/11/2005	33 1N 7W	25.0	Debris Burn—Nonauth—Yard Trash
14	2005-04-0224	03/12/2005	26 5S 4W	10.0	Incendiary
15	2005-04-0372	05/29/2005	7 1S 7W	15.0	Incendiary
16	2005-04-0552	11/13/2005	2 2S 7W	20.0	Unknown
17	2005-04-0608	12/21/2005	32 1S 7W	5.0	Debris Burn—Auth—Yard Trash
18	2006-04-0015	01/07/2006	15 5S 4W	2.0	Incendiary
19	2006-04-0032	01/11/2006	35 1S 6W	10.0	Debris Burn—Nonauth—Yard Trash
20	2006-04-0146	03/03/2006	20 1S 7W	0.5	Debris Burn—Nonauth—Yard Trash
21	2006-04-0151	03/04/2006	32 2S 8W	20.0	Debris Burn—Auth—Broadcast/Acreage
22	2006-04-0152	03/05/2006	36 1S 8W	30.0	Debris Burn—Auth—Broadcast/Acreage
23	2006-04-0172	03/10/2006	3 2S 6W	2.0	Miscellaneous—Other
24	2006-04-0202	03/21/2006	36 1S 6W	18.5	Miscellaneous—Other
25	2006-04-0261	04/10/2006	13 1S 8W	2.0	Debris Burn—Nonauth—Piles
26	2006-04-0278	04/22/2006	21 5S 6W	0.1	Lightning
27	2006-04-0293	05/03/2006	30 5S 7W	150.0	Debris Burn—Auth—Piles
28	2006-04-0313	05/17/2006	2 1S 7W	3.0	Debris Burn—Auth—Piles
29	2006-04-0423	07/09/2006	22 2S 8W	0.4	Unknown
30	2006-04-0664	12/10/2006	11 5S 4W	11.0	Debris Burn—Auth—Yard Trash
31	2007-04-0136	02/28/2007	26 1S 6W	3.0	Miscellaneous—Structure
32	2007-04-0159	03/07/2007	33 2S 8W	3.0	Debris Burn—Nonauth—Yard Trash
33	2007-04-0214	03/18/2007	33 1N 7W	10.0	Debris Burn—Nonauth—Piles
34	2007-04-0381	05/11/2007	14 1S 6W	1.0	Debris Burn—Nonauth—Yard Trash
35	2007-04-0385	05/12/2007	14 2S 7W	20.0	Lightning
36	2007-04-0386	05/12/2007	8 1S 6W	0.8	Lightning

Incident Number	Start Date	Section/Township/Range	Acres	Cause
37	2007-04-0418	05/25/2007	22 5S 7W	0.2 Smoking
38	2007-40-0419	05/25/2007	22 5S 7W	0.1 Smoking
39	2007-04-0421	05/26/2007	29 2S 5W	20.0 Unknown
40	2007-04-0500	06/28/2007	4 1S 5W	1.0 Lightning
41	2007-04-0619	08/24/2007	32 1N 6W	2.0 Lightning
42	2007-04-0690	09.30/2007	1 2S 8W	0.2 Miscellaneous—Power Lines
43	2007-04-0743	10/26/2007	6 1S 7W	0.1 Debris Burn—Nonauth—Yard Trash
44	2008-04-0039	01/12/2008	22 2S 8W	15.0 Debris Burn—Nonauth—Yard Trash
45	2008-04-0300	03/22/2008	10 5S 4W	2.0 Debris Burn—Nonauth—Yard Trash
46	2008-04-0481	06/09/2008	8 2S 7W	1.0 Lightning
47	2008-04-0491	06/16/2008	32 1S 5W	180.0 Lightning
48	2008-04-0498	06/25/2008	10 2S 5W	0.2 Lightning
49	2008-04-0569	08/09/2008	27 1S 6W	13.0 Lightning
50	2008-04-0668	11/05/2008	12 1S 8W	4.0 Unknown
51	2009-04-0115	02/08/2009	30 3S 8W	56.0 Unknown
52	2009-04-0167	02/21/2009	1 2S 8W	5.0 Debris Burn—Auth—Piles
53	2009-04-0209	03/02/2009	20 3S 7W	1.0 Unknown
54	2009-04-0211	03/02/2009	30 1S 7W	35.0 Incendiary
55	2009-04-0235	03/08/2009	26 1S 8W	30.0 Debris Burn—Auth—Broadcast/Acreage
56	2009-40-0388	05/21/2009	11 5S 4W	5.0 Unknown
57	2009-04-0410	06/16/2009	35 1S 6W	1.0 Lightning
58	2010-04-0124	02/20/2010	35 1S 6W	1.0 Lightning

Source: Florida Division of Forestry Fire Data Reports, 2010

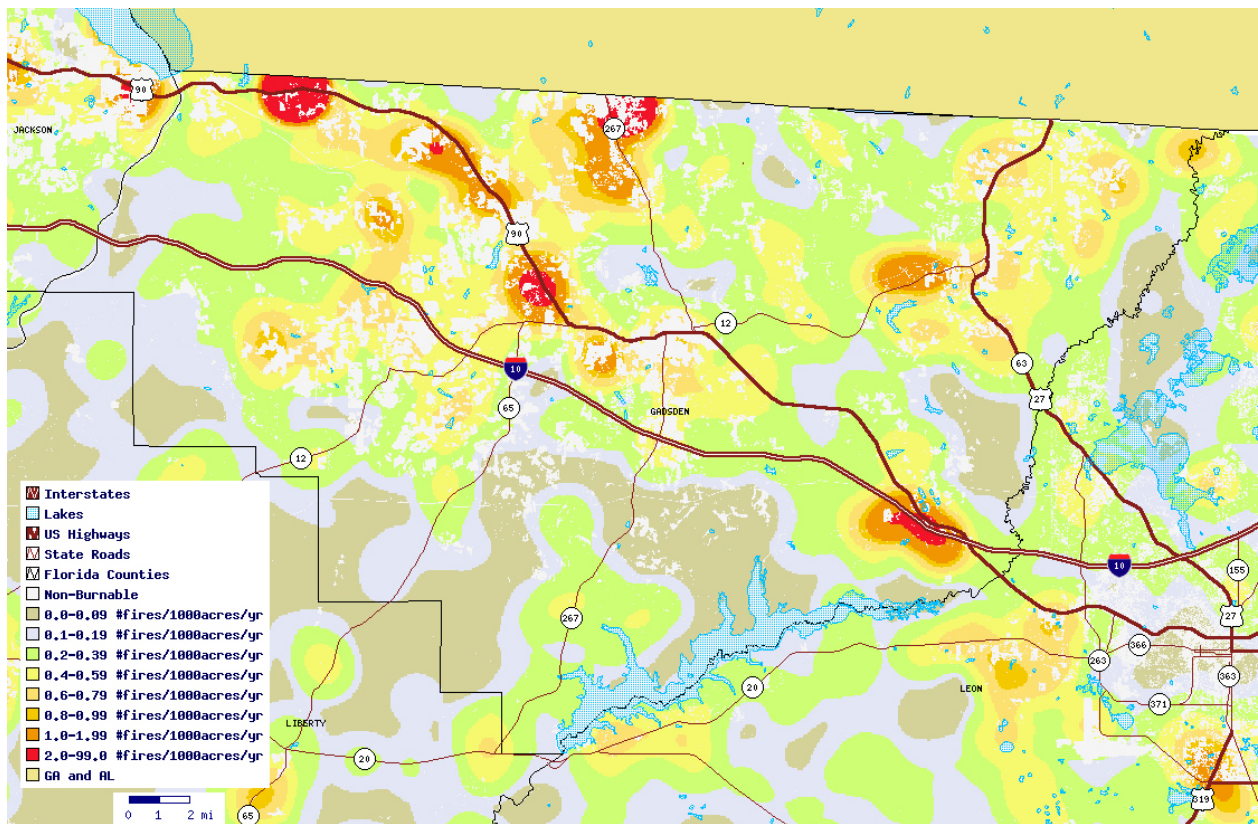


Figure 4.7: Gadsden County Fire Occurrence Areas, 1981-2000

Source: Florida Division of Forestry Fire Risk Assessment System

Figure 4.8 shows the Wildland Fire Susceptibility Index for Gadsden County. The index integrates the probability of an acre igniting, wildland fire behavior, and historic fire suppression effectiveness (Florida Division of Forestry, 2002). Level 1, in gray, represents a low probability and Level 9, in pink, represents a high probability. The Levels of Concern map, Figure 4.9, assigns values by multiplying the Wildland Fire Susceptibility Index by the Fire Effects Index. Levels 8 and 9, in red and pink, show areas where both susceptibility to wildfires and the risk for damage if a wildfire were to occur is high.

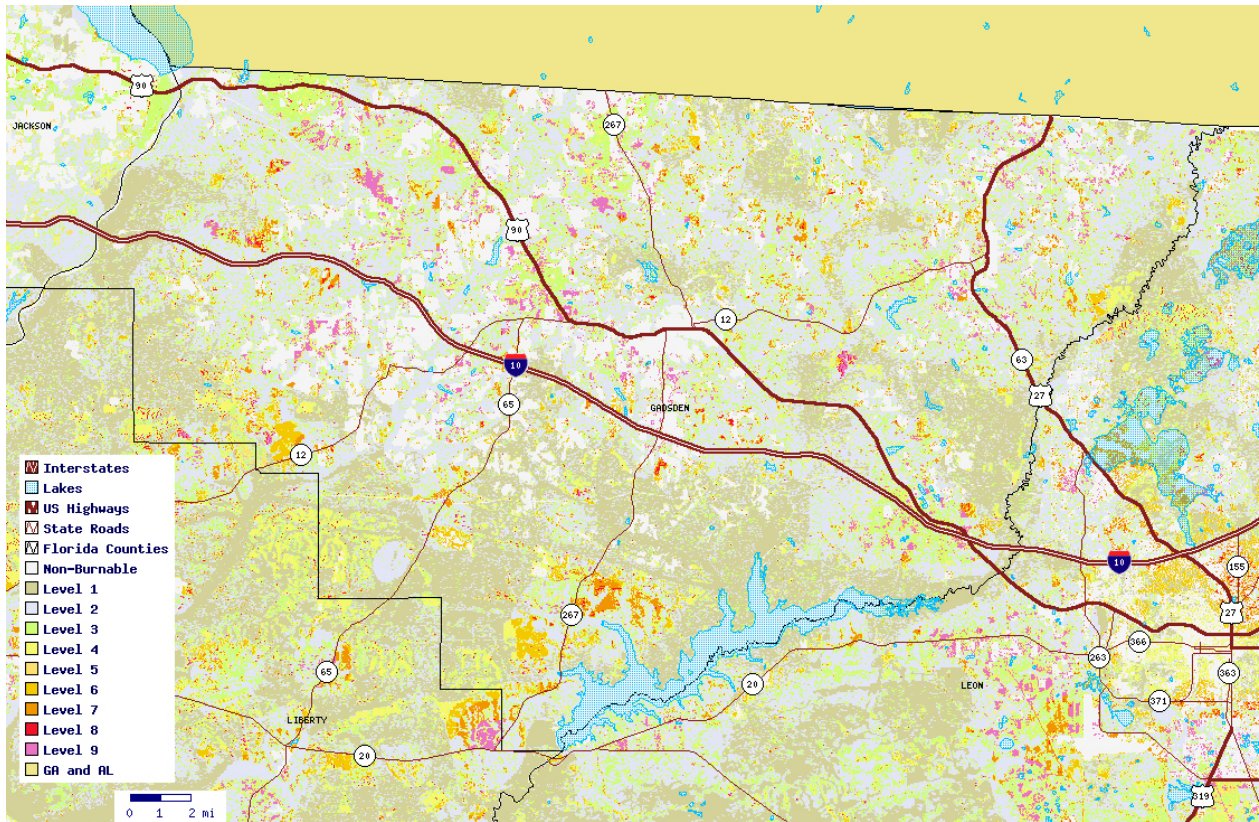


Figure 4.8: Gadsden County Wildland Fire Susceptibility Index

Source: Florida Division of Forestry Fire Risk Assessment System

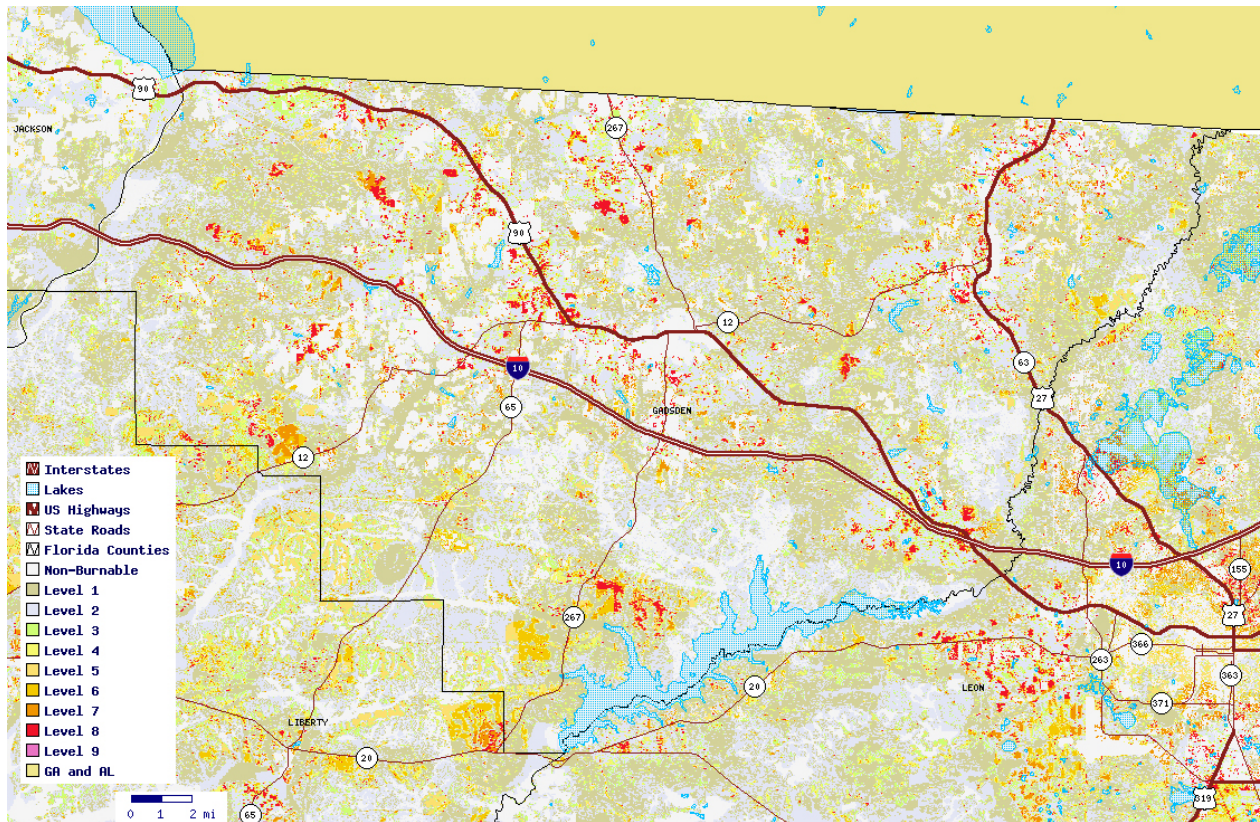


Figure 4.9: Gadsden County Wildfire Levels of Concern

Source: Florida Division of Forestry Fire Risk Assessment System

4.2.5 Drought and Extreme Heat

(description) Drought is a normal, recurring climatic event that is generally defined as a deficiency, or a lower than average, precipitation over an extended period of time (such as 75 percent of a 30-year average). The characteristics of drought are region specific because it is defined relative to a regional norm. Drought can occur for a season or for several years and can be exacerbated by climatic conditions and human impacts (National Drought Mitigation Center, 2009).

There are three main categories of drought that are defined by the impacts of the drought (National Drought Mitigation Center, 2009). The first is meteorological drought, which simply is the occurrence of less than average precipitation. Agricultural drought affects crops and rangeland. The agricultural sector is generally the first to be impacted due to the heavy dependence on stored soil water to grow crops and grass for range animals. Agricultural drought can be triggered, in part, by erosion caused by over farming the land. Measures should be explored to ensure best farming practices are used to prevent degradation of farming soil quality that may result in erosion. The third type of drought is hydrological. Hydrological drought occurs when water reserves, such as aquifers, lakes, and reservoirs, fall below statistical water levels. Such droughts can be exacerbated by diversion of water to other locations (such as Atlanta’s use of water from the Apalachicola-Chattahoochee-Flint watershed)

and over use. Hydrological drought is an impact generally experienced after long periods or extreme drought because capacity delays the affect of water shortage.

Extreme heat is when temperatures are 10 degrees, or more, above average for the region and remain at such high levels for several weeks (FEMA, 2010). Such heat waves can be very uncomfortable when combined with high humidity, but can cause other hazards when combined with dry conditions creating the potential for fires and dust storms. Children, the elderly, sick, impoverished, and overweight are particularly susceptible to the effects of extreme heat. Men and persons living in urban areas are also more susceptible to heat because men tend to sweat more, becoming dehydrated more quickly. Urban areas retain and reflect the sun’s heat, raising ambient temperatures compared with rural, vegetated areas.

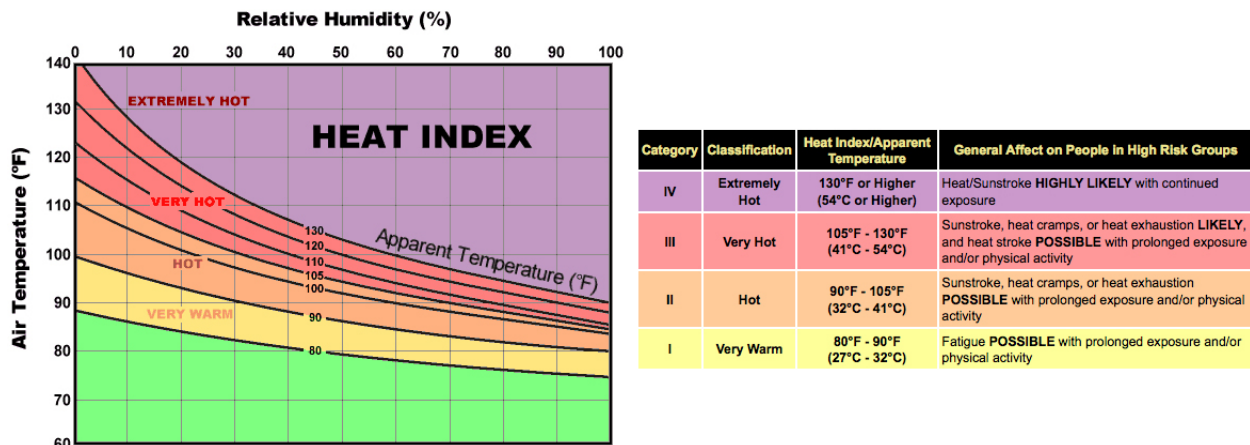


Figure 4.X: Heat Index Chart

Source: Cooper & Cain, 2010

(location) Drought occurs everywhere in the United States and during any time of year. During the summer months, drought can be exacerbated by extreme heat conditions. Gadsden County has been affected by

(extent/magnitude/severity) **Figure 4.9** shows the Palmer Drought Severity Index for the Northwest Florida division, which includes Jefferson County and all Florida counties to its west. This index provides a monthly value representing the severity of a wet or dry spell and is based on the principles of a balance between moisture supply and demand. The index generally ranges from -6 (dry) to +6 (wet), but at times, reaches magnitudes of -/+7. Drought values are described as normal (0 to -0.5), incipient drought (-0.5 to -1.0), mild drought (-1.0 to -2.0), moderate drought (-2.0 to -3.0), severe drought (-3.0 to -4.0), and extreme drought (beyond -4.0) (NCDC, 2009).

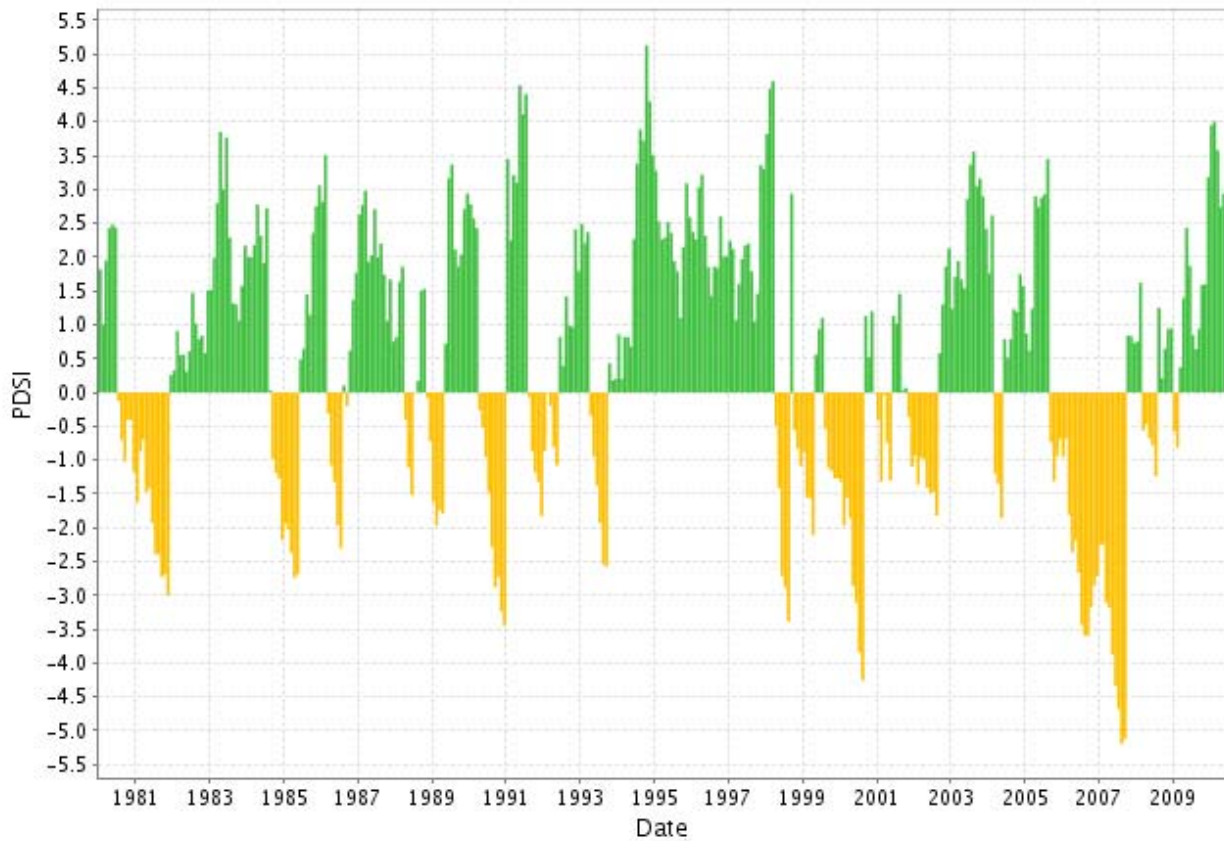


Figure 4.x: Northwest Florida Monthly Palmer Drought Severity Index, January 1980 to June 2010

Source: NCDC Climate Data Online, U.S. Divisional Data, 2009

(previous occurrences)

(probability of future events)

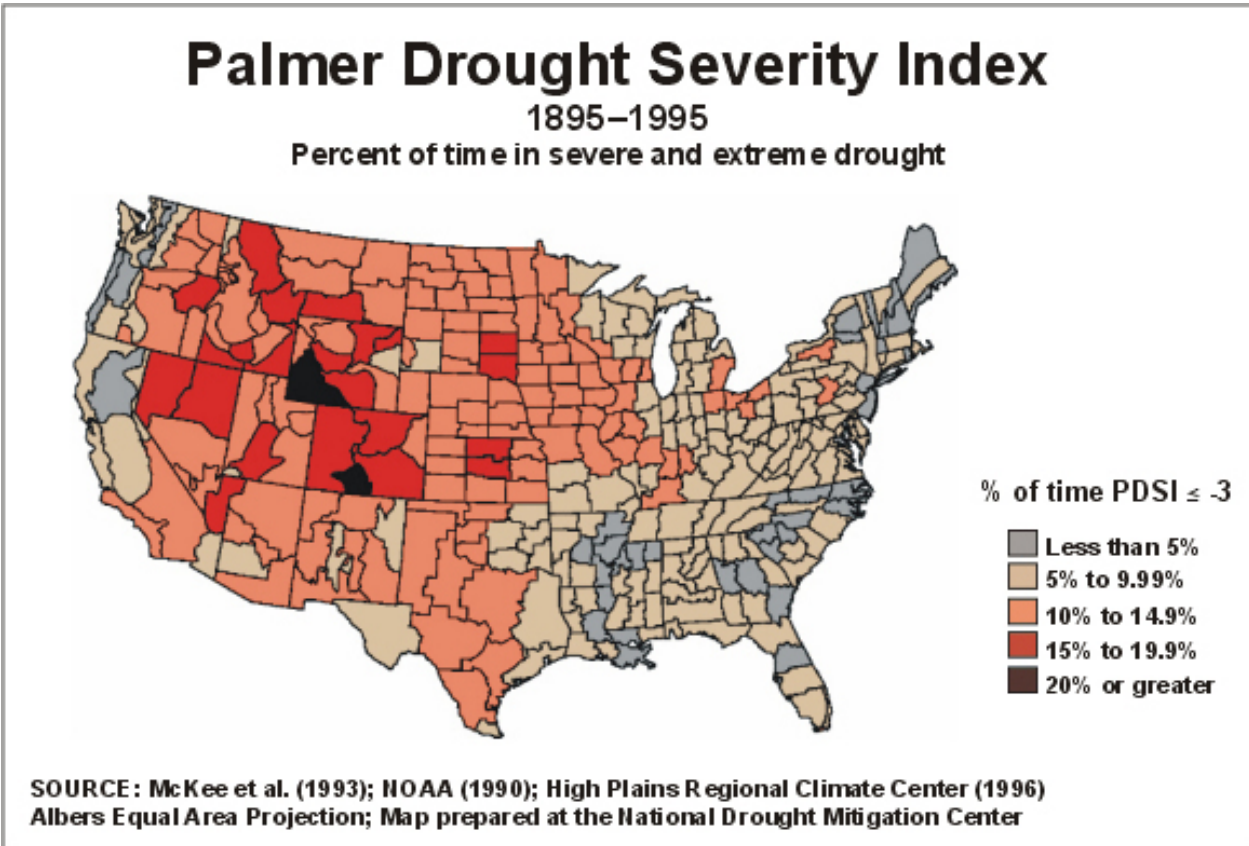


Figure 4.x: 100-year Palmer Drought Severity Index

Source: National Drought Mitigation Center, 2009

4.2.6 Winter Storms and Freezes

(description) Winter storms produce forms of precipitation that occur only during freezing temperatures, such as snow, sleet, and freezing rain. These weather conditions may also occur during spring and autumn months. These storms are often accompanied by wind, which can exacerbate the hazards of freezing precipitation. Snow is flakes of frozen water and is less dense than rain. Snow can accumulate in depths of 10 inches for the equivalent of one inch of rain, depending on temperature. Because it takes just an inch or two of snow to cause dangerous conditions, the threshold for a winter storm causing hazardous conditions is less than a summer storm. Sleet is rain that turns to ice pellets before hitting the ground and freezing rain is when rain freezes when it hits the ground. All forms of freezing precipitation cause icy, slippery surfaces that create hazards for automobiles and pedestrians alike. Freezing precipitation also accumulates on surfaces and can be very heavy, causing tree limbs to break, downed power lines, and caved in roofs. Blizzard conditions occur when wind blows snow, resulting in reduced visibility and increased wind-chill factors.

(location)

WINTER STORM HAZARDS IN THE U.S.

ANNUAL MEAN SNOWFALL

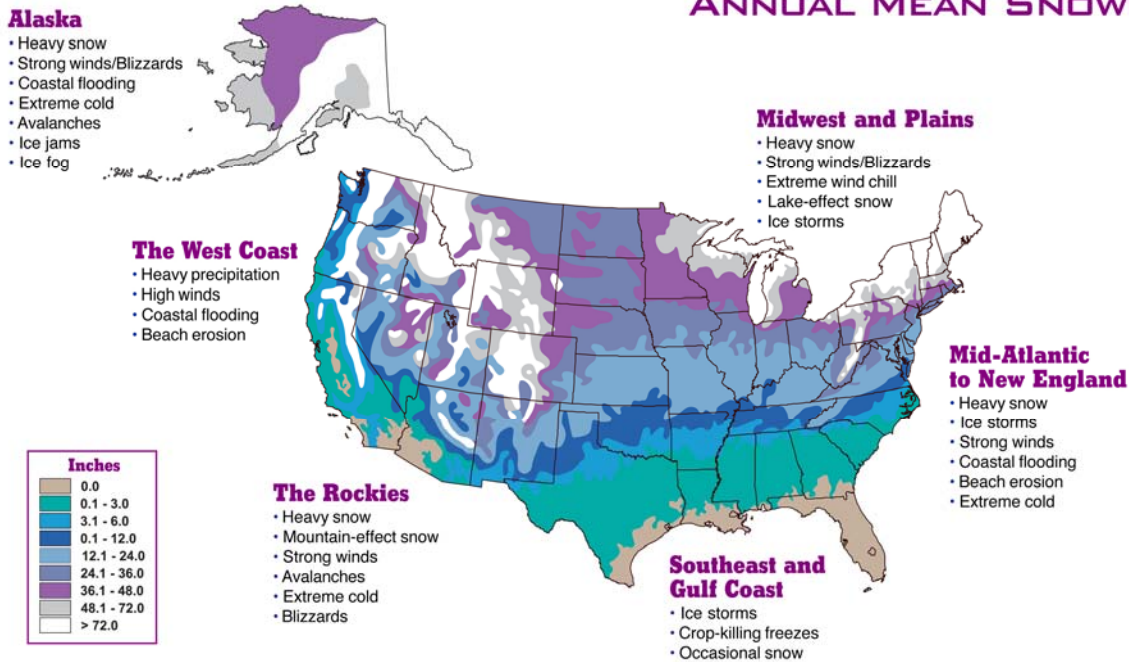


Figure 4.X: United States Annual Mean Snowfall

Source: NOAA National Weather Service, 2001

(extent, magnitude, severity)
(previous occurrences)

Table 4.X: Gadsden County Winter Weather, 1960-2008

Date	Injuries	Fatalities	Property Damage	Crop Damage
03/23/1968	0.00	0.00	\$0	\$3,676
01/10/1977	0.00	0.00	\$0	\$746,269
01/21/1985	0.00	0.09	\$0	\$74,627
12/22/1989	0.00	0.15	\$0	\$746,269
03/12/1993	0.00	0.70	\$0	\$7,463

Source: Hazards & Vulnerability Research Institute SHELUDS, 2009

(future probability)

4.2.7 Geological Hazards (Erosion, Sinkholes, Landslide, and Earthquake)

(description) Much of Florida is made up of karst terrain. Karst is a generic term for landforms that have been shaped by erosion of carbonate rock, especially limestone and dolomite (Florida Department of Environmental Protection, 2010). Over time, acidic water dissolves carbonate rock as it percolates through the layers creating underground landforms such as caves, disappearing streams, springs, and underground drainage systems. Sinkholes are the result of the collapse of overlaying sediments into these underground landforms. There are

other forms of land subsidence that are not the result of bedrock dissolution and are simply known as subsidence incidents. These can be caused by unstable soils, broken sewer pipes or septic tanks, improperly compacted soil, and buried trash or organic debris. Development of sinkholes may be sudden, resulting in loss of life and property. Existence of sinkholes can contribute to flooding due to reduced underground capacity and can provide a route for pollutants to reach ground water (Sinclair & Stewart, 1985).

(location)

(extent/magnitude/severity)

(previous occurrences) There are only two land subsidence events recorded for Gadsden County. The data, provided by the Florida Geological Survey, only includes reported subsidence incidents and is not verified as to whether the event is due to a true sinkhole or other cause. Both reported events in Gadsden County were attributed to drought or a low water table, had a rapid subsidence rates, and were circular in form. The dimensions shown in [Table 4.X](#) were estimated.

Table 4.X: Gadsden County Land Subsidence Incidents, 1909-2009

Reference Number	Date	Latitude	Longitude	Nearest City	Length (feet)	Width (feet)	Depth (feet)
50-500	10/28/1981	30.575	-84.401	Havana	5	5	5
50-501	04/01/1948	30.566	-84.750	Greensboro	-	-	60

Source: Florida Department of Environmental Protection, 2010

(probability of future events) [Figure 4.X](#) shows that nearly all of Gadsden County is located in Area IV, an area where limestone layers are generally covered by a thick layer of soil, retarding the flow of runoff into the limestone layers and the resulting cavities. This prevents the occurrence of many sinkholes. However, there are some areas where the limestone layers are subject to dissolution and result in large-diameter and deep sinkholes. Although there are few recorded incidents in Gadsden County and the geological composition is less likely to have sinkholes than other areas in Florida, sinkholes do occur and may be more damaging than in other terrain types.

According to Rupert (1990) the probability for sinkholes in northern and central areas of the county is low. The areas of the county most susceptible to sinkholes are in the northwest, where a dolomite formation is near the surface and southern tip, where there is a lack of soil over the underlying formations.

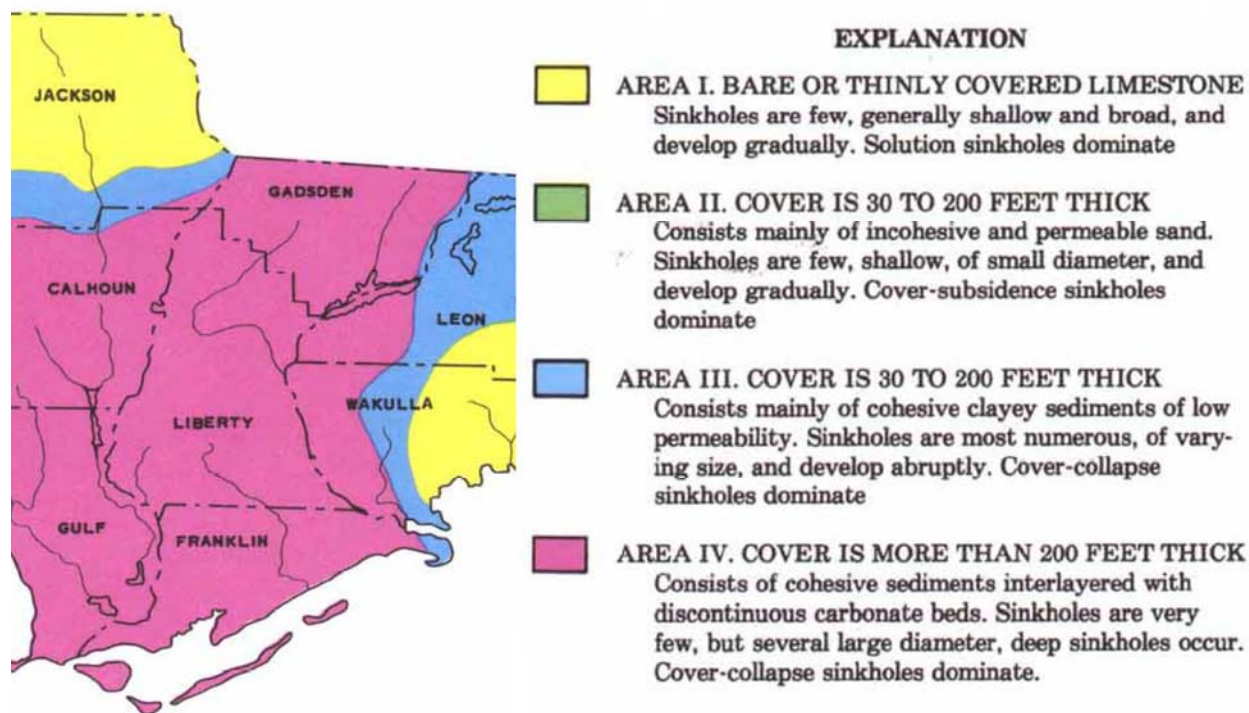


Figure 4.X: Sinkhole Type, Development, and Distribution

Source: Adapted from Sinclair & Stewart, 1985

Landslides are very uncommon in Florida, however, they do occur and the only documented landslide in the state occurred in Gadsden County on April 1, 1948 (DEP, 2009). Landslides, slumps, and soil creep are the result of gravity acting on unsupported and loose soils and usually occur in areas of steep slopes. Soil creep occurs slowly and is generally unnoticed, whereas landslides and slumps occur suddenly. Many times, landslides are associated with water saturation of soils from heavy rains and washing away of supporting soils by flooding. It is assumed that the 500-foot diameter landslide that occurred on Mr. D.W. Pitt's land outside of Greensboro was in part due to the adjacent, flood-swollen Flat Creek. An aerial photograph, [Figure 4.X](#), shows the extent of the Pitt Landslide. Such catastrophic landslides are unlikely in Gadsden County (Rupert, 1990), but are more likely than in other parts of Florida because of Gadsden's rolling topography. According to Rupert (1990), slumping processes at a smaller scale occur at the heads of drainage ravines, creating the landform known as steepheads.



Figure 32. Aerial photograph of the Pitt landslide, April 2, 1948, in Gadsden County (T3N, R5W, sec 32dc). Photograph by Tallahassee Aircraft Corporation (Rupert, 1990).

Figure 4.X: Pitt Landslide

Source: Rupert, 1990

Earthquakes are the release of forces resulting from the collision and friction between Earth’s constantly moving tectonic plates (Yanev, 1991). The sudden shaking that occurs with earthquake events is often minor, but can be violent and cause extensive damage and loss of life. Earthquakes occur most frequently along faults, the breaks between tectonic plates. Florida, unlike the western coast of the United States, is not located on or near a major fault and thus experiences few earthquakes. However, no place is free from the risk of experiencing earthquakes. There have been major earthquakes in the eastern United States, most notably the New Madrid, Missouri earthquakes of 1811 and 1812 and the Charleston, South Carolina earthquake of 1886. Although these earthquakes seem far from Florida’s panhandle, the underlying geology of the eastern United States allows earthquakes to be felt at higher intensities and at greater distances from their epicenters than earthquakes that occur west of the Rocky Mountains (Yanev, 1991). The Charleston earthquake and its aftershocks were felt in Jacksonville, the Florida Panhandle, and Tampa (Lane, 1983).

The Modified Mercalli Intensity Scale, shown in [Table 4.X](#), was developed in 1931 and measures the effects of an earthquake rather than the actual energy release, much like the Fujita Tornado Damage Scale. Because intensities are observed at various locations an earthquake cannot be assigned a single intensity number, and instead the observations are

plotted on a map. **Figure 4.X** shows the intensity map for the 1886 Charleston earthquake, indicating an intensity value of V for the Gadsden County area. The Richter Magnitude Scale was developed in 1935 as a mathematical device to compare the size of earthquakes based on a logarithmic scale indicating the amplitude of waves recorded by seismographs. Each whole number step corresponds with a release of about 31 times more energy (USGS, 2010). Earthquakes with a magnitude of about 2.0 or less are usually considered microearthquakes and usually not felt by people. An earthquake with a magnitude of 4.5 or greater is strong enough to be recorded by seismographs all over the world. Such moderate earthquakes occur several thousand times a year. Magnitudes of 8.0 are great earthquakes and occur about once annually, worldwide. The Richter Scale has no upper limit and is not used to express damage.

Table 4.X: Modified Mercalli Intensity Scale

Intensity Value	Description
I	Not felt except by a very few under especially favorable conditions
II	Felt only by a few persons at rest, especially on upper floors of buildings. Some suspended objects may swing.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Hanging objects swing.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Direction and duration of shock can be estimated by people outdoors. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Walking is difficult. Church bells ring. Windows and dishes break, pictures knocked from walls. Some heavy furniture moved; a few instances of fallen plaster.
VII	Causes general alarm. Standing is difficult. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. Small landslides occur.
VIII	General fright and near panic. Steering cars is difficult. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Trees damaged, cracks appear in ground.
IX	Panic is general. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. Underground pipe and reservoir damage.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. Bridges, dams, and dikes damaged. Large landslides triggered.
XI	Few, if any masonry structures remain standing. Bridges destroyed. Rails bent greatly. Underground pipe line and conduits out of service.
XII	Damage total, with practically all works of construction severely damaged or destroyed. Waves observed on ground surfaces. Heavy objects thrown into the air, and large rock masses are displaced.

Source: USGS, 2010 and Yanev, 1991

Table 4.X: Richter Magnitude Scale Classes

Class	Magnitude Range	Approximate Mercalli Comparison
Micro	<3.0	I
Minor	3.0-3.9	II-III
Light	4.0-4.9	IV-V
Moderate	5.0-5.9	VI-VII
Strong	6.0-6.9	VII-IX
Major	7.0-7.9	IIIIV and higher
Great	8.0+	

Source: USGS, 2010

The USGS (2010) reports that no earthquakes of magnitude 3.5 or greater have occurred in Florida within the last 30 years, however, there have been two Intensity VI earthquakes recorded in the state. The first occurred in Northwest Florida on February 6, 1780 and the second was near St. Augustine on January 12, 1879. There are two reports of earthquakes felt in Quincy

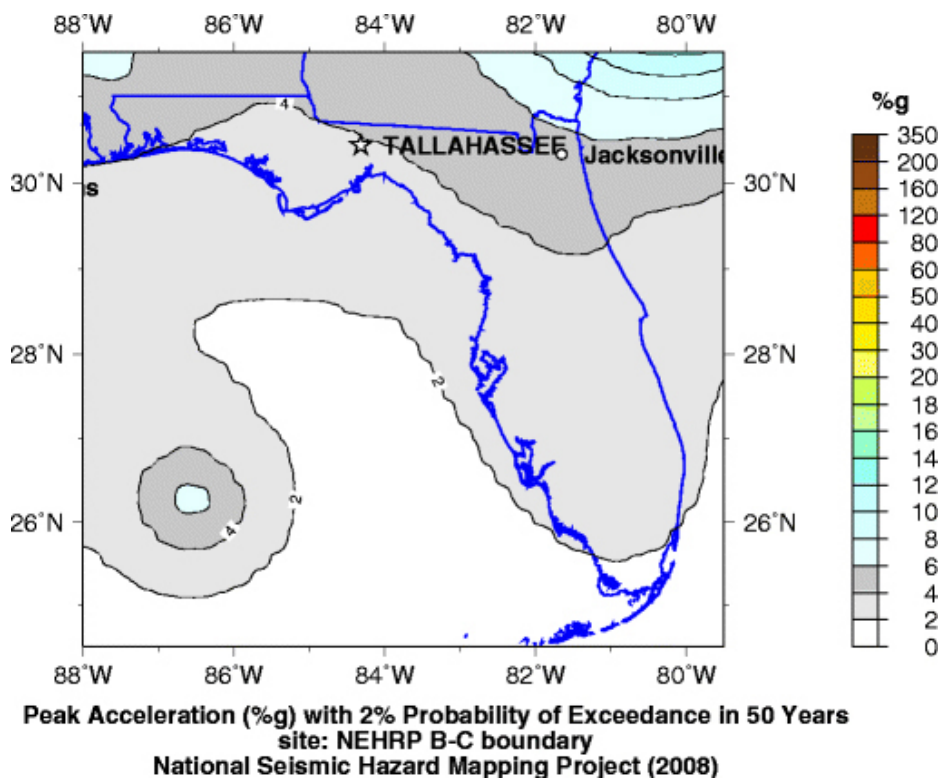


Figure 4.X:

4.2.8 Technological (Hazardous Materials)

The State HMP defines technological hazards as those that are caused by tools, machines, and substances that are used every day. The major technological hazards discussed in the State HMP are hazardous materials and radiological accidents (2010, p. 3.229).

highways, railroad, gas pipeline

4.2.9 Human Caused

State HMP includes: civil disturbances, mass immigration, mass casualty incidents, terrorism (domestic, international), weapons of mass destruction (nuclear, biological, chemical)

4.3 Vulnerability Assessment

§201.6(c)(2)(ii): The risk assessment shall include “a description of the jurisdiction’s vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of (A) the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; (B) an estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.”

Mandatory: Summary of each jurisdiction’s vulnerability to each hazard and impacts [7a & b], including repetitive loss properties [8a] – critical facilities, vulnerable populations, high risk areas, reference Section 2.2 and 2.3, total structures

Not Mandatory: identify structures existing and future [9a & b], estimate losses in dollars and explain methodology [10a & b], and analyze development trends [11a].

Probability table

0 – No risk, not going to happen

1 – very unlikely, likely to occur once in 400 years, 0.25% annual chance probability

2 – unlikely, likely to occur once in 100 years; 1% annual chance probability

3 – moderate, likely to occur at least once in 20 years

4 – high, likely to occur once in five years

5 – very high, likely to occur annually

6 – common, likely to occur more than once per year

Some flooding									
100 year flood									
500 year flood									
Tropical Storm									
Category 1 Hurricane									
Category 2 Hurricane									
Category 3 Hurricane									
Category 4 Hurricane									
Category 5 Hurricane									
Severe Thunderstorm									
Tornado									
Wildfire									

Drought									
Extreme Heat									
Winter Storm									
Freeze									
Erosion									
Landslide									
Sinkhole									
Earthquake									
Hazardous Material									
Human-caused									

Vulnerability – how bad can it be, \$, population impacted

Impact – damages (i.e. debris,

Each jurisdiction in Gadsden County varies slightly in its vulnerability to the hazards that occur. The variability is due to local geographical and geological conditions, development patterns, and infrastructure placement. Construction practices, age of structure, and level of maintenance are also factors that may increase vulnerability to hazards. The subsections of this portion of the document identify how particular conditions of each jurisdiction differ from the community as a whole and whether those factors make it more or less susceptible to specific hazards.

4.3.1 Hazard Impacts

All Gadsden County jurisdictions are susceptible to flooding events. Areas that are low lying, near water, and downstream from dams are particularly susceptible to flooding, however dry creek beds, drainage ditches, and urban areas can flood. Structures that are particularly susceptible to flooding are those located in the floodplain, have basements or below-grade crawl spaces, and mobile homes that are improperly anchored to a foundation. Infrastructure such as bridges and roads that pass over culverts are also susceptible to damages from flooding. Wastewater facilities and storage of hazardous materials should be protected from flooding as spread of waste can exacerbate damage of the flood and cause additional environmental and health damage. Flooded roads can prevent evacuation and access to emergency services. The type of flooding can result in different types of impacts. Flash flooding is especially dangerous to life and property because it is often unexpected and can carry large amounts of debris. Flowing floods cause erosion, lead to landslides, carry damaging debris, and can even carry away people, cars, and unanchored structures. Flooding that does not subside quickly can cause lasting damage to buildings and pose a health concern. Stagnant water leads to mold in buildings and creates an ideal environment in which mosquitoes can breed.

All areas of Gadsden County are vulnerable to strong winds from tropical storms, hurricanes, and severe thunderstorms. Most of the damage from strong winds is caused not by the wind itself, but from the debris it carries. Therefore, one of the best ways to mitigate for wind hazards is to minimize the amount of debris that can become airborne. Property maintenance regulations should be adopted and enforced because areas near trash piles,

junkyards, and unkempt properties are vulnerable to damage from airborne debris. Buildings that are improperly constructed or maintained are more susceptible to wind events and contribute to airborne debris. Mobile homes should be properly anchored to a foundation to prevent lift from strong winds. Crops are also susceptible to wind damage. Strong winds can break plants and ruin crops. Power lines are at risk of toppling or having trees fall on them during wind storms resulting in loss of power, risk of fire, and injury if someone comes in contact with a downed line. Debris can also block evacuation and emergency services access routes.

Tornadoes are also wind events, but are very different in character. As a very localized and violently twisting column of air they can have devastating effects on some properties, but leave adjacent properties nearly unharmed. Mobile homes are especially susceptible to damage from tornadoes. The combination of light, and oftentimes poor, construction with inadequate anchoring results in total destruction. Mobile homes should be evacuated during a tornado event. Mobile home and RV parks should have onsite shelters as tornadoes are unpredictable and form quickly. Older, poorly built, and poorly maintained structures are also at greater risk from tornado events. Roofs and siding materials are often torn off structures and become part of the debris that causes additional damage.

Hail can occur with thunderstorms and can affect all jurisdictions within the county. Although most hail is small and causes very little damage, large hail can cause significant damage. Crops are most susceptible to damage by hail, which can pulverize plants, bruise fruit, and break branches. Hail can also hurt ranch animals that do not have adequate shelter. Structures usually are resistant to damage from hail, but metal siding, windows, and poorly constructed roofs can receive significant damage. Automobiles can be severely dented by large hail. Personal injury and death can also occur from large hail, people should always seek shelter.

Rural areas with dry fuel sources are most susceptible to wildfire, but no jurisdiction is safe from risk. People are the primary cause of wildfire. Overgrown grass, cropland, brush, and forested areas are ideal areas for a wildfire. Although natural resources, forest, and agricultural land are the most common losses from a wildfire event, homes and other structures can easily be overtaken by an out of control fire. To prevent structure loss from wildfire, areas around buildings should be maintained to be clear of debris and overgrown vegetation. Fire has the tendency to climb uphill, so despite the view, hilltops should be avoided as home sites. Structures in areas at risk for wildfire events should also be built with fire resistant materials such as metal or brick as opposed to wood. Wildfires produce smoke, resulting in poor air quality, which can reduce visibility and cause health concerns, especially for those with asthma.

Agricultural crops are generally the first casualties of drought, however long-term droughts can result in insufficient water supply, an increased risk of wildfire, erosion, and eventual economic decline. Municipal suppliers of water should plan for decreased water supplies during times of drought and prevent development that would overtax local water resources. Regulations on water use can help decrease water usage and limit the short-term effects of a drought.

Extreme temperatures may come with a drought, but can occur and be even more dangerous when combined with wet weather. The major impact of extreme temperatures is on

personal health. Heat cramps, heat exhaustion, and heat stroke are all conditions caused by over exertion in hot temperatures. Heat stroke can cause brain damage and even death. Hot and dry conditions put people at risk for dehydration while hot and wet conditions prevent evaporative cooling produced by perspiration. Certain populations are at greater risk from high heat. The young and old are less physically able to cope with extreme temperatures and are often dependant on others to supply adequate shelter and hydrating fluids. Extreme temperatures may be accompanied by poor air quality, which can exacerbate health concerns. The poor often do not have access to air conditioning, cooling mechanisms, adequate shelter, or adequate fluids.

- Winter storms
- Freezes
- Erosion
- Landslides
- Sinkholes
- Earthquakes
- Hazardous materials
- Human caused (

4.3.2 Vulnerabilities of Unincorporated Areas

The unincorporated areas of Gadsden County are vulnerable to all the hazard events identified in [Section 4.2](#). Because of the rural and agricultural nature of the unincorporated parts of the county, it is more susceptible to flooding, wildfire, and those hazards that damage agriculture. Conversely, the rural areas are less susceptible to damage from hazards that damage structures and human-caused hazards.

Hazard	Probability	Vulnerability	Impact
Flooding		Identified floodplains Wetlands Dams Inadequate drainage	
Dam Failure		Yes	
Wind		Nearly 3000 mobile homes Property maintenance	Debris
Hail		Agriculture	
Wildfire		Agriculture, silviculture, forested lands	
Drought		Agriculture No public water service, reliance on private wells	
Extreme Heat		Elderly, children No AC	
Winter Storm		Visibility	

	Hazardous conditions for drivers, pedestrians
Freeze	Agriculture Frozen pipes due to inadequate insulation
Erosion	
Sinkhole	
Landslide	Steepest areas, especially near flowing water bodies Agricultural damage possible Structural damage possible
Earthquake	Older buildings,
Hazardous Material	Along certain highway routes, railroad
Human-Caused	Less likely to occur in the rural areas of the county

4.3.2 City of Chattahoochee

Hazard	Probability	Vulnerability	Impact
Flooding		Apalachicola River Crawfish Island Drainage issues Wetlands	
Dam Failure		Jim Woodruff Dam	
Wind			
Hail			
Wildfire			
Drought			
Extreme Heat			
Winter Storm			
Freeze			
Erosion			
Sinkhole			
Landslide			
Earthquake			
Hazardous Material			
Human-Caused			

4.3.3 Town of Greensboro

Hazard	Probability	Vulnerability	Impact
Flooding		Small floodplain (10 acres) No development impacted	

	Most likely damage from drainage issues
Dam Failure	None
Tropical Cyclone	
Severe Storm	
Tornado	
Wildfire	
Drought	
Extreme Heat	
Winter Storm	
Freeze	
Erosion	
Sinkhole	
Landslide	
Earthquake	
Hazardous Material	
Human-Caused	

4.3.4 City of Gretna

Hazard	Probability	Vulnerability	Impact
Flooding		Three creeks: (?) Lake Gretna drainage	
Dam Failure		None	
Tropical Cyclone			
Severe Storm			
Tornado			
Wildfire			
Drought			
Extreme Heat			
Winter Storm			
Freeze			
Erosion			
Sinkhole			
Landslide			
Earthquake			
Hazardous Material			
Human-Caused			

4.3.5 Town of Havana

Hazard	Probability	Vulnerability	Impact
Flooding		Lack of proper stormwater drainage	
Dam Failure		None	
Tropical Cyclone			
Severe Storm			
Tornado			
Wildfire			
Drought			
Extreme Heat			
Winter Storm			
Freeze			
Erosion			
Sinkhole			
Landslide			
Earthquake			
Hazardous Material			
Human-Caused			

4.3.6 City of Midway

Hazard	Probability	Vulnerability	Impact
Flooding		Ochlocknee River	
Dam Failure		Holley Branch	
Tropical Cyclone			
Severe Storm			
Tornado			
Wildfire			
Drought			
Extreme Heat			
Winter Storm			
Freeze			
Erosion			
Sinkhole			
Landslide			
Earthquake			
Hazardous Material			
Human-Caused			

4.3.7 City of Quincy

Hazard	Probability	Vulnerability	Impact
Flooding			
Dam Failure			
Tropical Cyclone			
Severe Storm			
Tornado			
Wildfire			
Drought			
Extreme Heat			
Winter Storm			
Freeze			
Erosion			
Sinkhole			
Landslide			
Earthquake			
Hazardous Material			
Human-Caused			

Section 5.0: Mitigation Strategy

§201.6(c)(3): The plan shall include “a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.”

The core of the Local Mitigation Strategy (LMS) is the mitigation strategy. The mitigation strategy was developed after review of the other planning mechanisms and efforts occurring in Gadsden County. A discussion of the other planning and mitigation efforts can be found in [Section 3.4](#). This section identifies eight long-term goals that state the desired end-state of the community and outlines objectives for each goal that will help to achieve that goal. Actions and projects are specific tasks that are built off of the objectives developed in this plan. Completion of each action or project will bring the community a step closer to eliminate losses from hazards. Implementation of each action or project requires organization, time, and funding. These aspects are discussed in [Section 5.3](#) and provide a guide on how each task can be achieved.

5.1 Mitigation Goals and Objectives

§201.6(c)(3)(i): The mitigation strategy shall include “a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.”

Upon review of the previously standing goals and objectives, it was determined that they were too specific and did not comprehensively include all possible mitigation actions and projects. This flaw with the goals and objectives was highlighted by the need to add an additional goal and several objectives to the LMS in order to obtain funding for acquisition of a repetitive loss property during early 2010. The total revision of goals and objectives for the Gadsden County LMS was completed with an aim to have a comprehensive set of goals that clearly state a desired future condition and objectives that provide a toolbox of ideas for the development and addition of mitigation projects. Not all of the objectives have corresponding actions, however the inclusion of such a set of a comprehensive objectives will allow for easy addition of projects during the life of this plan and during subsequent update cycles. Although not worded in the same manner, this new set of goals and objectives is consistent with the State of Florida Hazard Mitigation Plan and the former goals and objectives of the 2006 Gadsden County LMS. Documentation of how the new goals and objectives relate to the former goals and objectives is included in [Appendix A](#).

Goal 1.0: Threats to the health, safety, and welfare of all persons within Gadsden County, during and after a hazardous event, will be minimized or eliminated.

Objective 1.1: Develop plans for the safe evacuation of all persons, with special attention given to the specific needs of vulnerable populations.

Objective 1.2: Provide adequate and secure safe rooms and public shelters to house and protect the population during and after a hazard event.

Objective 1.3: Encourage people to evacuate or move to a public shelter in a timely manner by providing safe housing for pets and overcoming other obstacles to removing persons from the path of hazards.

Objective 1.4: Encourage the private sector to develop emergency plans for mitigation, evacuation, shelter, and recovery.

Goal 2.0: Damage and loss of property caused by hazards will be minimized or eliminated.

Objective 2.1: Modify existing structures to prevent and minimize impacts from a hazard event.

Objective 2.2: Regulate location and construction of new structures to avoid and withstand hazards.

Objective 2.3: Establish property maintenance standards to reduce spread of fire, windborne debris, damage to structures and utilities from trees, groundwater contamination from hazardous materials, and spread of disease by mosquitoes and other pests.

Objective 2.4: Encourage all persons to obtain hazard insurance to aid in repair of structures and replacement of personal items in case damaged or destroyed.

Goal 3.0: Economic, cultural, and natural resources will be protected from losses caused by hazards occurring in Gadsden County.

Objective 3.1: Encourage and aid private businesses in protecting their structures and property during and after hazard events.

Objective 3.2: Reduce risks of agricultural losses due to hazards.

Objective 3.3: Minimize losses to and support repair of cultural resource sites and structures.

Objective 3.4: Protect and manage natural resources as a natural defense system against the effects of hazards and as an economic basis for the community.

Goal 4.0: All people who live in, work in, or visit Gadsden County will be aware of potential hazards and know how to minimize their risk in case of a hazardous event.

Objective 4.1: Spread awareness of hazards, the potential dangers of each type of hazard, and how individuals can prepare for and minimize their risk from hazards.

Objective 4.2: Provide access to information about potential hazards and how individuals can protect themselves and their property from harm.

Objective 4.3: Ensure all persons within an affected area are warned of an impending hazard event and are notified of hazardous situations.

Objective 4.4: Enhance knowledge of local hazards by ensuring distribution of educational materials and access to programs for persons who are disabled, homebound, institutionalized, or speak a foreign language.

Objective 4.5: Join, participate, and contribute to programs and organizations that further the public education goals of this plan, such as the national Firewise Communities program.

Goal 5.0: Critical facilities, infrastructure, and services will remain operational during and after hazard events.

Objective 5.1: Construct and retrofit critical facilities and infrastructure to minimize or eliminate damage from any hazard that may occur, especially shelters and emergency response facilities.

Objective 5.2: Equip critical facilities to remain operational in case of infrastructure and service failure.

Objective 5.3: Coordinate with public and private utility providers to harden infrastructure and service lines against damage.

Objective 5.4: Upgrade and replace public infrastructure that is degraded and/or inadequate to handle peak hazard conditions.

Objective 5.5: Obtain, expand, or develop adequate facilities to meet the needs of the community.

Goal 6.0: Emergency management and response personnel will be well equipped, knowledgeable, and effective at aiding the affected population to anticipate, respond to, and recover from hazard events.

Objective 6.1: Coordinate with local agencies and neighboring jurisdictions to identify needs and opportunities to improve hazard mitigation regulation and develop partnerships for implementation of mitigation initiatives.

Objective 6.2: Seek, coordinate, and develop training and educational opportunities that spread knowledge about mitigation strategies and how to react during a hazardous event for personnel, volunteers, and the public.

Objective 6.3: Collect, maintain, and update data about hazardous events, new development, and critical facilities to increase knowledge about occurrences and effects of hazardous events, understand local vulnerabilities, and develop a resource upon which future plans may be based or updated.

Objective 6.4: Evaluate and improve the capability for local emergency management personnel to react during and after a hazard event by ensuring adequate and appropriate facilities, equipment, and personnel are available to meet community needs.

Objective 6.5: Coordinate the development, evaluation, and revision of emergency management plans including the Local Mitigation Strategy, Comprehensive Emergency Management Plan, and Continuity of Operations Plan.

Goal 7.0: Damages due to flooding will be minimized or eliminated.

Objective 7.1: Participate in the National Flood Insurance Program (NFIP) by adopting a floodplain management ordinance that meets or exceeds NFIP minimum criteria to reduce future flood damage.

Objective 7.2: Once participating in the NFIP, maintain compliance by enforcing the local floodplain management ordinance.

Objective 7.3: Participate in the Community Rating System (CRS) to reduce premium rates for flood insurance holders in the community by adopting a floodplain management ordinance that exceeds NFIP minimum criteria.

Objective 7.4: Utilize HGMP, PDM, and other flood mitigation assistance grants to fund mitigation strategies such as acquisition, demolition, relocation, modification, and elevation as applicable to individual grant programs.

Goal 8.0: Opportunities to mitigate natural and human-caused hazards will be maximized.

Objective 8.1: Seek hazard mitigation funding opportunities from Federal, State, and private sources.

Objective 8.2: Develop strategies to increase local funding for the percent match for funded projects and to use toward implementation of projects without outside funding.

Objective 8.3: Establish low-cost incentive programs to encourage private entities and citizens to take an active role in mitigating hazards.

5.2 Mitigation Actions and Projects

§201.6(c)(3)(ii): The mitigation strategy shall include “a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction’s participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.”

§201.6(c)(3)(iv): “For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.”

There are many actions and projects that a community, or individual, can undertake to reduce or eliminate losses from hazards. FEMA identifies six general categories of mitigation actions in the Developing the Mitigation Plan how-to guide (FEMA 386-3, 2003, p. 2-1). The following is excerpted from the guide:

1. Prevention. Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.
2. Property Protection. Actions that involve the modification of existing buildings or structures to protect them from a hazard or removal from the hazard area. Examples

include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.

3. Public Education and Awareness. Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
4. Natural Resource Protection. Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
5. Emergency Services. Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
6. Structural Projects. Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

A very specific and important action for all communities is participation in FEMA's National Flood Insurance Program (NFIP). Participation and compliance with the NFIP provides the opportunity for the residents of the jurisdiction to obtain federally backed flood insurance. In order to participate in the NFIP, each jurisdiction must adopt and enforce a floodplain management ordinance that meets or exceeds minimum development criteria identified by the program to minimize losses due to flooding. This plan specifically supports participation in the NFIP and the Community Rating System (CRS) through **Goal 7.0; Objectives 7.1, 7.2, and 7.3; and Project #043**. Currently all jurisdictions except Greensboro and Gretna are participating in the NFIP. Gretna officials report that they are currently preparing to submit an application for participation. No jurisdictions currently participate in the CRS, a program that allows a discount in flood insurance rates if the community adopts more stringent development standards.

The LMS Working Group has developed, implemented, and expanded the mitigation project list over several years. **Table 5.1** provides a comprehensive list of mitigation projects, including the current status of each project and how each relates to the goals and objectives of this plan. A numbering system was implemented in 2006 starting with Project #001, so projects added prior to 2006 do not have an associated project number. Of the 59 projects listed, 13 have been completed, two have been deleted because they were mitigated in a different manner, and one was relisted. Of the 43 active projects, 10 are ongoing, nine were deferred due to a lack of funding, and 24 are new projects added during the 2010 update process. A majority of the active projects identified are within the general category of structural projects: eight address new buildings and infrastructure and 23 address existing structures and infrastructure. In a matrix format, **Table 5.2** lists the active projects and identifies to which jurisdictions and hazards the mitigation project applies.

Table 5.1: Mitigation Project Master List

ID # and Name	Description	Date Added	Status	Associated Goals & Objectives
Relocate Gadsden County E911 Center and EOC	Relocate to a central location and larger facility.	2003	Completed in 2006.	
Gretna City Hall	Critical facility upgrade of existing structure to withstand all hazards and maintain operation during an event.	Pre-2006	Ongoing. Retrofits completed, awaiting generators and hookups.	
Water Intake Structure for Quincy	Mitigate water intake structure.	Pre-2006	Deleted. Need to construct new wellhead alleviated need for mitigation.	
Chaf Chason Road, Gadsden County	Drainage retrofit. Access enhancement for evacuation and critical services.	Pre-2006	Completed in 2006.	
Frank Smith/Squirrel Lane, Gadsden County	Drainage retrofit. Access enhancement for evacuation and critical services.	Pre-2006	Completed in July 2010.	
Knight Road, Midway	Access needed for emergency services and evacuation. Flooding caused loss of access. Drainage and paving construction has begun.	Pre-2006	Completed in 2008.	
Parker Knight Road (formerly Williams Road), Midway	Access needed for emergency services and evacuation. Flooding caused loss of access. Drainage and paving construction has begun.	Pre-2006	Completed in 2010.	
001: Chattahoochee City Hall, Police Department, and Fire Department Retrofits	Retrofit critical facilities to withstand all hazards.	2006	Deferred due to lack of funding.	
002: Crawfish Island Emergency Exit, Chattahoochee	Approximately 40 homes in the floodplain with limited access to evacuation routes. Need to elevate roadways and improve drainage to allow for evacuation during a flood event.	2006	Ongoing. Some work completed, awaiting additional funding.	
003: Public Awareness of Flood Vulnerabilities	Measures to inform the residents of Gadsden County floodplains and low-lying areas subject to flooding.	2006	Ongoing.	
004: Gadsden County Hazardous Materials Teams	Recruit, train and equip personnel to effectively respond to hazmat events to protect life and property.	2006	Ongoing.	

ID # and Name	Description	Date Added	Status	Associated Goals & Objectives
005: Shelter Public Awareness	Measures to inform residents and visitors of Gadsden County shelter locations, special needs accommodations, and procedures prior to an event.	2006	Ongoing.	
006: Gadsden County Alternate Debris Field	Contract with debris management company to identify alternate debris holding area, develop a plan, and conduct removal of debris.	2006	Ongoing. Bid process underway.	
007: Communications Repeaters	Upgrade and enhance critical communications infrastructure to ensure continuity of operations and interoperable communication in emergencies and critical events.	2006	Ongoing.	
008: East Gadsden Shelter	Conduct a study to identify shelter retrofitting needs and cost estimates for the acquisition of generators, shuttering, and pre-wiring.	2006	Completed in April 2010.	
009: A and B Street Extension – Lanier Estates/Lanier Oaks, Gretna	Access needed for emergency services and evacuation. Repair existing road and enhance drainage to withstand flooding.	2006	Ongoing.	
010: Gretna Elementary School	Critical facility retrofitting for shelter including shutters and generator.	2006	Deleted. West Gadsden identified as alternative shelter site.	
011: Havana Police Department	Critical facility retrofitting to enlarge facility to adequately meet community needs.	2006	Completed in 2009.	
012: Central Road, Midway	Unpaved portion in City to Joe Budd Wildlife Management Area needs culverts and possible evacuation route.	2006	Completed in 2009.	
013: Midway Fire Station #2	Located on CR268 (West Midway) CSX Railway splits Midway in half. A second fire station is needed. Will also serve areas of Gadsden that do not currently fall within the jurisdiction of any fire stations. Possible shelter and EMS station.	2006	Temporarily deleted after funding was not obtained. Re-added in 2010 as Project 034.	
014: Kitts Lane and Mine Road, Midway	Repair existing road and enhance drainage with culverts and possible road elevation.	2006	Deferred due to lack of funding.	

ID # and Name	Description	Date Added	Status	Associated Goals & Objectives
015: McCray Martin Road, Midway	Southern end is subject to washout. Needs repair and enhance drainage with culverts and possibly road elevation.	2006	Deferred due to lack of funding.	
016: Midway Police Substation	Critical facility retrofit former fire station into police substation.	2006	Deferred due to lack of funding.	
017: Silver Hill Road, Midway	Northern end is subject to washout. Needs enhanced drainage.	2006	Completed in 2009.	
018: Quincy EMS Station	Relocate existing services to new facility that has adequate space for expanded services and personnel.	2006	Deferred due to lack of funding.	
019: Bear Creek Road Bridge (DOT#500018), Gadsden County	Bridge repairs.	2006	Completed in 2009.	
020: Flat Creek Road Bridge (DOT#500023), Gadsden County	Bridge repair and enhancements to withstand flooding event for evacuation.	2006	Deferred due to lack of funding.	
021: Hutchinson Ferry Road Bridge (DOT#500034), Gadsden County	Bridge repair. Cooperation needed with Leon County.	2006	Completed in 2009.	
022: Kemp Road Bridge (DOT#500035), Gadsden County	Bridge repair.	2006	Completed in 2008.	
023: Lincoln Drive Bridge, Gadsden County	Bridge repair to provide access to Mosquito Creek	2006	Deferred due to lack of funding.	
024: Point Milligan Bridge (DOT#500040), Gadsden County	Bridge repair.	2006	Ongoing. Piling bracing needed before project is complete.	
025: Salem Road Bridge (DOT#500033), Gadsden County	Bridge repair and enhancement to withstand flooding event for evacuation.	2006	Deferred due to lack of funding.	
026: Sheline Drive, Gadsden County	Repair and enhance road to improve drainage with culverts and possibly road elevation.	2006	Ongoing.	
027: Tallavana Trail, Gadsden County	Enhance stormwater drainage.	2006	Completed in 2009.	
028: Gadsden County Health Department Mobile Response Vehicle	Currently borrow vehicle from Wakulla County to provide health care to homebound residents. Need vehicle to reach people during and after an event.	2010	New project.	

ID # and Name	Description	Date Added	Status	Associated Goals & Objectives
029: Gadsden County Health Department Backup Generator	Install necessary connections and install a backup generator to ensure critical facility operation during and after an event.	2010	New project. Have started installing hookups.	
030: Quincy Fire Department Retrofit	Repair and enhance strength of critical facility to withstand hazardous storm events.	2010	New project. Grant applied for.	
031: Rosedale Water Treatment Plant, Chattahoochee	Replace or upgrade failing critical facility.	2010	New project. Seeking funding.	
032: Gretna Community Center	Equip and enhance existing structure to serve as an evacuation staging area and temporary shelter.	2010	New project.	
033: Greensboro Volunteer Fire Department Station	Construct facility for VFD.	2010	New project.	
034: Midway Volunteer Fire Department Station #2	Located on CR268 (West Midway) CSX Railway splits Midway in half. A second fire station is needed. Will also serve areas of Gadsden that do not currently fall within the jurisdiction of any fire stations. Possible shelter and EMS station.	2010	Formerly Project 013. Deferred due to lack of funding.	
035: Lake Gretna Stormwater Drainage	Implement a stormwater drainage system to address flooding of roadways. Project will improve drainage swells, expand the capacity of cross drain systems, and construct stormwater drainage facilities.	2010	New project.	
036: Midway Wastewater and Sewage Plant	Construct a centralized critical facility to provide services to entire community.	2010	New project.	
037: Gadsden County Emergency Management Website	Update website to provide information about hazards, shelters, and appropriate contacts.	2010	New project.	
038: Countywide Warning System	Implement a warning system to alert residents of an imminent hazard and to provide shelter and evacuation information.	2010	New project. Researching alternatives.	
039: School Bus Use Agreement	Develop an agreement with the County School Board to utilize buses and drivers for transportation of residents to shelters.	2010	New project.	
040: Hazardous Waste Awareness	Inform residents of the proper procedures for disposing of hazardous wastes.	2010	New project. Notices in local newspapers.	

ID # and Name	Description	Date Added	Status	Associated Goals & Objectives
041: Havana Stormwater Drainage	Improve stormwater drainage citywide to reduce flooding, debris, and mosquito problems. Five culvert locations identified.	2010	New project.	
042: Intergovernmental Shelter, Chattahoochee	Cooperate with the Town of Sneads and Jackson County to identify and improve a shelter for residents in the northwest area of Gadsden County	2010	New project. Talks with Town of Sneads, alternative sites being identified.	
043: Enroll in the National Flood Insurance Program (NFIP), Greensboro and Gretna	The cities of Greensboro and Gretna need to adopt floodplain management ordinances, which meet or exceed minimum requirements of the NFIP program in order to participate in the program.	2010	New project. Gretna has begun process to join NFIP.	
044: Standardize Fire Fighting Equipment Countywide	Replace old fire fighting equipment, ensuring that all fire departments countywide have equipment that is interchangeable and can function together to improve mutual aid between departments.	2010	New project. Grant applied for.	
045: Fire Truck and Ambulances	Replace and expand fire truck and ambulance vehicles countywide to ensure adequate service capabilities. An estimated 10 fire trucks and 3 ambulances are needed.	2010	New project.	
046: Havana Volunteer Fire Department Expansion	Improve facility to withstand hazardous events.	2010	New project.	
047: Midway City Hall Backup Generator	Provide emergency backup electrical source for critical facility.	2010	New project. Researching costs.	
048: Midway Fire Department Backup Generator	Provide emergency backup electrical source for critical facility.	2010	New project.	
049: Midway Municipal Buildings Retrofit	Retrofit the Midway City Hall, Fire Department, and Community Center to withstand hazards and remain functional during an event.	2010	New project.	
050: River Park Drive, Midway	Enhance to decrease flooding.	2010	New project.	
051: Ochlocknee Point Apartments, Midway	Only one access point to development that crosses railroad. Need an alternate access/evacuation route.	2010	New project.	
052: High Bluff Court, Midway	Pave road to enhance drainage.	2010	New project.	

Table 5.2: Active Mitigation Projects by Jurisdiction and Hazard

ID # or Name	Gadsden County (unincorporated areas)	Chattahoochee	Greensboro	Gretna	Havana	Midway	Quincy	Flooding/Dam Failure	Hurricanes/Trop. Storms	Severe Storms/Tornadoes	Wildfire	Drought/Extreme Heat	Winter Storms/Freezes	Geological Hazards	Hazardous Materials	Human Caused
Gretna City Hall				X				X	X	X	X	X	X	X	X	X
001		X						X	X	X	X	X	X	X	X	X
002		X						X	X							
003	X	X	X	X	X	X	X	X								
004	X	X	X	X	X	X	X								X	
005	X	X	X	X	X	X	X	X	X	X		X				
006	X	X	X	X	X	X	X	X	X	X				X		
007	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
009				X				X	X	X						
014						X		X	X	X						
015						X		X	X	X						
016						X		X	X	X	X	X	X	X	X	X
018							X	X	X	X	X	X	X	X	X	X
020	X							X	X	X						
023	X							X	X	X						
024	X							X	X	X						
025	X							X	X	X						
026	X							X	X	X						
028	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
029	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
030							X	X	X	X	X	X	X	X	X	X
031		X						X	X	X		X		X		
032				X				X	X	X	X	X	X	X	X	X
033			X					X	X	X	X	X	X	X	X	X
034						X		X	X	X	X	X	X	X	X	X
035				X				X								
036						X		X	X			X				
037	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
038	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
039	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

ID # or Name	Gadsden County (unincorporated areas)	Chattahoochee	Greensboro	Gretna	Havana	Midway	Quincy	Flooding/Dam Failure	Hurricanes/Trop. Storms	Severe Storms/Tornadoes	Wildfire	Drought/Extreme Heat	Winter Storms/Freezes	Geological Hazards	Hazardous Materials	Human Caused
040	X	X	X	X	X	X	X								X	
041					X			X	X	X						
042		X						X	X	X	X	X	X	X	X	X
043			X	X				X								
044	X	X	X	X	X	X	X				X				X	X
045	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
046					X			X	X	X	X	X	X	X	X	X
047						X		X	X	X	X	X	X	X	X	X
048						X		X	X	X	X	X	X	X	X	X
049						X		X	X	X	X	X	X	X	X	X
050						X		X	X	X						
051						X		X	X	X	X	X	X	X	X	X
052						X		X	X	X						

Source: LMS Working Group, Authors' analysis

5.3 Implementation Strategy

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

Conceptualizing mitigation projects is meaningless unless they can be implemented. For each project there are certain costs in terms of money, time, and work resources. It must also be recognized that there are several mitigation projects that are in competition for these resources. In order to maximize effectiveness of the available resources, projects must be prioritized based on need, benefits, and available resources. The following sections discuss such aspects of implementing mitigation projects.

5.3.1 Project Administration

Gadsden County Emergency Management (GCEM) staff and the LMS Working Group prioritize and seek funding for mitigation projects, but local jurisdictions are responsible for project management and implementation. GCEM staff apply for and manage grants for mitigation projects. The appropriate jurisdictional departments and staff manage and implement the projects. [Table 5.5](#) identifies the lead agency for each mitigation project.

5.3.2 Project Prioritization

Prioritizing projects is an important step in implementation when there is limited funding. There must be agreement among the LMS Working Group members as to which projects should be implemented first. It is generally agreed that certain projects are more critical than others. The priority ranking in [Table 5.5](#) represents the level of general agreement on a scale of “high,” “medium,” or “low” priority. Most projects were ranked as “high” during the July 8, 2010 meeting. This indicates that the need to complete this project is based on the potential to save one or more lives. Medium ranked priorities indicate a project that is in need of implementation, but currently there is no risk to life if it is not completed. Low ranked projects are not likely to save a life if implemented. Because these projects are mitigation projects, which are intended to reduce risk to hazards, it is almost by definition that a majority of the projects were ranked as “high.” In order to separate the most important projects, representatives from each municipality were requested to identify the most important project. This resulted in several projects being identified as “very high” in [Table 5.5](#).

It is recognized that a general understanding of the importance of a project is not always an adequate analysis of prioritization. Because so many projects are identified at the same priority rating, a more objective prioritization process has been adopted by the LMS Working Group. The Project Prioritization Method is a several page worksheet that assigns a numerical value to several factors to aid in prioritizing projects when general agreement among the group cannot be reached. A copy of the Project Prioritization Method is located in [Appendix E](#). The Project Prioritization Method contains eight categories: Goals and Objectives, Level of Vulnerability, Cost Effectiveness, Ancillary Benefits, Local Funding, Special Designations, Timelines, and Local Expertise. The point weighting system gives the most weight to projects that produce a benefit that is greater than their cost under the Cost Effectiveness category. Analysis of projects based on a cost-benefit review ensures the ability to maximize the benefits of available funding. The Local Expertise category provides the second highest weight and is similar to the process that the LMS Working Group went through to develop the priority ranking identified in [Table 5.5](#). This category recognizes that local officials and professionals understand best how a project will benefit the community.

5.3.3 Funding Sources

FEMA’s Hazard Mitigation Assistance grant programs provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages. [Table 5.3](#) lists and briefly describes the mitigation grant programs. More information on each of these programs can be obtained through the State Hazard Mitigation Officer and on the FEMA website. Many of these programs are administered through the Florida Division of Emergency Management and not directly through FEMA.

Table 5.3: FEMA Hazard Mitigation Assistance Grant Programs

Program	Description
Hazard Mitigation Grant Program (HMGP)	Assists in implementing long-term hazard mitigation measures following Presidential disaster declarations. Funding is available to implement projects in accordance with State, Tribal, and local priorities.

Pre-Disaster Mitigation (PDM)	Provides funds on an annual basis for hazard mitigation planning and the implementation of mitigation projects prior to a disaster. The goal of the PDM program is to reduce overall risk to the population and structures, while at the same time, also reducing reliance on Federal funding from actual disaster declarations.
Flood Mitigation Assistance (FMA)	Provides funds on an annual basis so that measures can be taken to reduce or eliminate risk of flood damage to buildings insured under the National Flood Insurance Program (NFIP).
Repetitive Flood Claims (RFC)	Provides funds on an annual basis to reduce the risk of flood damage to individual properties insured under the NFIP that have had one or more claim payments for flood damages. RFC provides up to 100% federal funding for projects in communities that meet the reduced capacity requirements.
Severe Repetitive Loss (SRL)	Provides funds on an annual basis to reduce the risk of flood damage to residential structures insured under the NFIP that are qualified as severe repetitive loss structures. SRL provides up to 90% federal funding for eligible projects.

Source: FEMA Hazard Mitigation Assistance, 2010b

There are many other sources of funding available for mitigation projects. [Table 5.4](#) identifies some of the most prominent funding sources available to counties and municipalities in Florida. Each source funds specific activities that will need to be matched to specific projects. [Table 5.4](#) by no means lists all the available funding sources and effort should be made by GCEM staff, the LMS Working Group, and individual jurisdictions to identify appropriate funding sources for identified mitigation projects.

Table 5.4: Other Funding Sources

Program	Source	Description
Assistance to Firefighters Grant Program (AFGP)	U.S. Fire Administration	The purpose is to award one-year grants directly to fire departments and nonaffiliated emergency medical services (EMS) organizations of a State to enhance their abilities with respect to fire and fire-related hazards.
Community Development Block Grant (CDBG)	U.S. Department of Housing and Urban Development (HUD)	A flexible program that provides communities with resources to address a wide range of unique community development needs. Including disaster recovery assistance for Presidentially declared disaster areas.
Community Facilities Grants (CFG)	U.S. Department of Agriculture (USDA)	Community Programs provides grants to assist in the development of essential community facilities in rural areas and towns of up to 20,000 in population. Grant funds can be used to construct, enlarge, or improve community facilities for health care, public safety, and community and public services, including purchase of equipment required for a facility's operation.
Emergency Management Performance Grant (EMPG)	FEMA via Florida Division of Emergency Management (DEM)	To assist state and local governments in enhancing and sustaining all-hazards emergency management capabilities. EMPG funds are awarded based on population estimates and require a 50/50 match.

Emergency Management, Preparedness, and Assistance (EMPA)	DEM	The Emergency Management, Preparedness, and Assistance Trust Fund was established by the Florida Legislature in 1993. Each county receives an equal share of these funds annually. To receive these grants, the county must have a full-time Emergency Management Coordinator according to Rule 9G-19 of the Florida Administrative Code.
Florida EMS Grants	Florida Department of Health	County grants and two matching grants. General Matching Grants where the State will pay 75% of approved budgets and Rural Matching Grants for counties where the population is less than 100,000 the State will pay 90% of approved budgets.
Florida's Small Cities Community Development Block Grant Program	HUD via Florida Department of Community Affairs (DCA)	Counties with fewer than 200,000 residents with low to moderate income, slum and blight, and/or urgent needs can apply for funding for otherwise unaffordable projects. Funds can be used for water and sewer improvements and drainage improvements.
Homeland Security Grant Program (HSGP)	FEMA via DEM (?) as State Administrative Agency	A suite of five sub-programs: State Homeland Security Program (SHSP), Urban Areas Security Initiative (UASI), Operation Stonegarden (OPSG), Metropolitan Medical Response System (MMRS), and Citizen Corps Program (CCP). Together these grants fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises and management and administration. At least 25% of the SHSP and UASI award funds are dedicated towards law enforcement terrorism prevention activities.

Sources: U.S. Fire Administration (2010); HUD (2009); USDA (n.d.); DEM (2010b); Florida Department of Health (2010); DCA (n.d.); and FEMA (2010c).

5.3.4 Action Plan

Table 5.5 summarizes the action-plan components for each active mitigation project and provides a starting point for project planning and grant applications. **Section 5.3.2** describes the priority ranking process and values. A representative of the lead agency identified estimated cost and time needed to complete a project once it is begun. Potential funding sources are only those funding sources identified in **Section 5.3.3**; there are many other potential funding sources available. The acronyms used in **Table 5.5** to identify funding sources are sourced from **Tables 5.3** and **5.4**.

Table 5.5: Active Mitigation Project Action Plan

ID # or Name	Priority Ranking	Lead Agency	Estimated Cost	Time	Potential Funding Sources
Gretna City Hall	High	City of Gretna	\$70,000	1 yr.	CDBG, EMPA, HMGP, PDM, CFG
001	Medium	City of Chattahoochee	\$300,000	1 yr.	CDBG, EMPA, HMGP, PDM, CFG
002	Very High	City of Chattahoochee	\$457,000	1 yr.	FMA, HMGP, PDM
003	High	Gadsden County Floodplain Manager – Clyde Collins	\$1,000	6 mos.	EMPATF, FMA, PDM, FEMA

ID # or Name	Priority Ranking	Lead Agency	Estimated Cost	Time	Potential Funding Sources
004	Very High	Gadsden County Emergency Management (GCEM)	\$600,000	1 yr.	EMPTE, ODP, AFGP
005	High	GCEM, Red Cross	\$35,000	1 yr.	EMPATF, HMGP, PDM
006	Low	GCEM	\$35,000	6 mos.	EMPATF, HMGP, PDM
007	Very High	GCEM – Robert Maxwell	\$1M	1 yr.	CDBG, EMPATF, HMGP, PDM
009	Very High	City of Gretna	\$300,000	2 yrs.	CDBG, EMPATF, FMA, HMGP, PDM
014	High	City of Midway	\$400,000	18 mos.	CDBG, EMPATF, FMA, HMGP, PDM
015	High	City of Midway	\$350,000	18 mos.	CDBG, EMPATF, FMA, HMGP, PDM
016	High	City of Midway	\$30,000	6 mos.	CDBG, EMPATF, HMGP, PDM
018	High	City of Quincy	\$2.5M	2 yrs.	CDBG, EMPATF, HMGP, PDM, FL EM Services Matching Grant Program
020	High	Gadsden County Public Works (GCPW)	\$750,000	1 yr.	CDBG, EMPATF, HMGP, PDM
023	High	GCPW	\$750,000	1 yr.	CDBG, EMPATF, HMGP, PDM
025	High	GCPW	\$750,000	1 yr.	CDBG, EMPATF, HMGP, PDM
026	High	GCPW	\$750,000	1 yr.	CDBG, EMPATF, HMGP, PDM
028	Medium	Gadsden County Health Department (GCHD)	\$150,000	1 yr.	EMPATF, Emergency Medical Matching Grant Program
029	High	GCHD	\$103,000	1 yr.	CDBG, EMPATF, PDM, Community Facility Grant Program
030	High	City of Quincy	\$75,000	18 mos.	CDBG, EMPATF, HMGP, PDM, National Fire Grants
031	Very High	City of Chattahoochee	\$1.5M	2 yrs.	CDBG, EMPATF, HMGP, PDM, Community Facility Grant Program
032	High	City of Gretna	\$150,000	1 yr.	CDBG, HMGP, PDM
033	Very High	City of Greensboro	\$500,000	2 yrs.	CDBG, EMPATF, HMGP, PDM, National Fire Grants
034	High	City of Midway	\$2.5M	2 yrs.	CDBG, EMPATF, HMGP, PDM, National Fire Grants
035	High	City of Gretna	\$900,000	18 mos.	CDBG, HMGP, FMA, PDM
036	High	City of Midway	\$6M	2 yrs.	CDBG, EMPATF, HMGP, PDM, Community Facility Grant Program
037	Medium	GCEM	\$500	2 mos.	EMPATF, HMGP, PDM
038	High	GCEM	\$10,000	6 mos.	DHS, EMPATF, HMGP, PDM
039	High	GCEM, Gadsden County School Board	Negligible	2 mos.	N/A

ID # or Name	Priority Ranking	Lead Agency	Estimated Cost	Time	Potential Funding Sources
040	Medium	GCPW, all municipalities	\$1,000	Periodic	EMPATF, PDM
041	Medium	Town of Havana	\$125,000	1 yr.	CDBG, EMPATF, HMGP, PDM, Community Facility Grant Program
042	High	City of Chattahoochee, intergovernmental	\$200,000	1 yr.	CDBG, EMPATF, HMGP, PDM, Community Facility Grant Program
043	High	Town of Greensboro, City of Gretna	Negligible	6 mos.	N/A
044	Medium	Gadsden County Fire Department – Donald Crum	\$650,000	1 yr.	CDBG, EMPATF, HMGP, National Fire Grants
045	Medium	Gadsden County Fire Department – Donald Crum	\$1.687 M	1 yr.	CDBG, EMPATF, HMGP, National Fire Grants
046	Very High	Town of Havana	\$150,000	1 yr.	CDBG, EMPATF, HMGP, PDM, National Fire Grants
047	High	City of Midway	\$15,000	1 mo.	EMPATF, PDM, Community Facility Grant Program
048	High	City of Midway	\$15,000	1 mo.	EMPATF, PDM, Community Facility Grant Program
049	High	City of Midway	\$150,000	1 yr.	CDBG, EMPATF, HMGP, PDM, Community Facility Grant Program
050	Very High	City of Midway	\$250,000	18 mos.	CDBG, EMPATF, FMA, HMGP, PDM
051	Very High	City of Midway	\$650,000	18 mos.	CDBG, EMPATF, PDM
052	High	City of Midway	\$150,000	1 yr.	CDBG, EMPATF, FMA, HMGP, PDM

Source: LMS Working Group, local government officials

Section 6.0: Plan Maintenance

For any plan to be effective, it must be maintained so that it remains a relevant and useful document for guiding appropriate actions and decisions. This section outlines methods for maintaining this plan, incorporating its objectives into other planning processes, and keeping the public involved.

6.1 Monitoring, Evaluating, and Updating the Plan

6.1.1 Regular Monitoring and Evaluation Process

§201.6 (c)(4)(i): The plan maintenance process shall include “a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.”

The formation of the LMS Working Group is authorized and required by the Hazard Mitigation Grant Program Rule (2002) in the Florida Administrative Code. The group is responsible for the development and implementation of the county LMS document. A list of the members of the LMS Working Group that developed this plan update is found in **Table 3.1**. The Gadsden County Emergency Management Office is the local government division responsible for administration of the LMS Working Group.

The Gadsden County LMS Working Group has chosen to identify the Emergency Management Director and Emergency Management Coordinator as chair and vice-chair, respectively. This arrangement will continue until the LMS Working Group expresses the desire and/or need to identify a chairperson for the group that is not Gadsden County Emergency Management Office staff. The chair and vice-chair take on the administrative responsibilities for the LMS Working Group including scheduling LMS Working Group meetings, providing public notice of the meetings, and keeping an official record of the proceedings. The GCEMO staff also take on the responsibility of continual monitoring of the plan to ensure coordination with local government agencies and other organizations, incorporation of updated plan information, identification needed revisions and mitigation opportunities, and identification and pursuing funding for mitigation projects.

Together, the Gadsden County Emergency Management Staff and LMS Working Group monitor and evaluate the LMS document. At meetings, held at least twice per year, the plan is reviewed

The Hazard Mitigation Grant Program Rule sets forth the responsibilities of this LMS Working Group, including the requirement to submit an annual update to DEM by the last working weekday of January each year. The updates will include changes to the 1) hazard assessment, 2) project priority list, 3) critical facilities list, 4) repetitive loss list, and 5) any maps. In order to fulfill requirements of the annual update, the LMS Working Group will meet at least twice per year to review the plan, update the project list, and identify any other changes to the plan. Additional meetings will be called as necessary.

6.1.2 Five-Year Update Approval Process

§201.6(d)(3): “A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.”

A comprehensive review and update of the plan will be conducted every five years. This update is due to be adopted by 2011. Provided adoption of this plan occurs on-schedule, the next plan cycle will need to be completed by 2016. Although the revision process should be somewhat continual (through the identification of needed revisions, addition of mitigation projects, and updating of hazard events and critical facilities) based on the monitoring and evaluation process identified in [Section 6.1.1](#), the formal plan revision process should begin at least one year prior to the plan expiration date.

According to §201.6(d)(1) “plans must be submitted to the State Hazard Mitigation Officer (SHMO) for initial review and coordination. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval.” “The Regional review will be completed within 45 days after receipt from the State, whenever possible.”

6.2 Plan Incorporation

§201.6 (c)(4)(ii): The plan maintenance process shall include “a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.”

In order to maximize the effectiveness of this plan, its goals, objectives, and implementation methods must be incorporated into other local planning mechanisms. Development of this plan relied partially on what hazard mitigation goals, policies, and regulations have been adopted by regional, countywide, and municipal jurisdictions as evidenced in [Section 3.4](#) and [Appendix D](#). Such analysis and consideration of local efforts should be reciprocal with this plan. The LMS Working Group must be an active advocate for the LMS and ensure that it is considered during other planning processes. GCESO staff and LMS Working Group members should take an active effort to be informed of other planning efforts and participate in those planning processes to ensure

6.3 Continued Public Involvement

§201.6 (c)(4)(iii): The plan maintenance process shall include “discussion on how the community will continue public participation in the plan maintenance process.”

Public involvement is imperative to the development and maintenance of any planning document, policy, or regulation. Community members can provide invaluable insights into the local condition, are aware of the greatest community needs, and understand how changes will be received by the public. Because planning efforts are aimed at modifying the local condition, the public must have the opportunity to be involved in the planning process. There are three main ways in which the public will continue to have the opportunity to be involved in the plan maintenance process: through proper public notice of meetings, easy access to the LMS document and meeting records, and a method in which to comment on the document content.

All meetings of the LMS Working Group are public meetings as defined by the Sunshine Law, §286.011 of the Florida Statutes (2009). The law requires that “reasonable notice” must be given of all public meetings so that the media and the general public may have the opportunity to attend the meeting. Although the Sunshine Law does not provide specific requirements for a reasonable public notice, each LMS Working Group meeting will be publicly advertized by publication in a local newspaper, digital posting on the Gadsden County website, and/or paper posting at the Gadsden County Sheriff’s Office. The notice shall contain the time and place of the meeting, a summary of the meeting content if known, and contact information for an individual who can answer questions about the meeting. The notice shall be published and/or posted at least one week prior to the meeting. Furthermore, all meetings will be held in a publicly accessible location and reasonable accommodations will be made for handicapped or special needs persons wanting to attend the meeting.

A publicly accessible plan is important resource for the community not only as a resource, but also as an indication that the decision making body is accountable to the public. Much like the plan itself, record of the public meetings should be maintained in a manner that is accessible to the public. A hard copy of the adopted plan should be maintained in the Gadsden County Emergency Management Office (GCEMO), at the offices of each of the adopting jurisdictions, and at the Gadsden County Library. Additionally, a digital version of the adopted plan should be posted on the websites of the adopting jurisdictions and on the Gadsden County Emergency Management website once it is updated in accordance with **Mitigation Project #37**. The GCEMO will maintain the minutes and other official records of the proceedings of the LMS Working Group meetings and will make them available to the public upon request.

Without methods to provide comments, the public is not truly involved in the planning process. There are several ways in which opportunity may be given to the public to comment on the LMS and participate in the maintenance process. On each LMS Working Group meeting agenda, an item for discussion should be reserved for hearing comments from the public in attendance. Every copy of the plan, whether paper copy or online, should be accompanied by instructions and contact information for providing comments to the LMS Working Group. Staff members of the GCEMO are responsible for receiving, documenting, and forwarding public comments to the LMS Working Group for consideration and action.

Appendices

Review and Revision Table (referenced in 1.2)

Public meeting notices, contact lists, attendee lists, and minutes (referenced in 3.0)

Appendix A: Review and Revision Documentation

This appendix documents how the 2006 Gadsden County Local Mitigation Strategy (LMS) document was reviewed and revised to create this updated plan. [Table A.1](#) shows the changes as they relate to the 2006 LMS and identifies where the comparable update information can be found in this document. [Table A.2](#) identifies how the new goals and objectives developed for this plan update relate to the goals and objectives from the 2006 LMS. [Section 5.1](#) describes the review and revision process for development of an entirely new set of goals and objectives for this update.

Table A.1: Document Review and Revision

Original Plan Section	How Reviewed	Revised?	Location in Updated Plan
Executive Summary	Modified to describe plan update.	Yes	Preface
Chapter 1: The Planning Process			
1.1 Origins of the Gadsden County Local Mitigation Plan	Summarized	Yes	1.0 Introduction
1.2 Current Update and Plan Adoption	Summarized Updated to reflect current process	Yes	1.0 Introduction 3.0 The Planning Process
1.3 Opportunity for Public Involvement	Updated to reflect current process	Yes	3.3 Participation
1.4 LMS Working Committee Membership	Updated to reflect current members	Yes	3.2.1 Local Mitigation Strategy Working Group
1.5 LMS Working Committee Meetings	Updated to reflect current process	Yes	3.3 Participation
1.6 Supporting Information/Documents Available for LMS Inclusion		Yes	3.4 Review of Existing Plans, Studies, Reports and Technical Information
1.7 Description of the Planning Process		Yes	3.0 The Planning Process
Chapter 2: Risk Assessment and Vulnerability Analysis			
2.1 Gadsden County Profile			2.0 Important Background Information on County
2.2 Hazard Identification			4.1 Hazard Identification
2.3 Vulnerability Analysis			4.3 Vulnerability Analysis
2.4 Hurricanes and Tropical Storms		Yes	
2.5 Tornadoes and Severe Storms	Reviewed several data sources to update historical record	Yes	4.2.3 Severe Storms and Tornadoes
2.6 Forest Fires			

2.7 Floods		Yes	4.2.1 Flooding and Dam Failure
2.8 Drought and Heat Wave			
2.9 Winter Storms/Freeze			
2.10 Sinkholes			
2.11 Earthquakes			
2.12 Coastal and Riverine Erosion			
2.13 Hazardous Materials			
2.14 Dam/Levee Failure			4.2.1 Flooding and Dam Failure
2.15 Land Uses and Future Development Trends			
2.16 Municipal Risk and Vulnerability Assessment			
Chapter 3: Mitigation Strategy			
3.1 Mitigation Blueprint		Yes	5.0 Mitigation Strategy; Appendix D: Current Mitigation Strategies in Support Documents
3.2 Mitigation Goals and Objectives	Review described in Section 5.1. Table A.2.	Yes	5.1 Mitigation Goals and Objectives
3.3 Mitigation Actions and Projects		Yes	5.2 Mitigation Actions and Projects
3.4 Action Plan		Yes	5.3 Implementation Strategy
3.5 Jurisdictional Action Items		Yes	Table 5.X
3.6 Monitoring, Maintenance and Updating		Yes	6.1 Monitoring, Evaluating, and Updating the Plan
3.7 Incorporations with other Planning Mechanisms		Yes	6.2 Plan Incorporation
3.8 Public Participation	Revised to be more comprehensive and provide guidelines for action.	Yes	6.3 Continued Public Involvement
Appendices			
Appendix 1: Jurisdiction Adoption	Replace with new adoptions.	Yes	Preface
Appendix 2: Minutes from LMS Working Committee Meetings	Document current update process meetings.	Yes	Appendix B
Appendix 3: Project Scoring Methodology	Reviewed and updated with minor modifications.	Yes	Appendix E
Appendix 4: List of Gadsden County Critical Facilities	Updated list and contact information.	Yes	Appendix C
Appendix 5: US Census Data for Gadsden County	Summarized for both Gadsden County and municipalities. Identify source for more information.	Yes	Section 2.0, American FactFinder Website
Appendix 6: MEMPHIS Data and	Removed. Did not use MEMPHIS	No	N/A

Methodology	data.		
Appendix 7: FEMA/State Crosswalk	July 1, 2008 Crosswalk completed for this updated document.	Yes	Preface

Table A.2: Incorporation of 2006 LMS Goals and Objectives into the 2010 LMS Update

2006 LMS Goal or Objective	Related Goal or Objective in the 2010 Update
Goal 1.0: Maintain an ongoing effort to emphasize the mitigation process in all areas of Gadsden County government operations and development.	Reflected in all plan goals.
Objective 1.1: Appoint/reappoint on an annual basis, the County Mitigation Coordinator through the Office of Emergency Management	Removed. Emergency management personnel act in the capacity of chair and vice-chair of the LMS Working Group and are identified as such on a rolling basis. Description is provided in Section 6.1 .
Objective 1.2: The Mitigation Coordinator will work with municipal and County authorities to identify needed revisions to policies, local development regulations and ordinances relating to mitigation; update list of vulnerable community assets and critical facilities; update hazard maps as needed; develop initiatives to address unmet needs; match sources of funding to initiatives.	Incorporated into O-6.1, O-6.3 and all objectives under G-8.0. Also relevant to plan maintenance and described in Section 6.1 .
Objective 1.3: Ensure County Emergency Management staff coordinate review and revision of the Local Mitigation Strategy.	O-6.5
Objective 1.4: The County Mitigation Coordinator will attend Board meetings and note citizen complaints. This will be provided to the LMS Working Committee for possible mitigation opportunities.	Incorporated into O-6.1 and identified in plan maintenance in Section 6.1 .
Objective 1.5: The County will maintain a record of development, especially those in identified hazard areas. Such development reports will be provided to the LMS Working Committee for possible mitigation opportunities.	O-6.3
Objective 1.6: Coordinate with the Apalachee Regional Planning Council on mitigation initiatives, to include public awareness campaigns.	O-6.1
Goal 2.0: Increase Public and Private Sectors awareness and support for disaster loss reduction through mitigation policies, plans, and procedures.	
Objective 2.1: Continue to invite public and private sector representatives to continue to participate in the development, review, and preparation of mitigation policies, procedures, and plans.	
Objective 2.2: Develop and promote outreach strategies designed to educate residents and visitors to Gadsden County of local hazards, their associated risk and vulnerabilities, and applicable mitigation actions.	
Objective 2.3: Advertise in local media outlets of future meetings of the LMS Working Committee and solicit their continued support and input into the long term mitigation planning efforts in Gadsden County.	
Objective 2.4 Promote awareness of Florida’s Firewise Communities concepts for Gadsden County residents.	
Objective 2.5: Maintain the ongoing education and outreach effort to educate elected officials on the importance of hazard mitigation.	

Objective 2.6: Promote the all-hazards awareness campaign developed by the State of Florida, Division of Emergency Management, as found and described at www.floridadisaster.org . This includes awareness materials for hurricanes, floods, winter storms, heat/drought, and a host of additional hazards applicable to Gadsden County.	
Objective 2.7: Investigate the possibilities of enhancing the Gadsden County Emergency Management website to include the LMS Plan, and any other pertinent information, as a measure to increase public awareness and input.	
Goal 3.0: Maximize mitigation opportunities prior to each hurricane season.	
Objective 3.1: Review funding sources and obtain notices of funding availability for the Emergency Management Preparedness and Assistance Trust Fund competitive grant, Flood Mitigation Assistance program, Community Development Block Grants, and Florida Communities Trust.	
Objective 3.2: Review universe of funding sources and add any new funding sources to serve as the requisite match for the programs listed above. This is to include identification of local projects using non-federal funds that could be considered for global match provisions.	
Objective 3.3: Update and revise the LMS project list. Identify the best fit source of potential funding for each identified project. Prioritize the list of potential projects.	
Objective 3.4: Determine cost estimates for proposed projects.	
Objective 3.5: Update list of completed and on-going mitigation initiatives and projects.	
Objective 3.6: Update hazard maps, as needed.	
Objective 3.7: Update flood or other hazard histories, as needed.	
Objective 3.8: Update list of mitigation programs and policies, if needed.	
Objective 3.9: Update all components of the Local Mitigation Strategy and submit to Board of County Commissioners for approval.	
Goal 4.0: Maintain an ongoing effort to maximize post-disaster mitigation options.	
Objective 4.1: Obtain information regarding the availability of and requirements of the Hazard Mitigation Grant Program, CDBG, and any other mitigation program available post-disaster.	
Objective 4.2: Identify suitable projects for HMGP, CDBG, and any other special post-disaster funding from existing LMS Plan, and any new projects identified.	
Objective 4.3: Prioritize projects and apply for funding for those projects that have the highest potential for funding.	
Objective 4.4: Maintain a list of any new projects identified to add to the annual revised list of mitigation projects and initiatives.	
Objective 4.5: Keep records of damage, and repetitive damage for updating hazard history.	
Goal 5.0: Reduce critical facility risk and vulnerability to appropriate, known hazards to ensure operability when disasters occur.	
Objective 5.1: Update the critical facilities inventory on a biannual basis.	
Objective 5.2: Maintain, update, and when needed, ensure hazard mitigation projects reflect efforts to reduce critical facility vulnerabilities.	
Objective 5.3: Prioritize critical facility hazard mitigation projects for potential, future funding opportunities.	

Goal 6.0: Resolve conflicts arising from the development and implementation of the Gadsden County Local Mitigation Strategy.	
Objective 6.1: Ensure the LMS Working Committee follows the guidelines contained in the Intergovernmental Coordination Element of the Comprehensive Plan before beginning any local hazard mitigation initiative in the final local mitigation strategy.	
Objective 6.2: Contact and coordinate mitigation strategies with agencies within the county, adjacent local governments and any regional, state and/or federal agencies that are likely to be affected by the initiative or having jurisdiction and or permit authority over the initiative.	
Objective 6.3: Interact with neighboring jurisdictions and request to be informed of any government action that may affect the long-term health, safety, and welfare of Gadsden County.	
Objective 6.4: Require any conflicts to be presented to the County on any proposed mitigation effort in writing for disposition by the proper County entity.	
Objective 6.5: The LMS Working Committee Chairman will review the complaint and provide a response through the government clerk or manager.	
Goal 7.0: Reduce flood related damages through the use of mitigation strategies.	
Objective 7.1: Utilize Hazard Mitigation Grant Programs (HMGP) for acquisitions, demolition, relocation of structures with conversion of the underlying property to deed-restricted open space; Elevation of existing structures to at least the base flood elevation (BFE) or an advisory base flood elevation (ABFE) or higher; Dry flood proofing of non-residential structures; and minor and localized flood reduction projects.	
Objective 7.2: Utilize pre-disaster mitigation (PDM) grants for acquisition and demolition or relocation of structures.	
Objective 7.3: Utilize Flood Mitigation Assistance grants for acquisition and demolition or relocation of structures, with conversion of the underlying property to deed-restricted open space; Elevation of existing structures to at least the BFE or ABFE or higher; Dry flood proofing of non-residential structures; and Minor and localized flood reduction projects.	
Objective 7.4: Utilize Repetitive Flood Claims (RFC) grants for Acquisition and demolition or relocation of structures, with conversion of the underlying property to deed-restricted open space; Elevation of existing structures to at least the BFE or an ABFE or higher; Dry flood proofing of non-residential structures; and Minor localized flood reduction projects.	
Objective 7.5: Severe Repetitive Loss (SRL) grants for Acquisition and demolition or relocation of structures, with conversion of the underlying property to deed-restricted open space; Elevation of existing structures to at least the BFE or an ABFE or higher; Mitigation reconstruction; Dry flood proofing (historic property only); and Minor and localized flood reduction projects.	

Appendix B: Public Meeting Documentation

Public notice of the LMS Working Group meetings was provided through several methods. The following pages contain the notices provided for publish in the local newspapers, distributed directly to stakeholders, and posted in public locations. Public notice was published in three local newspapers, including the Gadsden County Times, the Havana Herald, and the Twin City News. Publication dates for each meeting are listed in Table A.X.1. Tables A.X.2 and A.X.3 list the organizations and individuals who were directly notified of one or more of the LMS Working Groups. Not all contacts were notified of each meeting because the list was expanded throughout the process as additional stakeholders were identified.

Figure B.X.1: June 10, 2010 LMS Working Group Meeting Public Notice

Notice of Public Meeting

The Gadsden County Local Mitigation Strategy Working Group will hold a public meeting at which the matters of business will include, but are not limited to: the required five-year update of the Gadsden County Local Mitigation Strategy, discussion of natural and human-caused hazards to be included in the strategy, and review of the critical facilities list to be included in the strategy.

Date: June 10, 2010
Time: 10:00am
Place: Gadsden County Sheriff's Office in the ground floor conference room Located at 339 E Jefferson Street, Quincy, Florida.

All are invited to attend. Any questions regarding this meeting can be directed to Charles Brinkley by calling (850) 875-8642. Comments regarding the content of the Local Mitigation Strategy update can be submitted in writing to Anne Rokyta c/o Charles Brinkley, Gadsden County Sheriff's Office, 339 E Jefferson ST, Quincy, FL 32351 or to annerokyta@tds.net.

Figure B.X.2: July 8, 2010 LMS Working Group Meeting Public Notice

Notice of Public Meeting

The Gadsden County Local Mitigation Strategy Working Group will hold a public meeting at which the matters of business will include, but are not limited to: the required five-year update of the Gadsden County Local Mitigation Strategy, setting of plan goals, and development and prioritization of mitigation projects.

Date: July 8, 2010
Time: 10:00am
Place: Gadsden County Sheriff's Office in the ground floor classroom located at 339 E Jefferson Street, Quincy, Florida.

All are invited to attend. Any questions regarding this meeting can be directed to Charles Brinkley by calling (850) 875-8642. Comments regarding the content of the Local Mitigation Strategy update can be submitted in

writing to Anne Rokyta c/o Charles Brinkley, Gadsden County Sheriff's Office, 339 E Jefferson ST, Quincy, FL 32351 or to annerokyta@tds.net.

Table B.X.1: Public Notice Publication Dates for Each LMS Meeting

Newspaper	June 10, 2010	July 8, 2010	August 5, 2010
Gadsden County Times	June 3, 2010		
Havana Herald	May 27, 2010		
Twin Cities News	May 27, 2010	July 1, 2010	

Source: Gadsden County Times, Havana Herald, and Twin City News

Table B.X.2: Jurisdictional Representatives Who Received Direct Notice of LMS Meetings

Jurisdiction	Department	Contact	Title	Contact Method
Gadsden County	County Administrator	Johnny Williams	County Administrator	Email
Gadsden County	Management Services	Arthur L. Lawson, Sr.	Assistant County Administrator	Email
Gadsden County	Planning and Community Development	Jill Jeglie	Interim Director	Email
Gadsden County	Public Works	Robert Presnell	Director	LMS Member
Gadsden County	Emergency Medical Services	Don Crump	Director	LMS Member
Gadsden County	Fire Services	Andre Walker	Coordinator	LMS Member
Gadsden County	Building Inspection/Facilities Management	Clyde Collins	Building Official	Email
Gadsden County	Parks/Solid Waste/Animal Control	Charles Chapman	Administrative Coordinator	Email
Gadsden County Health Department	Administration	Marlon Hunter	Administrator	LMS Member
Gadsden County Schools	Administration	Reginald C. James	Superintendent	Post
Gadsden County Sheriff's Office	Bureau of Administration	Shawn Wood, Sr.	Emergency Management Director	LMS Chairman
Gadsden County Sheriff's Office	Bureau of Administration	Charles Brinkley	Emergency Management Coordinator	LMS Coordinator
City of Chattahoochee	Administration/Utility and Public Works	Elmon "Lee" Garner	City Manager	LMS Member
City of Chattahoochee	Fire Department	Billy Campbell	Fire Chief	Post
City of Chattahoochee	Police Department	Vann Pullen	Police Chief	Post

City of Chattahoochee	Sewer Treatment Plant	John P. Owens	Plant Operator	Post
Town of Greensboro	Administration	Buddy Pitts	Mayor	LMS Member
Town of Greensboro	Police Department	Tim Hall	Police Chief	Post, Email
City of Gretna	Administration	Antonio Jefferson	City Manager	LMS Member
City of Gretna	Police Department	Brian Bess	Police Chief	Email
City of Gretna	Public Works	Terrell William "Bill" Revels	Director	Post
City of Gretna	Waste Water Plant			Post
Town of Havana	Administration	Howard L. McKinnon	Town Manager	LMS Member
Town of Havana	Police Department	E. Glynn Beach	Police Chief	Email
Town of Havana	Utilities			Post
Town of Havana	Volunteer Fire Department	Don Vickers	Fire Chief	Post
City of Midway	Administration	Agatha Muse-Salters	City Manager	LMS Member
City of Midway	Fire Department	J. Frank Robinson	Fire Chief	Post
City of Quincy	Administration	Jack L. McLean, Jr.	City Manager	LMS Member
City of Quincy	Fire Department	Howard Smith		LMS Member
City of Quincy	Police Department	Ferman Richardson	Police Chief	Post
City of Quincy	Public Works	Wille E. Banks		Post
City of Quincy	Utilities	Mike Wade	Director	Email

Table B.X.3: Other Stakeholders Who Received Direct Notice of LMS Meetings

Organization	Department	Contact	Title	Contact Method
Neighboring Jurisdictions				
Calhoun County, FL		Don A. "Sonny" O'Bryan	Emergency Manager	Post
Decatur County, GA	Decatur County EMA	Charlie McCann	Fire Chief/EMA	Post; Email
Grady County, GA	Grady County EMA			Email
Jackson County, FL		Rodney Andreasen	Emergency Manager	Post
Leon County, FL		Richard R. Smith	Emergency Manager	Post
Liberty County, FL		Rhonda Lewis	Emergency Manager	Post
Seminole County, GA	Seminole County EMA			Email
Other Local and Regional Interests				

American Red Cross	Capital Area Chapter	Debara Jump	Regional Development Director	Email
Apalachee Regional Planning Council	Emergency Management	Denise Imbler	Emergency Management Planner	Email
Apalachee Regional Planning Council	Emergency Management	Chris Rietow	Emergency Management Planner	Email
Chamber of Commerce		David A. Gardner	Executive Director	Email
Jim Woodruff Dam		Jason Barrentine	Operations Manager	Post
Leon Department of Health		Brian Bradshaw		Email
Northwest Florida Water Management District	Headquarters			Post
Talquin Electric Cooperative				Post

Table B.X.X: June 10, 2010 Attendee List

Name	Position
Don Crum	EMS/Fire Chief
Tim Hall	Police Chief
Charlie McCann	Decatur County Fire Chief/EMA
Andre Walker	Fire/EMS
Brian Bradshaw	
Lee Garner	Chattahoochee City Manager
Buddy Pitts	Greensboro Mayor
Howard Smith	Quincy Fire
Robert Presnell	Public Works Director
Agatha Muse-Salters	Midway City Manager
Antonio Jefferson	Gretna City Manager
Charles Brinkley	Emergency Management Coordinator
Shawn Wood	Emergency Management Director
Anne Rokyta	LMS Intern
Cheryl Dippre	LMS Intern

June 10, 2010 Meeting Summary

Cheryl Dippre and Anne Rokyta presented a summary of the process and requirements for the LMS update. Rokyta reviewed proposed changes to the list of hazards to be included in the plan and in which order they should be presented. There was general agreement that the list should reflect the State Hazard Mitigation Plan listing. References to coastal hazards were removed due to the inland location of Gadsden County. Although not previously included in the plan, a member of the group reported an incident of landslide and thus landslides should be considered in the plan. The group agreed to use the term “technological hazards” and include reference to radiological accidents as the State HMP does. Similarly, they suggested Human-Caused Hazards should be mentioned in the plan, but didn’t need to be an in depth assessment. The Human-Caused Hazards should reflect the categories in the State HMP, which includes Civil

Disturbances, Mass Immigration, Mass Casualty Incidents, Terrorism, and Weapons of Mass Destruction.

Dippre presented the LMS Working Group with a copy of the revised Critical Facilities List and requested that any changes, additions, or deletions be reported to include in the final document. She also presented the current goals and objectives requesting that any comments about changes or inclusions be expressed. The group was asked to develop lists of mitigation projects for their corresponding jurisdictions to be considered for inclusion into the plan at the next meeting.

Appendix C: Critical Facility Inventory

Appendix D: Current Mitigation Strategies in Support Documents

Authority, policy, program, or resource	Mitigation Goal
Apalachee Regional Planning Council Strategic Regional Policy Plan	
Regional Goal EP 1.1: Be prepared for hazards associated with tropical cyclones.	
Regional Policy 1.1.4: Roadway improvements will be made in a coordinated, timely, and orderly manner to avoid the potential for exceeding the evacuation capacity of the Region’s road network by (a) consulting with local governments and the Regional Planning Council prior to road construction, (b) avoiding, where possible, construction activities on critical evacuation routes during hurricane season, and (c) by completing the job according to the work schedule.	

Appendix E: Project Prioritization Method

Gadsden County Local Mitigation Strategy Prioritization and Scoring Method

The LMS Prioritization and Scoring Method is used for identifying projects and programs that have technical merit, will be cost effective, and acceptable to the public upon implementation. The project or program is described and categorized by type. The score is used as the basis for the preliminary ranking of projects and programs on the LMS list.

Reference Number:

Location:

Project/Program Name:

Project/Program Description:

Project/Program Category

Goals & Objectives

Points are awarded for each goal and/or objective supported by the project or program from the Local Mitigation Strategy. Choose the goals and objectives supported by the project/program. Total the number of goals and objectives addressed. Multiply the total number of goals and objectives by the points awarded to obtain the score.

Criteria	List Goals & Objectives	Total #	Points	Score
Goals			2	
Objectives			1	
			Total:	

Level of Vulnerability

Points are based upon the type of hazard mitigated and the predetermined Level of Vulnerability.

Hazard Type:

Criteria	Points	Score
High Level of Vulnerability	15	
Moderate Level of Vulnerability	10	
Low Level of Vulnerability	5	
No Vulnerability Identified	0	
Total:		

Cost Effectiveness

Points are awarded based on a positive Benefit Cost Ratio (BCR). The BCR is obtained by dividing the estimated value of the project benefits(s) by the estimated project costs. Projects with a BCR of 1.0 or greater will be awarded 30 points. 15 points will be awarded for projects that demonstrate life saving benefits, but have a BCR less than 1.0. (Example: Estimated Benefits of Project = \$25,000, Cost of Project = \$30,000, BCR = 0.833)

Criteria	Points	Score
Benefit-Cost Ratio is 1.0 or greater	30	
Benefit-Cost Ratio is <1.0 and the project could save lives, prevent injuries, and/or protect the health of residents and visitors	15	
Benefit-Cost Ratio is <1.0 and is not expected to save lives, prevent injuries, and/or protect the health of residents and visitors	0	

Estimated Project Costs:
Estimated Project Benefits:
Estimated BCR:

Benefits description/assumptions:

Total:	

Ancillary Benefits

Additional benefits associated with the initiation or completion of the project or programs have been identified. These benefits highlight areas that were deemed significant during the development of the Local Mitigation Strategy.

Criteria	Points	Score
Community Participation	5	
Critical Facility	5	
Improved Evacuation and/or Sheltering Capabilities	5	
Multi-Jurisdictional	5	
Eligible for the National Register of historic Places	5	

Public-Private Partnership	5	
Natural Features Restored or Improved	5	
Total:		

Local Funding

Will local funding be provided for the project? Identify source for matching funds.

Criteria	Points	Score
Local funding provides more than 25% of project cost	15	
Local funding provides 25% of project cost	10	
Local funding provides less than 25% of project cost	5	
No local funding available	0	
Total:		

Special Designations

Points are awarded if the Project/Program has a special designation or falls within an area of Critical State Concern.

A HUBZone is a “Historically Underutilized Business Zone”

An Enterprise Zone is a specific geographic area targeted for economic revitalizing. Enterprise Zones encourage economic growth and investment in distressed areas by offering tax advantages and incentives to businesses locating within the zone boundaries.

Criteria	Points	Score
Designated HUBZone	15	
Designated Enterprise Zone	20	
Other Designations	10	
Total:		

Timeliness

Points are awarded based on the expected timeframe for completion and implementation of the project or program.

Criteria	Points	Score
Less than one year to complete or implement	10	
More than one year to complete or implement	5	
Long Term Project (one year or more before implementation)	0	
Total:		

Local Expertise

Points are awarded based on the local expertise of the County Engineer, EM Director, Public Works official, or other jurisdictional authority. This correlation is based on a rating of the project or program by the selected authority.

Criteria	Rating	Points	Score
The project/program has the greatest likelihood of significantly benefiting the jurisdiction	5	25	
The project/program has a significant likelihood of benefiting the jurisdiction	4	20	
The project/program will likely benefit the jurisdiction	3	15	
The project/program may benefit the jurisdiction in more than one area of concern	2	10	
The project/program may benefit the jurisdiction in at least one area of concern	1	5	
The project/program could benefit the jurisdiction, however there are circumstances that may decrease the chances for it to be completed or implemented.	0	0	
Total:			

Total Worksheet Score

Criteria	Score
Goals & Objectives	
Level of Vulnerability	
Cost-Benefit	
Ancillary Benefits	
Local Funding Availability	
Special Designations	
Timeliness	
Local Expertise	
TOTAL SCORE	

Date Completed:

Scorers Initials:

Reviewed by Gadsden County LMS Working Group:

Comments:

Acronyms

BFE	Base Flood Elevation
CDBG	Community Development Block Grant program
DCA	Florida Department of Community Affairs
DEM	Florida Department of Community Affairs, Division of Emergency Management
EMS	Emergency Management Services
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GCEMO	Gadsden County Emergency Management Office
HMGP	Hazard Mitigation Grant Program
HUD	United States Department of Housing and Urban Development
LMS	Local Mitigation Strategy
mph	miles per hour
NCDC	National Climatic Data Center
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
PDM	Pre-Disaster Mitigation grant program
SHELDUS	Spatial Hazard Events and Losses Database for the United States
USDA	United States Department of Agriculture

Definitions

Adoption. A resolution, ordinance or other formal action taken by the governing body of a county or municipality indicating agreement with and acceptance of the relevant Local Mitigation Strategy (Hazard Mitigation Grant Program, 2002)

Asset. Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks (FEMA 386-2, 2001).

Base Flood Elevation (BFE). The elevation of the water surface resulting from a flood that has a 1% chance of occurring in any given year, measured in feet from a referenced vertical datum (FEMA 386-2, 2001).

Critical Facility. Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals (FEMA 386-2, 2001).

Debris. The scattered remains of assets broken or destroyed in a hazard event. Debris caused by a wind or water hazard event can cause additional damage to other assets (FEMA 386-2, 2001).

Earthquake. A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of Earth's tectonic plates (FEMA 386-2, 2001).

Erosion. Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm over a period of years, through the action of wind, water, or other geologic processes (FEMA 386-2, 2001).

Extent. The size of an area affected by a hazard or hazard event (FEMA 386-2, 2001).

Fault. A fracture in the continuity of a rock formation caused by a shifting or dislodging of the Earth's crust, in which adjacent surfaces are differentially displaced parallel to the plane of fracture (FEMA 386-2, 2001).

Federal Emergency Management Agency (FEMA). Independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response, and recovery (FEMA 386-2, 2001).

Flash Flood. A flood event occurring with little or no warning where water levels rise at an extremely fast rate (FEMA 386-2, 2001).

Flood. A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the usual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land (FEMA 386-2, 2001).

Flood Insurance Rate Map (FIRM). Map of a community, prepared by the Federal Emergency Management Agency, that shows both the special flood hazard areas and the risk premium zones applicable to the community (FEMA 386-2, 2001).

Flood Insurance Study (FIS). A study that provides and examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities (FEMA 386-2, 2001).

Floodplain. Any land area, including watercourse, susceptible to partial or complete inundation by water from any source (FEMA 386-2, 2001).

Frequency. A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1 percent chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered (FEMA 386-2, 2001).

Fujita Scale of Tornado Intensity. Rates tornadoes with numeric values from F0 to F5 based on tornado windspeed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while an F5 indicates severe damage sustained (FEMA 386-2, 2001).

Hazard. A condition that exposes human life or property to harm from a man-made or natural disaster (Hazard Mitigation Grant Program Rule, 2002). A source of potential danger or adverse condition. Hazards include naturally occurring events such as floods, earthquakes, tornadoes, tsunamis, coastal storms, landslides, and wildfires that strike populated areas. A natural event is a hazard when it has the potential to harm people or property (FEMA 386-2, 2001).

Hazard Mitigation. Sustained action taken to reduce or eliminate long-term risk to people and their property from hazards (FEMA, 2009).

Hurricane. An intense tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74-miles-per-hour or more and blow in a large spiral around a relatively calm center or “eye” (FEMA 386-2, 2001).

Infrastructure. Refers to the public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area’s transportation system and waterways (FEMA 386-2, 2001).

Intensity. A measure of the effects of a hazard event at a particular place (FEMA 386-2, 2001).

Local Mitigation Strategy or LMS. A plan to reduce the identified hazards within a county (Hazard Mitigation Grant Program, 2002).

LMS Working Group. The group responsible for development and implementation of the Local Mitigation Strategy as required by Florida Administrative Code 9G-22.004 (Hazard Mitigation Grant Program Rule, 2002).

Magnitude. A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard (FEMA 386-2, 2001).

Mitigation Plan. A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the state and includes a description of actions to minimize future vulnerability to hazards (FEMA 386-2, 2001).

National Flood Insurance Program (NFIP). Federal program created by Congress in 1968 that makes flood insurance available in communities that enact minimum floodplain management regulations in 44 CFR §60.3 (FEMA 386-2, 2001).

Probability. A statistical measure of the likelihood that a hazard event will occur (FEMA 386-2, 2001).

Project. A hazard mitigation measure as identified in an LMS (Hazard Mitigation Grant Program, 2002).

Repetitive Loss Structures. Structures that have suffered two or more occurrences of damage due to flooding and which have received payouts from the National Flood Insurance Program as a result of those occurrences (Hazard Mitigation Grant Program, 2002).

Richter Scale. A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935 (FEMA 386-2, 2001).

Risk. The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard (FEMA 386-2, 2001).

Riverine. Of or produced by a river (FEMA 386-2, 2001).

Tornado. A violently rotating column of air extending from a thunderstorm to the ground (FEMA 386-2, 2001).

Tropical Cyclone. A generic term for a cyclonic, low-pressure system over tropical or subtropical waters (FEMA 386-2, 2001).

Tropical Depression. A tropical cyclone with maximum sustained winds of less than 39 mph (FEMA 386-2, 2001).

Tropical Storm. A tropical cyclone with maximum sustained winds greater than 39 mph and less than 74 mph (FEMA 386-2, 2001).

Vulnerability. Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions.

Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones (FEMA 386-2, 2001).

Vulnerability Assessment. The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment (FEMA 386-2, 2001).

Wildfire. An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures (FEMA 386-2, 2001).

References

- Atlantic Oceanographic and Meteorological Laboratory, National Oceanic and Atmospheric Administration. (n.d.). Hurricane research division, frequently asked questions. Retrieved from <http://www.aoml.noaa.gov/hrd/tcfaq/tcfaqHED.html>
- Brooks, Harold. (2003). Severe thunderstorm climatology, total threat. National Severe Storms Laboratory, NOAA. Retrieved from <http://www.nssl.noaa.gov/hazard/totalthreat.html>
- Cooper, Steven & Cain, Dennis. (2010). JetStream – online school for weather. National Weather Service, Southern Region Headquarters: Fort Worth, Texas. Retrieved from <http://www.srh.noaa.gov/srh/jetstream/>
- Disaster Mitigation Act of 2000, Pub. L. No. 106-390 [114 STAT. 1552, esp. 42 USC 5165: Sec. 322 Mitigation Planning]
- Edwards, R. (2009). The online tornado FAQ. NOAA Storm Prediction Center. Retrieved from <http://www.spc.noaa.gov/faq/tornado/index.html#About>
- Federal Emergency Management Agency. (2001). State and local mitigation planning how-to guide: Understanding your risks, identifying hazards and estimating losses. [FEMA 386-2]. Retrieved from <http://www.fema.gov/plan/mitplanning/resources.shtm>
- Federal Emergency Management Agency. (2003). State and local mitigation planning how-to guide: Developing the mitigation plan, identifying mitigation actions and implementation strategies. [FEMA 386-3]. Retrieved from <http://www.fema.gov/plan/mitplanning/resources.shtm>
- Federal Emergency Management Agency. (2008). Taking shelter from the storm: Building a safe room for your home or small business. [FEMA 320, 3rd ed.]. Retrieved from <http://www.fema.gov/library/viewRecord.do?id=1536>
- Federal Emergency Management Agency. (2009). Multi-hazard mitigation planning. Retrieved from <http://www.fema.gov/plan/mitplanning/index.shtm>
- Federal Emergency Management Agency. (2009b). The national flood insurance program. Retrieved from <http://www.fema.gov/about/programs/nfip/index.shtm>
- Federal Emergency Management Agency. (2010). Disaster information. Retrieved from <http://www.fema.gov/hazard/>
- Federal Emergency Management Agency. (2010b). Hazard mitigation assistance. Retrieved from <http://www.fema.gov/government/grant/hma/index.shtm>
- Federal Emergency Management Agency. (2010c). FY 2010 homeland security grant program (HSGP). Retrieved from <http://www.fema.gov/government/grant/hsgp/index.shtm>
- Florida Department of Children and Families. (2010). About Florida State Hospital. Retrieved from <http://www.dcf.state.fl.us/facilities/fsh/about.shtml>
- Florida Department of Community Affairs. (n.d.). Small cities community development block grant program. Retrieved from <http://www.floridacommunitydevelopment.org/cdbg/>

- Florida Department of Environmental Protection. (2009). Florida's Hazards. Retrieved from http://www.dep.state.fl.us/geology/geologictopics/hazards/coastal_erosion.htm
- Florida Department of Environmental Protection. (2010). Sinkholes. Retrieved from <http://www.dep.state.fl.us/geology/geologictopics/sinkhole.htm>
- Florida Division of Emergency Management. (2002). FloridaDisaster.org. Retrieved from <http://www.floridadisaster.org>
- Florida Division of Emergency Management. (2010). Draft enhanced state hazard mitigation plan 2010. Retrieved from <http://www.floridadisaster.org/Mitigation/State/Index.htm>
- Florida Division of Emergency Management. (2010b). Federal and state program grants. Retrieved from <http://www.floridadisaster.org/grants/index.htm>
- Florida Division of Forestry. (2010). Fire data reports [online database]. Retrieved from <http://tlhforweb03.doacs.state.fl.us/PublicReports/>
- Florida Department of Health. (2010). Florida EMS grants. Retrieved from <http://www.doh.state.fl.us/demo/ems/grants/grants.html>
- Florida Statutes. Ch. 286.011 (2009)
- Hazard Mitigation Grant Program Rule, Fla. Admin. Code 9G-22 (2002)
- Hazards & Vulnerability Research Institute. (2009). The spatial hazard events and losses database for the United States, Version 7.0 [online database]. Columbia, SC: University of South Carolina. Available from <http://www.sheldus.org>
- Lane, Ed. (1983). Earthquakes and seismic history of Florida, Information circular no. 93. Bureau of Geology Division of Resource Management, Florida Department of Natural Sciences, Tallahassee, FL. Retrieved from <http://ufdcweb1.uflib.ufl.edu/ufdc/?m=hd1j&I=70093>
- Lane, Ed (ed). (1994). Florida's geological history and geological resources. Tallahassee, FL: Florida Geological Survey. Retrieved from <http://www.clas.ufl.edu/users/guerry/GLY415/sp35/Fgs35.HTM>
- Local Mitigation Plans Rule, 44 CFR 201.6 (2008)
- National Climatic Data Center. (n.d.). Climate of Florida. Retrieved from http://coaps.fsu.edu/climate_center/specials/climateofflorida.pdf
- National Climatic Data Center. (2008). U.S. tornado climatology. Retrieved from <http://www.ncdc.noaa.gov/oa/climate/severeweather/tornadoes.html>
- National Climatic Data Center. (2009). Climate data online, U.S. divisional data [online database]. Retrieved from <http://www.ncdc.noaa.gov/oa/climate/onlineprod/drought/xmgr.html>
- National Climatic Data Center. (2010). Storm events database [online database]. Retrieved from <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms> on May 25, 2010*
- National Drought Mitigation Center. (2009). University of Nebraska Lincoln. Retrieved from <http://drought.unl.edu/index.htm>

- National Oceanic and Atmospheric Administration, National Weather Service. (2001). Winter storms the deceptive killers: A preparedness guide. Retrieved from <http://www.nws.noaa.gov/om/winterstorm/winterstorms.pdf>
- National Oceanic and Atmospheric Administration, Coastal Services Center. (2010). Historical hurricane tracts tool. [Online database]. Retrieved from <http://www.csc.noaa.gov/digitalcoast/tools/hurricanes/>
- National Oceanic and Atmospheric Administration, National Hurricane Center. (2010). The Saffir-Simpson hurricane wind scale. Retrieved from <http://www.nhc.noaa.gov/aboutsshws.shtml>
- National Weather Service. (2009). National Weather Service Glossary. Retrieved from <http://www.weather.gov/glossary/>
- Public Entity Risk Institute. (n.d.). All about presidential disaster declarations [online database]. Retrieved from <http://www.peripresdecusa.org/mainframe.htm>
- Rupert, Frank R. (1990). Geology of Gadsden County, Florida. Florida Geological Survey, Tallahassee, Florida. Retrieved from <http://www.uflib.ufl.edu/ufdc/?b=UF00000404&v=00001>
- Sinclair, William C., & Stewart, J.W. (1985). Sinkhole type, development, and distribution in Florida [map]. U.S. Geological Survey, Tallahassee, Florida. Retrieved from <http://www.dep.state.fl.us/geology/publications/sinkholetype2.pdf>
- United States Army Corps of Engineers (2008). Apalachicola-Chattahoochee-Flint river system history. Retrieved from <http://www.sam.usace.army.mil/op/rec/acf/history.htm>
- United States Census Bureau. (n.d.). American fact finder. Retrieved from <http://factfinder.census.gov>
- United States Department of Agriculture. (n.d.). Community facilities grants. Retrieved from http://www.rurdev.usda.gov/HAD-CF_Grants.html
- United States Department of Housing and Urban Development. (2009). Community development block grant program. Retrieved from <http://www.hud.gov/offices/cpd/communitydevelopment/programs/>
- United States Fire Administration. (2010). Assistance to firefighters grant program. Retrieved from <http://www.usfa.dhs.gov/fireservice/grants/afgp/index.shtm>
- United States Geological Survey. (2010). Earthquakes. Retrieved from <http://earthquake.usgs.gov/earthquakes>
- United States Landfalling Hurricane Web Project. (2010). 2010 tropical cyclone landfall probabilities. Retrieved from <http://landfalldisplay.geolabvirtualmaps.com/>
- Yanev, Peter I. (1991). Peace of mind in earthquake country: How to save your home and life. Chronicle Books, San Francisco, CA.

Resources

American FactFinder: <http://factfinder.census.gov>

American Red Cross: www.redcross.org

Assistance to Firefighters Grant Program:
<http://www.usfa.dhs.gov/fireservice/grants/afgp/index.shtm>

Capital Area Chapter of the American Red Cross: www.tallyredcross.org; 1115 Easterwood Drive, Tallahassee, FL 32311; Telephone: (850) 878-6080

Community Development Block Grant Program:
<http://www.hud.gov/offices/cpd/communitydevelopment/programs/>

Community Facilities Grants: http://www.rurdev.usda.gov/HAD-CF_Grants.html

Disasters, Strategies & Ideas Group, LLC: www.dsideas.com; PO Box 12333, Tallahassee, FL 32317; Telephone: (850) 443-6948

Federal Emergency Management Agency: <http://www.fema.gov/>

Federal Emergency Management Agency Community Status Book Report: Florida Communities Participating in the National Flood Program: <http://www.fema.gov/cis/FL.html>

Federal Emergency Management Agency Multi-Hazard Mitigation Planning:
<http://www.fema.gov/plan/mitplanning/index.shtm>

Florida Department of Community Affairs, Division of Emergency Management:
<http://www.floridadisaster.org>

Florida EMS Grants: <http://www.doh.state.fl.us/demo/ems/grants/grants.html>

Florida's Small Cities Community Development Block Grant Program:
<http://www.floridacommunitydevelopment.org/cdbg/>

Homeland Security Grant Program: <http://www.fema.gov/government/grant/hsgp/index.shtm>

National Drought Mitigation Center: <http://drought.unl.edu/index.htm>

National Hurricane Center, National Weather Service: <http://www.nhc.noaa.gov/>

National Response Framework (NRF) Resource Center:
<http://www.fema.gov/emergency/nrf/index.htm>

Southeast Regional Climate Center: <http://www.sercc.com/>