

Madison County, Florida Local Mitigation Strategy



Approved November 12, 2015

Primary Point of Contact

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The jurisdictions represented in the Madison County Local Mitigation Strategy (LMS) Plan are the same since the last update and are as follows:

Madison County, Florida
City of Madison
Town of Greenville
Town of Lee

Madison County Emergency Operations Center



Photo Courtesy of Matt Preston

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Executive Summary

Madison County and its jurisdictions face a variety of natural and man-made hazards that could affect the lives and property of residents and visitors. The development and implementation of the Madison County Local Mitigation Strategy (LMS) provides a mechanism for the County, municipalities (Greenville, Lee, & Madison), and partners to address issues that will reduce or eliminate exposure and the impacts of hazards. The 2015 update of the LMS is a result of a coordinated, cooperative effort of local government and partners who make up the Madison County Local Mitigation Strategy Work Group.

Hazard mitigation is any action taken to permanently reduce or eliminate long-term risk to people and their property from the effects of hazards. Some examples of hazard mitigation include land use planning techniques that limit infrastructure in high hazard areas and programs for retrofitting existing structures to meet new building codes and standards. Ideally, a community can minimize the effects of future hazards through a mix of code enforcement, planning, and responsible development.

Mitigation occurs in many ways through various activities of governmental and non-governmental agencies and stakeholders. Together, these activities establish the mitigation goals for a community and provide the framework for effective redevelopment. Existing plans, programs, policies, and ordinances should be reviewed to identify mitigation activities already occurring in a jurisdiction. These independent activities are combined and contained in the LMS.

Over the past 5 years Madison County has not seen an increase in residential and commercial growth. However, Madison County continues to move forward with mitigation. Priorities of the 2015 LMS remain the same as previous versions of this plan: identify hazards, continue planning/regulations to protect lives & property, continue to secure grant funding for future mitigation projects. During the past 5 years Madison County improved from a CRS Class 8 to a CRS Class 7. This provides an additional 5% discount on flood insurance policies to the citizens of Madison County. Madison County began using the Code Red emergency notification system in 2014. This system provides severe weather notifications including flood, tornado, and severe thunderstorm warnings from the National Weather Service at no cost to the residents of Madison County. For the 2015 LMS revision MEMPHIS data continues to be the most accurate data for Madison County. Overall population and housing stock has not changed significantly over the last 5 years. The flood section has been updated based on revised flood maps completed in 2010 making the MEMPHIS data outdated. MEMPHIS data will continue to be phased out as additional studies are completed.

Section 1 Jurisdiction Profile

History and Community Information

Madison County was named in 1827 in honor of Founding Father James Madison, the fourth President of the United States and Father of the United States Constitution. It was chartered as Florida's largest county. That was before Florida was admitted to the Union, in 1845. Since then, the Madison County has "surrendered" Taylor, Lafayette and Dixie Counties, but there are still 716 square miles of forests, rivers, lakes and gently rolling hills to enjoy. Madison County played an influential role in Florida's subsequent statehood in 1845. The area was settled by cotton planters and their labor force who hailed from the South Carolina low country near Charleston.

Madison County is located in the north central region of the Florida panhandle. It is bordered on the north by the State of Georgia (Brooks County), on the south by Taylor and Lafayette Counties, on the east by Hamilton and Suwannee Counties, and on the west by Jefferson County. Figure 1 illustrates Madison County and the counties that border it in north central Florida.

Figure 1: Madison County and Neighboring Counties



Source: Madison County Property Appraiser, 2015

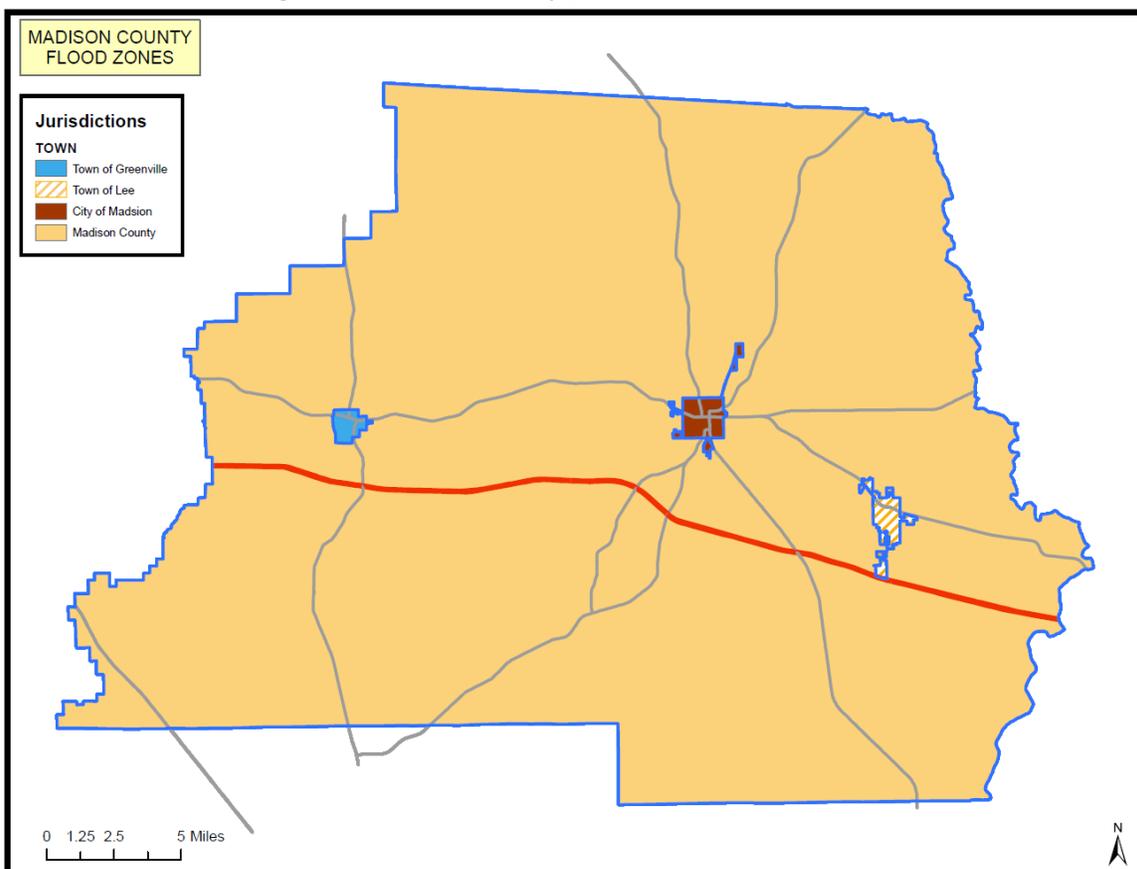
The county consists of 696 square miles of predominantly rural land, with the majority of the area dominated by agricultural and forest land use. Croplands and pastures account for 131,577 acres of land area and forestland covers 326,400 acres of the county's total area. Urban growth and homestead development make up only five percent of Madison County's land area. As of 2014, the average county-wide population density was 28 persons per square mile, which ranked 59th out of the 67 counties in Florida.

The population of Madison County as of the 2010 Census was 19,244. The 2014 population estimate was 19,303.

Madison County is a single-member voting district, which means that residents living in a particular district elect a Commissioner from that district to represent them. There are five districts and each district is represented by one Commissioner.

The City of Madison and the Towns of Greenville and Lee, are the three incorporated jurisdictions in the county. Madison County (unincorporated) is the fourth jurisdiction (Fig. 2).

Figure 2: Madison County Jurisdictions, 2015



Source: Madison County Property Appraiser, 2015

The City of Madison

Founded in 1838, it is the largest incorporated jurisdiction in Madison County, population just over 3,000, and is home to the Madison County Courthouse. The City of Madison is also the County Seat and was named for Madison C. Livingston, who donated the first parcel of land to create the city on May 2, 1838. Four Freedoms Park is located on the north side of the county courthouse and across the street from the Chamber of Commerce. It is home to the Four Freedoms Monument. The monument commemorates the Four Freedoms:

Four Freedoms Monument



Photo Courtesy of Matt Preston

Freedom of speech and expression
Freedom of worship
Freedom from want
Freedom from fear

The City of Madison has recently renovated its downtown area by restoring many of its historic buildings that show Antebellum and Victorian architecture at their finest. Carriage lights, brick sidewalks, and additional landscaping add to its charm.

The Town of Greenville

A small southern town, population 843, located on the western side of Madison County, Greenville was originally known as Sandy Ford. When the railroad came through from Jacksonville to Pensacola the town became known as Station Five, as it was the fifth stop on the line from Jacksonville.

When the Civil War broke out, the Confederate commissary asked that a proper name be given to the town. That's when Mrs. U.M. Roberts, a member of a group of ladies who would get together and knit socks and other items to mail to their soldiers, suggested that the town be called Greenville after her old home in South Carolina. And the rest, as they say, is history.

Haffye Hays Park in Greenville



Photo Courtesy of Matt Preston

The Town of Lee

The Town of Lee has a slogan that sums it up, “Small but Proud”. With a population of 352 residents, Lee is the least populated incorporated jurisdiction in Madison County. It is also one of the smallest incorporated jurisdictions in the State. Chartered in 1909, the Town of Lee is said to have originated in the mind of Greenberry Haven, a pioneer of the pre-civil war era.

The Town of Lee is governed by a Town Council and a Mayor, all elected by the town's citizens. City Manager Cheryl Archambault and Clerk Janice Miller help manage the day-to-day affairs of the community.

In an effort to encourage economic development, the Lee Town Council obtained the vacated Lee School building to establish a business incubator. The intent of this project is to assist with the development of small businesses by providing office space at a reduced rate, assisting with tax incentive applications, providing direction and support to obtain small business loans and to assist with the promotion of their product. The building has 9,928 square feet of office space, which has been divided into 19 available offices ranging from 110 square feet to 1,300. The complex has been divided into two sections, one area for the development of a small business incubator and the other to provide services to the community.

Lee Town Hall



Located only two miles from Interstate 10, five miles west of the Suwannee River, and thirty miles from Valdosta, Georgia, Lee is an easy drive from anything one wants or needs to do.

Major Rivers and Watersheds

The Aucilla, Suwannee, and Withlacoochee Rivers are the primary rivers in Madison County and along with their tributaries provide a natural drainage system. Major lakes in the county include Cherry Lake, Indian Lake and Sampala Lake. Large

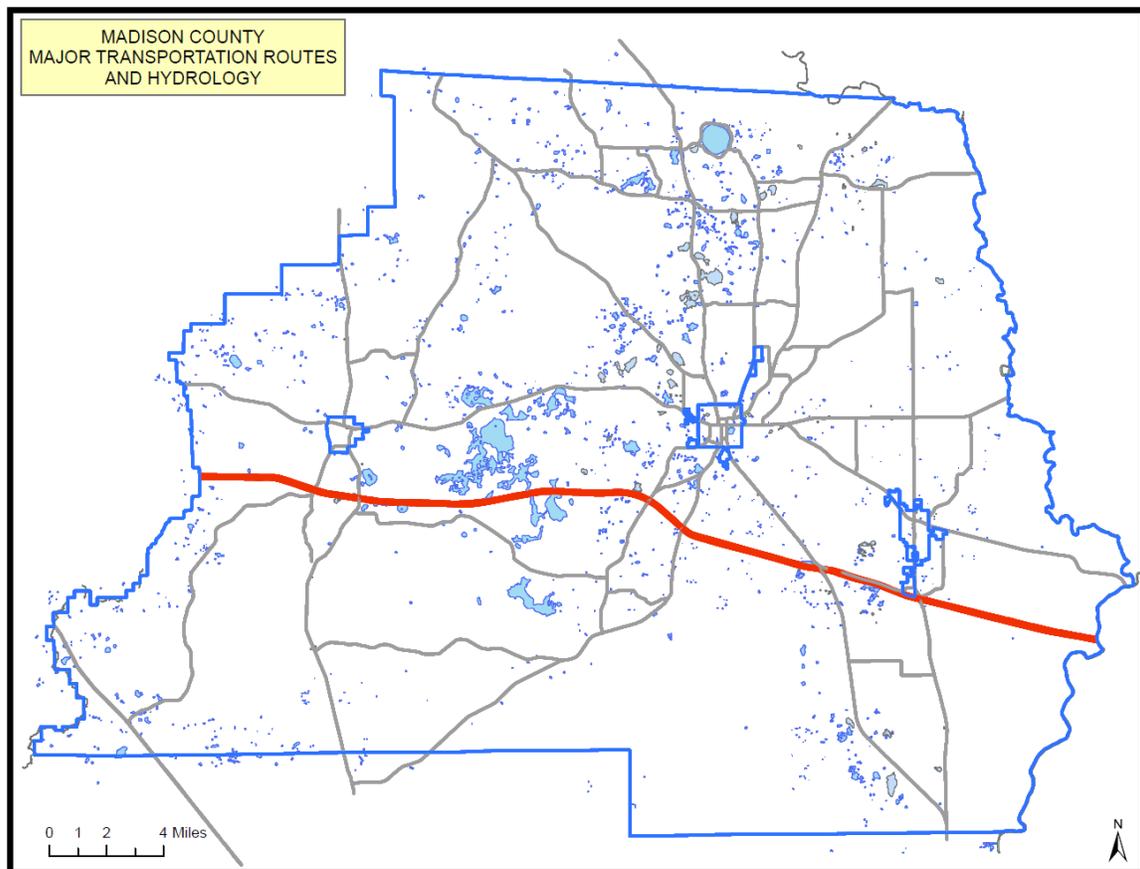
wetland areas, namely San Pedro Bay, exist in the western and southern portions of the county.

The Suwannee and Withlacoochee Rivers form the eastern boundary of the county, while the Aucilla River runs along the western boundary. The total water area in Madison County, including rivers, lakes, ponds and streams is estimated to be approximately 58,689 acres, or 24 square miles. The average elevation in the county varies from approximately 77 feet in the south to 114 feet in the north.

Transportation and Infrastructure

Critical highway links in and near the county include U.S. Highway 90, Interstate 10 and Interstate 75. U.S. 90 and I-10 accommodate east/west travel and connect the county with the major cities of Jacksonville and Tallahassee. I-75 (north/south) is only twenty miles east of the Madison County border. In addition, two rail lines traverse the county, the CSX Transportation Railroad and the Southern Railway systems.

Figure 3: Madison County Major Transportation Routes and Hydrology, 2015

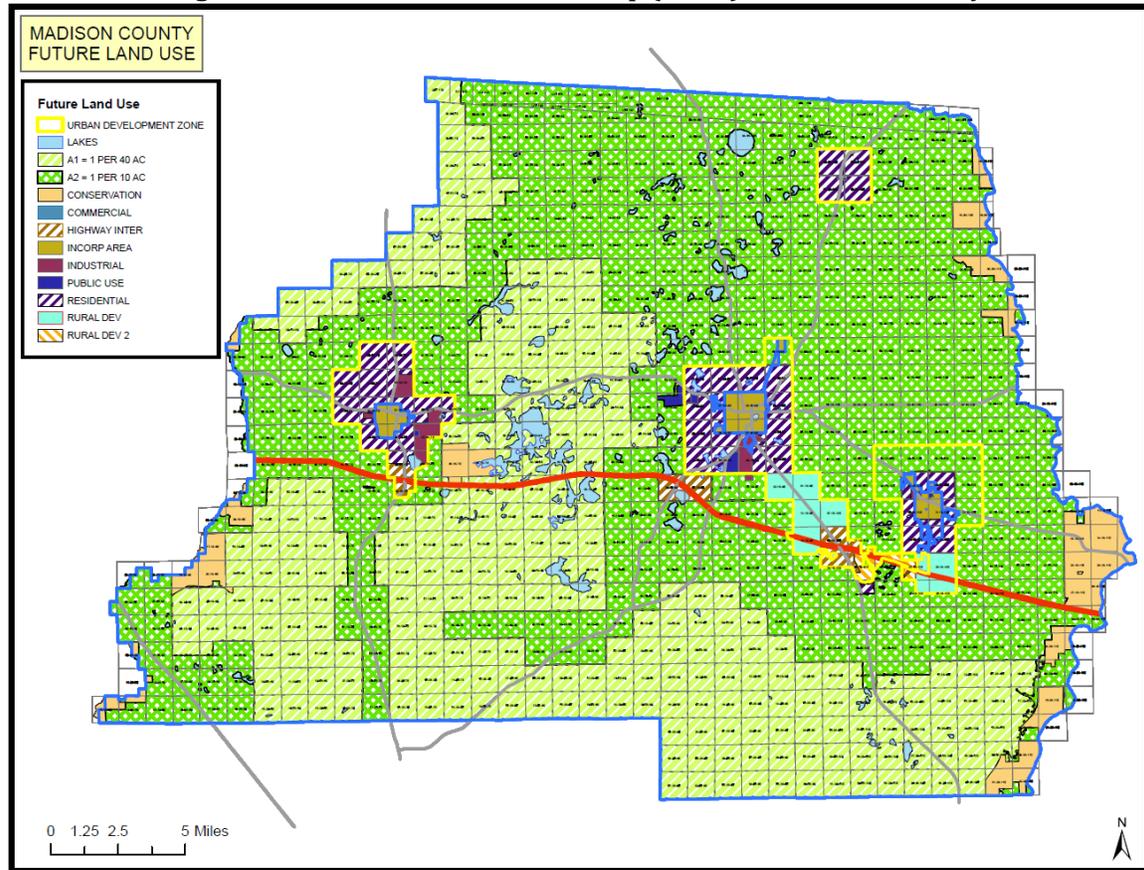


Source: Madison County Property Appraiser, 2015

Future Land Use

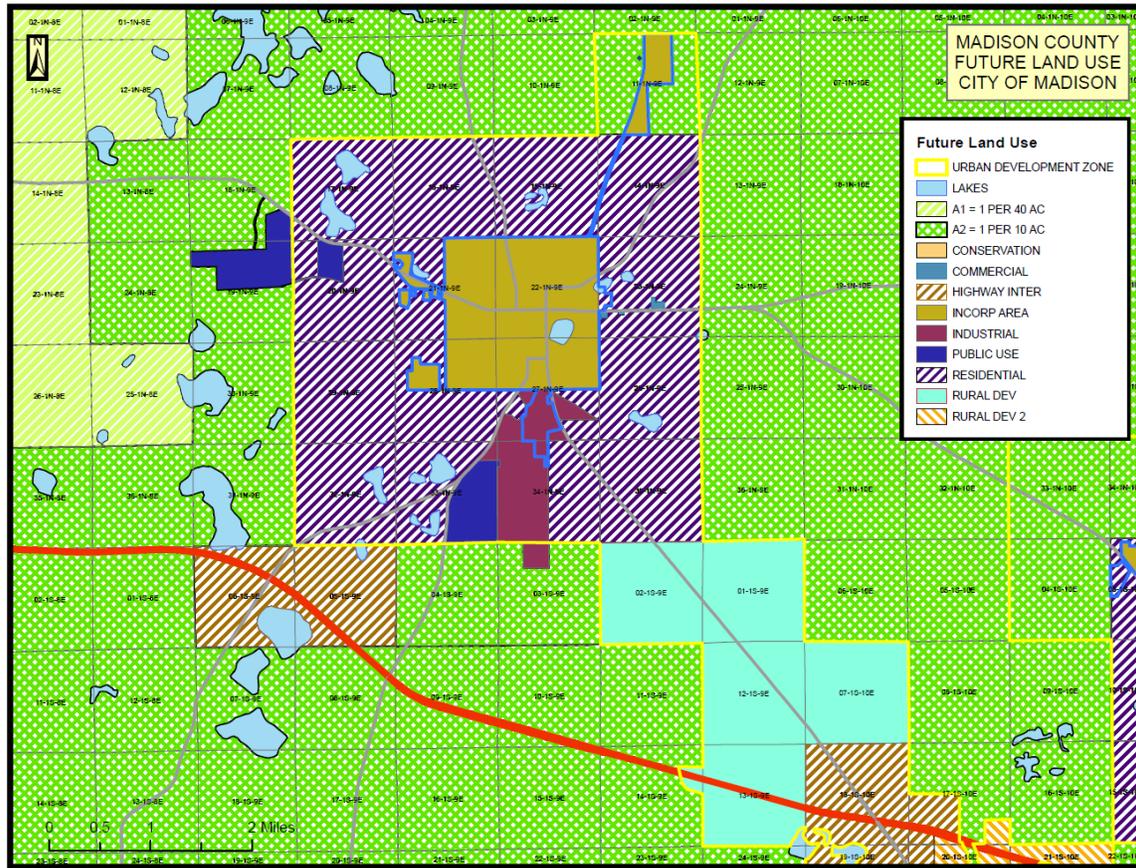
The Future Land Use Maps (Figures 4-7) seen below, indicate the various land use designations throughout the jurisdictions of the Madison County. Most of the land immediately adjacent to the Aucilla, Suwannee and Withlacoochee Rivers are designated as either Agriculture or Conservation. These designations prohibit or severely limit development in the areas, and indicate a natural or environmentally sensitive nature, which could be flood prone at times.

Figure 4: Current Future Land Use Map (FLUM) for Madison County



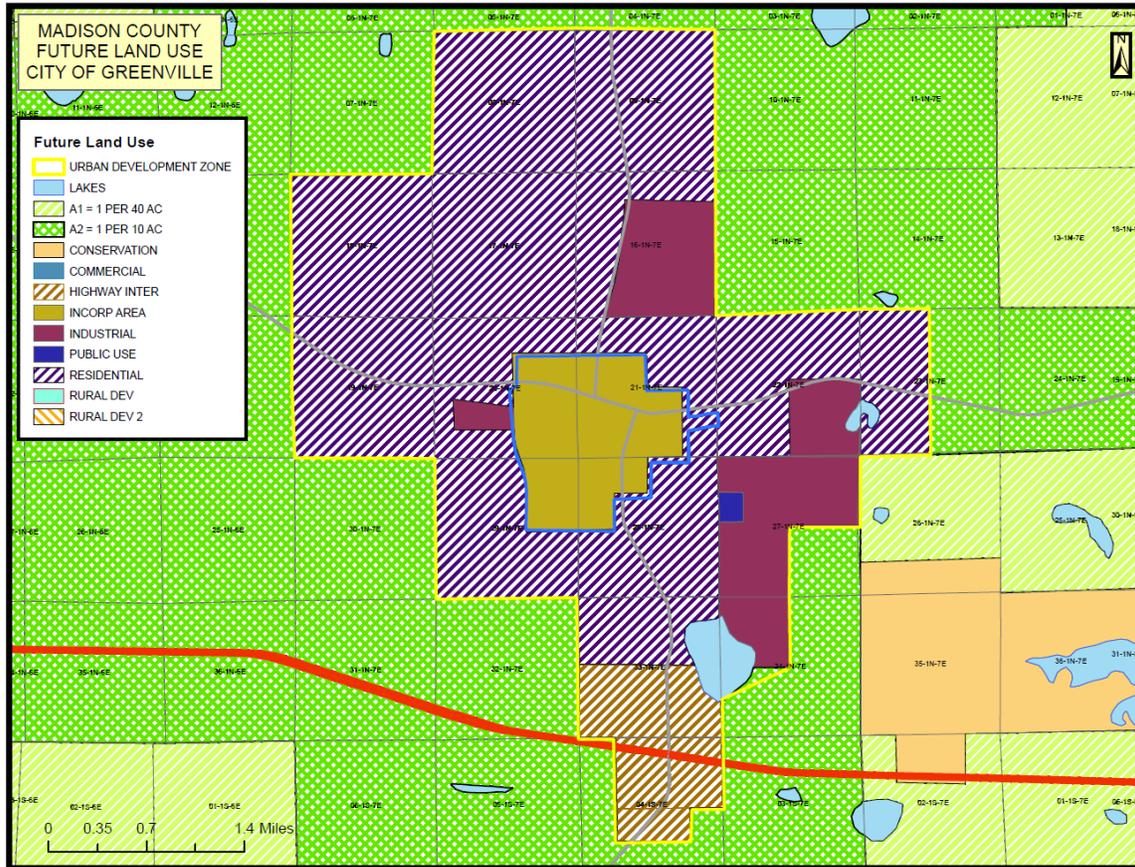
Source: Madison County Property Appraiser, 2015

Figure 5: Current Future Land Use Map for City of Madison, 2015



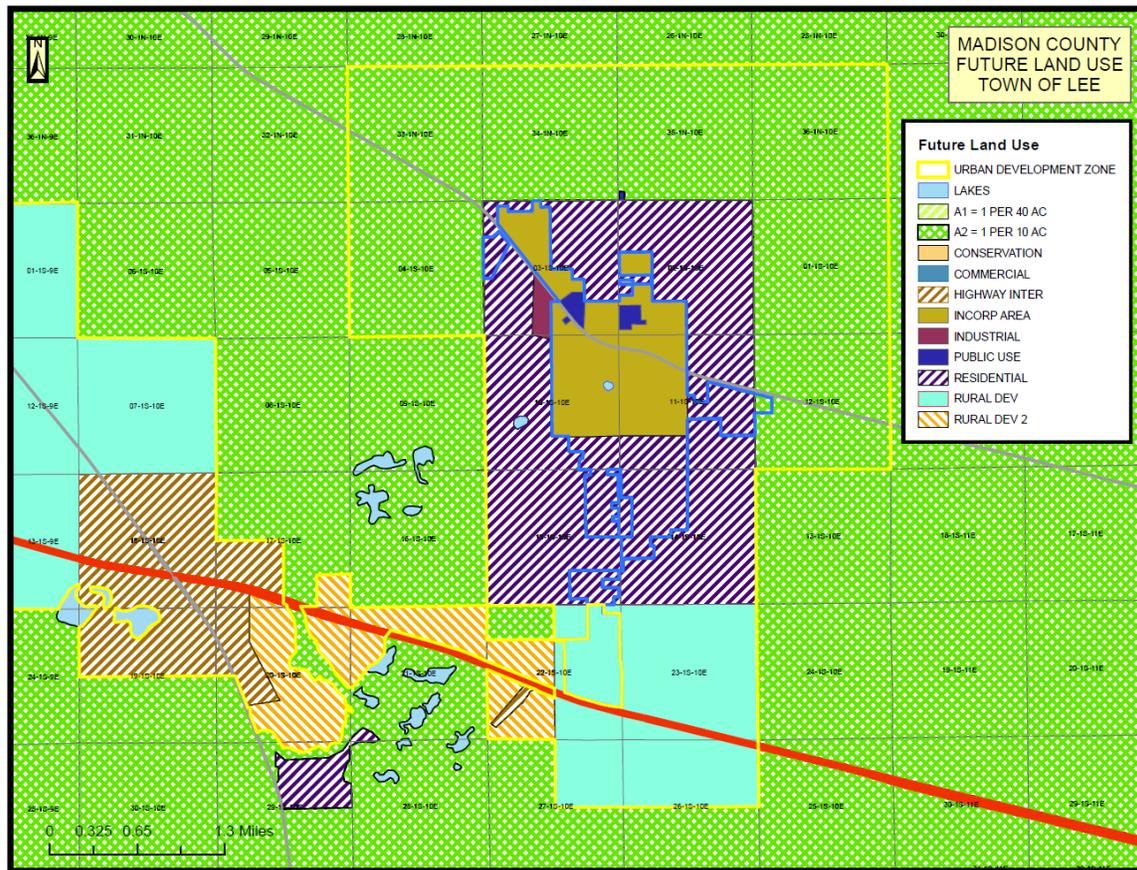
Source: Madison County Property Appraiser, 2015

Figure 6: Current Future Land Use Map for Town of Greenville, 2015



Source: Madison County Property Appraiser, 2015

Figure 7: Current Future Land Use Map for Town of Lee, 2015



Source: Madison County Property Appraiser, 2015

Vulnerability in the Types and Number of Future Structures:

The vulnerability in terms of the types and numbers of future structures for Madison County, City of Madison, Town of Greenville and the Town of Lee are found to be the same as the 2010 LMS. The reason for this is because that over the past 20 years, the US Census Bureau and the Bureau of Economic and Business Research have shown that Madison County and its incorporated jurisdictions are growing at a very slow rate of speed. In 2013 only 34 building permits were issued in Madison County. The LMS Working Group cannot identify any future buildings and infrastructure that could be accurately analyzed in the next 5-10 years. The Bureau of Economic and Business Research (BEBR) estimated the total Madison County population for the year 2014 at approximately 19,303 residents, only a 0.4% increase from 19,224 in the 2010 LMS revision.

Demographics

The Bureau of Economic and Business Research (BEBR) estimated the total Madison County population for the year 2014 at approximately 19,303 residents, only a 0.4% increase from 19,224 in the 2010 LMS revision. Population centers include the incorporated municipalities of Greenville, Lee and Madison. The City of Madison (pop. 3,102), is by far the most populated community and contains 16% of the total county population. Greenville (pop. 763) contains 3.9%, and Lee (pop. 331) contains 1.7% of the total county population. The remaining unincorporated areas of the county (pop. 15,107), although less densely populated, contains the vast majority of the population, with 78.3%.

2014 Population Estimates

Download the most recent BEBR Population Estimates (2014).

2014 Population Estimates

County Estimates

Choose a county:

Madison ▼

2010 Census Count: 19,224

2014 Estimate: 19,303

2020 Projection: 19,487

2030 Projection: 19,739

Currently, there are approximately 4,850 conventional residential dwellings, with an additional 3,400 mobile homes scattered throughout the county. Within the total mobile home population, there are 34 mobile home parks with a total population of approximately 1,000.

There are approximately 30 persons listed as people with special needs for evacuation assistance throughout the county. In addition, the 2014 elderly population (65 and over) was estimated to be 3,276 persons (16.9%).

Economy

The combined non-farming manufacturing, trade and services sectors provide the greatest source of income/employment and dominates most of the economy of Madison County. In 2013, approximately 3,500 persons were engaged in this livelihood with combined earnings of approximately \$100 million from these activities. In 1999 only 2.21 percent of the total county work force was wage and salary workers in farming. The total farm labor and farm proprietor's income was \$10 million.

One of the largest employers in Madison County is Nestle Waters. Nestle Waters is a bottled water company that employs 200 people and has estimates to grow that number to 500 employees in the next few years. Another major contributor to the economy is the government sector, which provides one of the largest single sources of employment. The government sector provided approximately 20% of the county's non-farm employment in 1999, with total earnings of approximately \$49 million. One of the largest government employers, Madison Correctional Institution, is located just south of Madison on CR 360 South.

The 2013 unemployment rate for Madison County was 14.2%. The 2013 civilian labor force was 7,522. Total wages paid in 2000 was \$299,611,000.

The 2013 median property value of owner occupied units in Madison County was \$81,000. The 2013 per capita personal income for Madison County was \$15,538.

Section 2 – Planning Process and Public Involvement

In order to develop a cohesive LMS Plan, Madison County has developed a working LMS Committee. The Madison County LMS Working Group is established pursuant to authorization by the Madison County Board of County Commissioners (BOCC). It is through this Committee that the necessary tasks will be formulated that allow the development of strategies on guiding principles, hazard identification and vulnerability assessment and mitigation initiatives in an on-going basis. The LMS Working Group holds routine and special meetings to ensure that documents and projects continue to move forward. From time to time, new projects are added and old projects are deleted when completed. It should also be noted that the three municipalities and Madison County's agencies and departments participate in mitigation strategy planning, and are part of the LMS team.

The Madison County Emergency Management Director, as the LMS Working Group Chair, is responsible for coordinating the efforts and input of the Madison County LMS Working Group. The LMS Working Group consists of more than 15 local and state agency representatives. During the revision process, two separate LMS Working Group meetings were held, each several months apart. During the first meeting on January xx, 2015 the LMS Working Group roster was updated and the Mitigation project list was verified. During the 2015 update process local information and input from participating agencies was incorporated to ensure that there is "community-wide" representation in the LMS and its contents. The LMS Working Group discussed many areas during this revision, including but not limited to, the LMS of 2010 for which this revision is based, recent hazards that have occurred, and new mitigation projects to be considered. LMS Working Group members, neighboring communities and other agencies were notified via email and the Madison County website of the LMS update and of meetings.

The 2015 revision of the Madison County Local Mitigation Strategy has been assembled with the guidance and input from more than 15 representatives from County and State Agencies, the private sector, and the three incorporated jurisdictions. These agencies have united to discuss the effects that hazards have on the Madison County community and ways to mitigate these effects regarding life and property. The LMS of 1999 and the 2005 update are the base plans from which this revision will reference. However, this update is not an extension of the previous plans, but is a separate, stand alone document.

History of Mitigation Planning in Madison County

As documented in the 1999 LMS, on October 12, 1998, Madison County held its first meeting of the Local Mitigation Strategy Working Group. This began an intensive process that resulted in an adopted Local Mitigation Strategy (LMS); an Inter-local Agreement between Madison County and the Cities of Madison, Greenville, and Lee, and a Working Group Resolution for the on-going maintenance of this plan.

In 2002, The American Red Cross was contracted to assist Madison County with the update of their LMS in order to meet the new FEMA requirements. This process continued for some time, but eventually, it was decided by Madison County to seek another solution to complete this complicated process. In February of 2005, Bold Planning Solutions, LLC in partnership with Disaster, Strategies and Ideas Group accepted the project to complete the DMA2000 compliance plan within a three month deadline.

In the summer of 2009, a graduate research assistant from Florida State University was contracted to assist in updating the Madison County LMS Plan for its most recent scheduled update.

Description of Process

The LMS Working Group, with the assistance of Blue Skies Professional Services, followed a pre-determined process for the preparation of this Local Mitigation Strategy. The process consisted of four major stages:

- Research and Data Collection – The LMS Working group gathered all relevant, existing data from various sources including the 2005 & 2010 LMS, the internet, State and Federal resources, and interviews with team members and Madison County residents.
- Data Collation and Plan Writing – After the initial phase of data collection, all of these documents and notes were analyzed and related information was collated. Using all of this information, the initial drafts of the Plan were written and submitted to the LMS Working group, the State of Florida Division of Emergency Management for review and comments.
- Review and Comments – As each section was completed, they were reviewed by the LMS Working Group. All comments and ideas are then incorporated into a finalized edition. As review comments from

the State were delivered, these requested revisions have also been considered and added into the plan.

- Finalization, Adoption and Delivery – After all suggested revisions have been implemented to the final LMS by the LMS Working Group, the State, FEMA and the public, the final plan is to be adopted by Madison County, and the three incorporated jurisdictions of Madison, Greenville, and Lee. This finalized plan along with the adopted resolutions is to be delivered to the State of Florida and continuing on to FEMA to ensure compliance with the Disaster Mitigation Act of 2000.

The specific internal planning processes by which the LMS revision is being conducted under falls in line with those identified in the previous LMS activities:

1. Identify hazards to which Madison County is vulnerable.
2. Determine where the county is most vulnerable to these hazards
3. Assess the facilities most vulnerable to these hazards
4. Prepare a prioritized list of mitigation projects to take advantage of available funding.
5. Identify funding sources and tie mitigation projects to these sources.
6. Make hazard awareness and education a community goal.

Table 1: Local Mitigation Working Group 2015

LMS Working Group Member	Title	Agency/Organization
Alan Whigham	Director	Madison County Emergency Management
Charles Hitchcock	Community Dev./Bldg. Inspector	City of Madison
Lisa Jordan	EMS Director	Madison County EMS
Leigh Barfield	Property Appraiser	Madison County Property Appraiser
Renee Demps	Certified Permit Technician	Madison County Building Department
Allen Cherry	County Coordinator	Madison County BOCC
Kenneth Moore	Police Chief	City of Madison Police Department
Jeanne Bass	County Planner	Madison County Planning and Zoning
Ben Stewart	Sheriff	Madison County Sheriff's Office
Leigh Webb	Program Coordinator	Madison County Emergency Management

Tammy Stevens	Hospital Administrator	Madison County Hospital
Rusty Smith	Safety Director	Tri-County Electric
Wallace Bullock	Building Official	Madison County Building Department
Cindy Colwell	GIS Mapping Director	Madison County Property Appraiser
Skip James	Campus Safety Director	NFCC
Lonnie Thigpen	Road Dept. Coordinator	Madison County Road Dept.
Jim Parrish	Grant Writer/Consultant	Town of Greenville
Kim Albritton	Administrator	Madison County Health Dept.
Jerome Wyche	Solid Waste/Recycling Coordinator	Madison County Solid Waste
Butch Galbraith	Forest Area Supervisor	Florida Forestry Service
John Anderson	Lee Town Manager	Lee
Gerald Searson	Maintenance Supervisor	Duke Energy

As part of the planning process, the LMS Planning Team has organized and performed public meetings, to encourage the general public to review and comment on the Madison County Mitigation Plan. The public meetings and their documentation are included within this revision.

The members of the Madison County LMS Working Group understand the importance of including the public in this hazard mitigation planning process. Several opportunities have been, and will be given, to allow the general public of Madison County to comment on the LMS Plan throughout the drafting process. The public will also be provided an opportunity to review and comment on the final LMS draft at the Board of County Commissioners meeting before it is formally adopted. Comments from the public are used to update hazard vulnerability and occurrences, provide input on mitigation activities, and help determine public education and outreach activities.

One opportunity for the public to review and comment on the updated LMS draft took place on Thursday, July 27th, 2015. The public meeting was held at the Madison County Emergency Operations Center (EOC). An invitation to the public was drafted and sent out to all Working Group Members and several officials from surrounding counties to publicize the event. The meeting notice was posted on the County Website:

Public Notice Posted on the Madison County Website

The screenshot shows the Madison County Florida website. The header includes the Madison County logo, the word "CODERED", and a search bar. A navigation menu on the left lists: Home, News & Events, Departments, County Information, Employment, and Other Links. Below the menu are three buttons: Residents (blue), Businesses (orange), and Visitors (green). The main content area features a banner for "Madison County, Florida" and "News & Events". The article title is "Local Mitigation Strategy Public Meeting" with a sub-heading "Local Mitigation Strategy". The text reads: "As part of our efforts in updating the Local Mitigation Strategy for Madison County, Madison County Emergency Management will hold a public meeting Monday July 27, 2015 at 1:30 PM. The meeting will be held at the Emergency Operations Center located at 1083 SW Harvey Greene Dr. Madison, FL 32340. The meeting will provide an opportunity for the residents of Madison County to provide input and advisement on the Local Mitigation Strategy revision." Below the text is a contact number: "For additional information, please contact Leigh Webb at (850) 973-3698." At the bottom of the article is a link: "Back to News & Events".

Source: <http://www.madisoncountyfl.com/news.aspx?a=viewPost&PostID=28755>

Public Meetings and Involvement in the Planning Process

Madison County recognizes the need to involve its neighboring communities and agencies in the LMS plan development. The LMS strategy in Madison County follows a multi-jurisdictional approach. As part of this continued effort, the following are examples of the continuing effort to invite and encourage participation from neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, businesses, academia and other private and non-profit interests.

Through ongoing correspondence and discussions held during the June 23rd Working Group meeting, a set of existing documents has been collected for this LMS initiative. These various plans, reports and technical information are being incorporated into this revised Madison County LMS. Each individual resource is a useful tool when researching hazards and the Madison County Community as well as developing local mitigation strategies to combat these hazards. By utilizing their

local information, Madison County is achieving their DMA2000 requirements in a more cost effective and timely manner. The following list details the existing resources being incorporated into this plan.

Current Comprehensive Emergency Management Plan (CEMP)
GIS Databases: Tax Parcel Information, Other Hazard Data
National Flood Insurance Program (NFIP) Repetitive Loss Locations and Data
Critical Facilities List
Flood Mitigation Assistance (FMA) and Community Rating System (CRS)

Comprehensive Emergency Management Plan (CEMP)

A copy of the current CEMP was provided by Alan Whigham and Leigh Webb of the Madison County Emergency Management Agency. Contained in the CEMP are annexes individually addressing each of the hazards that affect Madison County. With each annex, the CEMP outlines the primary agencies responsible for mitigation efforts pertaining to that hazard and the duties they hold. This data will be invaluable in the revision of the LMS as a baseline for coordinating mitigation efforts and policies.

GIS Databases: Maps, Tax Parcel Information, and Other Hazard Data

Information provided courtesy of Cindy Colwell, GIS/911 Addressing Coordinator. Cindy is a member of the LMS Working Group and she contributed Geographic Information System (GIS) data for the county and the surrounding areas. This GIS information will be used to evaluate the effects that selected hazards have on the Madison County community. It will be used to meet the requirements of the DMA, displaying areas of high risk and critical facility locations.

Critical Facilities List

The information provided in Table 2 has been developed by Madison County Emergency Management as a comprehensive list of all identified facilities in the county deemed “critical” for the continuing operations of Madison County. This list, which contains the latitude and longitude coordinates, will be used in the development of the hazard analysis. These critical facility locations will be overlapped with high risk hazard areas to determine the vulnerability to unique hazard events.

The LMS Working Group has identified 52 structures that are deemed “Critical Facilities”. Facilities selected as critical have been chosen so due to the critical role they play in the continuing of the standards of the Madison County community standard of living.

Table 2: Madison County Critical Facilities, 2015

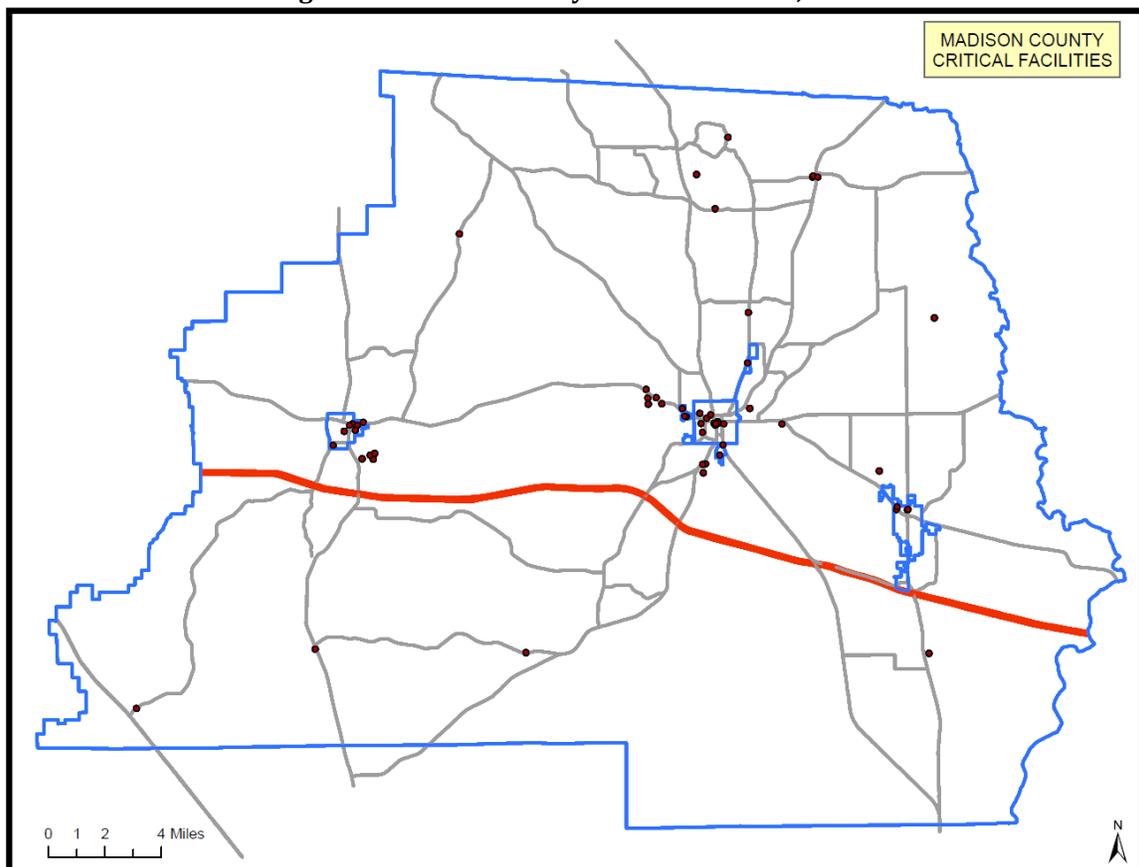
Facility	Latitude	Longitude
Cherry Lake Waste Water Treatment Plant	303547.37	-832524.96
Embarq Communications	30286.02	-832452.74
Florida Highway Patrol	302854.37	-832656.04
Gas Transmission Station #37134	302725.49	-832434.68
Greenville City Hall	30287.75	-833752.56
Greenville Elementary School	302730.74	-833828.11
Greenville Fire Department	302756.93	-83384.1
Greenville Hills Academy	30274.82	-83372.64
Greenville Hills Academy (Ramsey Program)	302711.65	-83378.88
Greenville Post Office	302810.6	-833745.82
Greenville Waste Water Treatment Plant	30275.1	-833726.68
Greenville Water Treatment Plant	302758.5	-833740.33
Joann Bridges Academy	302715.37	-833659.48
Lake Park of Madison	302818.18	-832551.26
Lee City Hall	302520.99	-831759.97
Lee Elementary School	302527.44	-831822.57
Lee Post Office	302522.09	-831824.28
Madison Academy	30299.64	-832717.03
Madison Barrs Field Well and Water Tower	302521.63	-832458.98
Madison Chason Well	302649.08	-832517.77
Madison City Hall	30283.3	-832449.52
Madison Coody Well	302818.94	-832554.91
Madison Correctional Institute	302634.34	-832516.28
Madison County Air Strip	302633.94	-831859.63
Madison County Central School	302842.72	-832643.96
Madison County Communications Center	30285.82	-832519.74
Madison County Courthouse	30288.47	-832444.88
Madison County Courthouse Annex	30286.3	-832443.98
Madison County Emergency Medical Services	30284.22	-832517.54
Madison County Health Department	302749.3	-832516.9
Madison County High School	302853.42	-832713.83
Madison County Hospital	302814.02	-832441.13
Madison County Road Department	302957.17	-832339.26
Madison County Emergency Operations Center	302650.76	-832512.05
Madison Fire Department	30281.92	-832449.54
Madison Nursing Center	302842.38	-832713.1
Madison Police Department	30284.6	-832448.93

Madison Post Office	30286	-832442.03
Madison Waste Water Treatment Plant	30276.57	-832441.23
Madison Water Department/Garage	30284.77	-832431.96
New Testament Christian Center (Shelter)	30283.24	-832226.92
North Florida Community College	302824.15	-832523.3
Pine Lake Nursing Home	30287.79	-833735.94
Pinetta Elementary School	303540.7	-83214.92
Pinetta Post Office	303540.53	-832116.81
Progress Energy Substation	303130.23	-832336.77
Tri County Electric Cherry Lake Substation	303443.14	-832445.74
Tri County Electric Overstreet Substation	301925.07	-834532.92
Tri County Electric Substation 1	303116.99	-831658.55
Tri County Electric Substation 2	302055.01	-831717.64
Tri County Electric Madison Substation	302832.84	-832335.57
Tri County Electric Greenville Substation	302812.67	-833223.43

Source: Madison County Property Appraiser and Madison County Emergency Management, 2015

A map of the critical facilities was provided by Cindy Colwell of the Madison County Property Appraisers Office and is shown below in Figure 9.

Figure 8: Madison County Critical Facilities, 2015



Source: Madison County Property Appraiser, 2015

NFIP, CRS and FMA

Madison County is an active participant in the National Flood Insurance Program (NFIP) and the LMS Working Group has reviewed and incorporated these standards and guidance in the development of the LMS. In a letter dated May 1, 2014, FEMA notified the Madison County community that it maintains its current class 7 classification in the NFIP Community Rating System (CRS), along with the existing flood insurance policyholder premium discount. Assuming there are no NFIP compliance actions, the rating will be automatically renewed yearly as long as the Madison County community continues to implement the activities as certified annually each October. If no additional modifications or new activities are added, Madison County will not receive an additional verification for five years.

Madison County joined the NFIP program on June 4, 1987. Currently, there are 79 insurance policies in the community with a total of 53 claims paid totaling \$904,694.86. There are a total of seven properties identified by the NFIP as repetitive loss properties. Copies of flood maps are maintained in the building department, as well as in the planning/zoning department; the date on the current maps is May 3, 2010. The County of Madison has a flood insurance study, courtesy of Suwannee River Water Management and FEMA that was completed in September of 2010. An online flood risk assessment tool can be accessed through Suwannee River Water Management by visiting their website www.srwmdfloodreport.com. This tool provides access to the 2010 flood study as well as flood risk searches by address or parcel ID. The Towns of Greenville, Lee & Madison do not participate in the NFIP.

Currently, the Madison County Building Department is designated as the Floodplain Administrator; however, determinations of flood zones are completed by the Planning & Zoning Department at the time a development permit is issued. As a participant in the National Flood Insurance Program, Madison County has adopted two ordinances that reflect the requirements of the NFIP. Additionally, the County has a Land Development Code which includes in chapter 6 a provision for flood hazard reduction.

National Flood Insurance Program Repetitive Loss Locations and Data

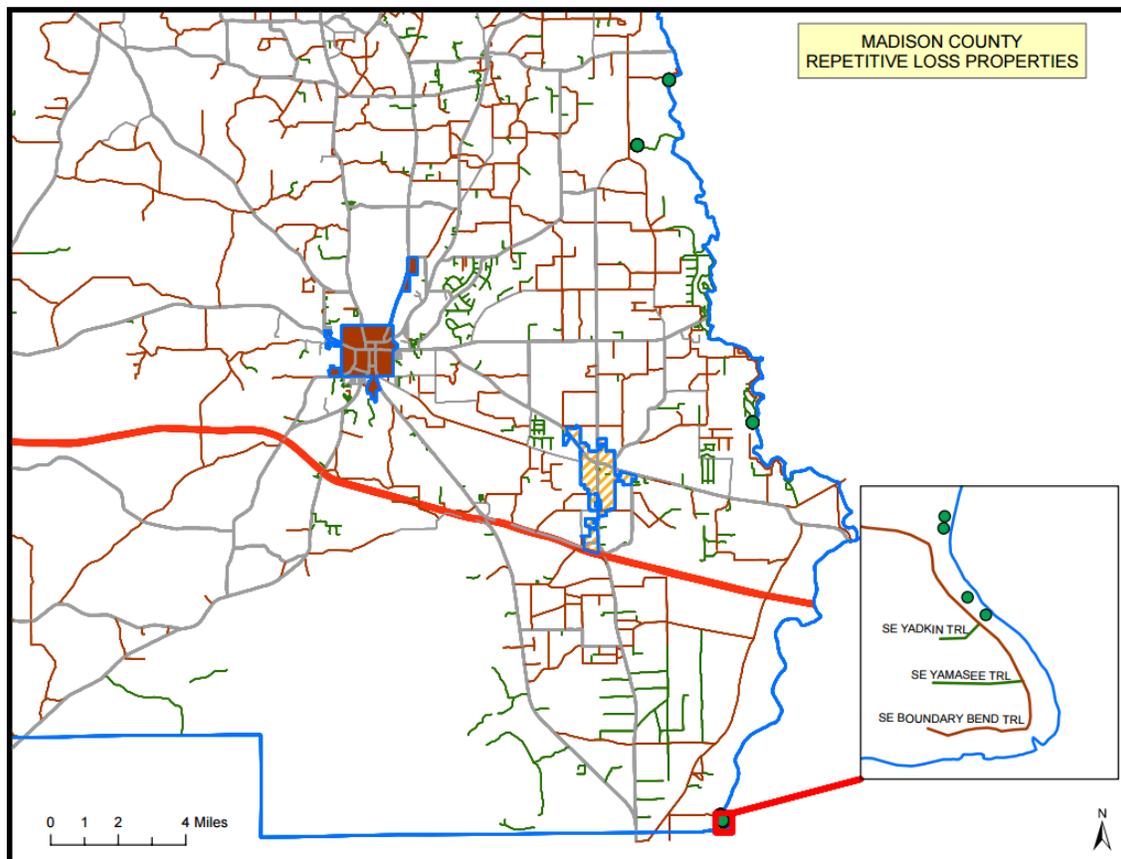
Repetitive loss properties information was provided by Cindy Colwell of the Property Appraisers Office. Madison County has eight (7) identified repetitive loss properties and they are listed below in Table 2. All of the repetitive loss properties are single family residences.

Table 3: Madison County Repetitive Loss Properties, 2010

Repetitive Loss	Structure Type	Community	State	Total Times Lost
Property 1	Single Family Residence	Lee	FL	4
Property 2	Single Family Residence	Lee	FL	3
Property 3	Single Family Residence	Lee	FL	2
Property 4	Single Family Residence	Lee	FL	5
Property 5	Single Family Residence	Lee	FL	5
Property 6	Single Family Residence	Pinetta	FL	3
Property 7	Single Family Residence	Pinetta	FL	2

Source: Madison County Property Appraiser, 2015

The repetitive loss inventory above was merged into a GIS format and mapped in order to illustrate where the properties are located in the county. Most of the properties are located along the Suwannee and Withlacoochee rivers and have been prone to flooding in the past. The approximate locations of the repetitive loss properties are illustrated in Figure 8.

Figure 9: Madison County Repetitive Loss Properties, 2015

Source: Madison County Property Appraiser, 2015

The last Community Assistance visit took place on January 14, 2013, in an effort to complete the five-year cycle application. Issues concerning the current program and methods of improvement were discussed. Several forms of documentation were presented including flood elevation certificates, flood insurance rate map information, outreach programs, repetitive loss information, flood protection information, etc. Based on this review points were increased points in many CRS categories. Madison County improved from a CRS Class 8 to a CRS Class 7. This provides an additional 5% discount on flood insurance policies to the citizens of Madison County.

Madison County has been a participant in the CRS program since September 1, 1994. The current rating is a Class 7, which offers savings to citizens of 15% on flood insurance policies. Madison County participates in the following activities in order to maintain a Class 7 rating:

Table 4: Community Rating System Program Activities

Activity	Category	Points Accrued
310	Elevation Certificates	56
320	Map Information Service	140
330	Outreach Projects	76
340	Hazard Disclosure	5
350	Flood Protection Information	71
360	Flood Protection Assistance	35
410	Additional Flood Data	10
420	Open Space Preservation	47
430	Higher Regulatory Standards	586
440	Flood Data Maintenance	148
450	Storm Water Management	104
510	Floodplain Management Planning	122
520	Acquisition and Relocation	35
540	Drainage System Maintenance	180
610	Flood Warning Program	45
630	Dam Safety	71

Source: CRS Verification Report, 2013

Floodplain management provisions are integrated in the Land Development Code, the County's Comprehensive Plan, as well as in ordinances adopted by the County. Furthermore, the Building Department references the Florida Building Code in order to ensure the proper construction of buildings and provides additional information to customers on ways of protecting their home against flood waters. Elevation certificates are obtained prior to authorizing occupancy showing the proper elevations of the structure.

Changes are constantly being made in order to improve the Floodplain Management Program in Madison County. A process is followed for permitting, requiring customers to report to Planning/Zoning Department for an overview of the property on which a structure will be placed. The overview includes zoning of the property, determination of flood zones, wetlands, etc. At this point of the process, property owners are made aware of the condition of the property and if an elevation certificate will be required. The building department's application requires identification of FEMA map reference number and flood zone determination. Additionally, continuing education is ongoing amongst the Building Department as well as Planning/Zoning Department when trainings are available. Flood maps are maintained as required and kept for review in the Building Department. Flood information is made available for citizens in the local libraries, governmental offices, and in the Building Department. Additional methods of obtaining credit through the CRS program are currently being examined and presented to the ISO/CRS Specialist for review.

In an effort to ensure continued compliance with the NFIP, each participating community will:

1. Enforce their adopted Floodplain Management Ordinance requirements, which include regulating all new development and substantial improvements in Special Flood Hazard Areas (SFHA).
2. Maintain all records pertaining to floodplain development, which shall be available for public inspection.
3. Notify the public when there are proposed changes to the floodplain ordinance or Flood Insurance Rate Maps.
4. Maintain the map and Letter of Map Change repositories.
5. Promote Flood Insurance for all properties.
6. Establish Community Rating System outreach programs.

Section 3 – Risk Assessment and Vulnerability Analysis

Due to the slow growth that Madison County has experienced over the past five years, most of the MEMPHIS data that was included in the 2010 LMS is still considered best available data. The flood section has been updated based on revised flood maps completed in 2010. MEMPHIS data will continue to be phased out as additional studies are completed. The population statistics have been updated in this section to represent current figures, but structure numbers and dollar amounts have remained relatively unchanged.

The 2015 update process involved identifying additional hazards, updating the risk assessment using the most recent and best data available, and evaluating existing mitigation goals, projects, and programs for overall effectiveness. The hazard

analysis includes the hazards from the 2010 LMS hazard profile, information from the August 2013 Florida State Risk Assessment, and hazards identified in other emergency management plans for Madison County. The 2015 Madison County LMS utilizes the best and most current available data.

As part of the Madison County LMS, the following hazards have been identified as events that could impact Madison County. In addition, the hazards have been ranked in severity by the LMS Working Group based on the “overall” impact they pose on the Madison County community:

Table 5: Madison County Hazards and Priority Rankings, 2015

Hazard	Priority Ranking
Tornado	Very High
Hurricanes	High
Floods	High
Wildfires	High
Winter Storms	Medium
Droughts	Medium
Sinkholes	Medium
Earthquakes	Low
Mass Migration	Low
Biological	Low
Technological	Low
Terrorism	Low

Source: Madison County LMS Working Group, 2015

Hazards Not Addressed in the LMS and Reasons for Omission:

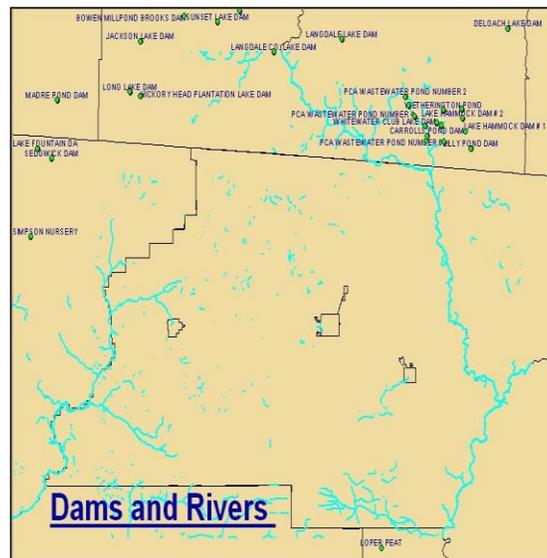
Coastal Erosion - The effects and occurrence of coastal erosion will not be included in the Madison County LMS. The primary reason for this hazards omission is the fact that Madison County is not a coastal county but rather a landlocked community. This hazard was reviewed by the LMS Working Group members for the update and it was agreed that it would continue to be excluded from the plan. However, during yearly revisions, the LMS Working Group will review this decision for possible admittance.

Riverine Erosion - The effects and occurrence of riverine erosion will not be included in the Madison County LMS. Although Madison County does have 3 rivers within its boundaries, the LMS Working Group felt that no erosion effects were experienced by the community and it did not cost the community any financial hardships. The LMS Working Group has had previous discussion about this hazard. No one could recall any past events of riverine erosion or damages incurred in previous flooding events. Also, during the discussion, the group pointed out that no money had been spent on projects attributed to the hazard. The group therefore

decided to keep this hazard out of the plan. However, during yearly revisions, the LMS Working Group will review this decision for possible admittance.

Dam/Levee Failure - The effects and occurrence of this hazard will not be included in the Madison County LMS. Madison County does not contain any dams or levees within its boundaries. Furthermore, a study has been conducted regarding surrounding counties having dams and found that dams in their jurisdictions were small in nature and any event caused by its failure would not be felt by the Madison County community. However, during yearly revisions, the LMS Working Group will review this decision for possible admittance.

Figure 10: Dams Located in the Vicinity of Madison County



Tsunamis - The effects and occurrence of a tsunami hazard will not be included in the Madison County LMS. The primary reason for this hazard's omission is the fact that Madison County does not have coastal borders and is a landlocked community. The nearest point of the Gulf of Mexico from the Madison County borders is 18 miles, with the incorporated jurisdictions ranging in distance from 40-45 miles. The LMS Working Group decided to keep it removed from the LMS plan. However, during yearly revisions, the LMS Working Group will review this decision for possible admittance.

Vulnerability Analysis and Methodology

Madison County is affected by a variety of natural hazards. The State of Florida has compiled significant data about some of these hazards and the potential economic impact for each county and city. The data has been used to develop a modeling and reporting system called MEMPHIS that has been used by Madison County to estimate its vulnerability. Tables 6-8 below show a high level vulnerability analysis

for both Madison County and the towns of Greenville and Lee, for the hazards included in the MEMPHIS system. The Memphis system did not include an ELVIS for the City of Madison.

For the 2015 LMS revision this MEMPHIS data continues to be the most accurate data for Madison County. Overall population and housing stock has not changed significantly over the last 5 years.

These tables represent ELVIS - the Economic Loss Vulnerability Index System. ELVIS allows a comparison of the relative risk of various hazards through the use of loss costs. A loss cost is the long term average of the damage a hazard causes. They are usually expressed in terms of loss per \$1000 of exposure per year.

An example will help explain the use of loss costs. Take a \$100,000 house. Over 100 years, the house suffer 40% wind damage once (\$40,000 loss), 10% damage twice (\$10,000 each), and 5% damage three times (\$5000 each), for a total loss over the time frame of \$40,000 + \$20000 + \$15,000 = \$75,000.

So over the 100 year period the house cost \$750 per year (\$75,000/100), or \$0.75 per \$1000 of the value of the house. The same house might flood only once in 100 years, but be a total loss, for a loss cost of \$100,000/100 = \$1000 per year = \$1.00 per thousand per year. Therefore, even though floods don't occur as often, they cost more in the long run, therefore mitigation of flooding might be more cost effective in the long run for this site than wind.

Economic Loss Vulnerability Index System (ELVIS)

Table 5: Madison County Losses per \$1000 by Department of Revenue Use Code

Hazard	Structure					
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Gov/Institution
Wind	0.4626	0.6032	0.4626	0.4626	0.4626	0.4626
Wind (5 mph)	0.2802	0.3727	0.2802	0.2802	0.2802	0.2802
Flood	0.0299	0.0284	0.0273	0.0299	0.0299	0.0308
Flood (1 ft)	0.0024	0.0023	0.0022	0.0024	0.0024	0.0025
Earthquake	0.0077	0.0073	0.0079	0.0079	0.0066	0.0079
Sinkhole	0.0056	0.0053	0.0060	0.0056	0.0061	0.0058
Wildfire	0.0201	0.0201	0.0201	0.0201	0.0201	0.0201
Exposure	\$504.98M	\$110.33M	\$31.15M	\$160.14M	\$299.92M	\$1.28B

Source: MEMPHIS

Table 6: Town of Greenville Losses per \$1000 by Department of Revenue Use Code

Hazard	Structure					
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Gov/Institution
Wind	0.4376	0.5720	0.4376	0.4376	0.4376	0.4376
Wind (5 mph)	0.2614	0.3492	0.2614	0.2614	0.2614	0.2614
Flood	0.0327	0.0311	0.0298	0.0237	0.0327	0.0337
Flood (1 ft)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Earthquake	0.0069	0.0066	0.0071	0.0071	0.0059	0.0071
Sinkhole	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Wildfire	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069
Exposure	\$26.67M	\$3.79M	\$3.14M	\$5.50M	\$5.85M	\$6.60M

Source: MEMPHIS

Table 7: Town of Lee Losses per \$1000 by Department of Revenue Use Code

Hazard	Structure					
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Gov/Institution
Wind	0.4324	0.5655	0.4324	0.4324	0.4324	0.4324
Wind (5 mph)	0.2632	0.3516	0.2632	0.2632	0.2632	0.2632
Flood	0.0200	0.0190	0.0182	0.0200	0.0200	0.0206
Flood (1 ft)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Earthquake	0.0069	0.0066	0.0071	0.0071	0.0059	0.0071
Sinkhole	0.0133	0.0126	0.0141	0.0133	0.0145	0.0137
Wildfire	0.0174	0.0174	0.0174	0.0174	0.0174	0.0174
Exposure	\$6.90M	\$1.37M	\$83.61M	\$2.33M	\$2.19M	\$7.25M

Source: MEMPHIS

An ELVIS Vulnerability Analysis for the City of Madison was not supplied by the MEMPHIS system.

Vulnerability of Types and Number of Future Structures

The vulnerability in terms of the types and numbers of future structures for Madison County, City of Madison, Town of Greenville and the Town of Lee are found to be the same as current analyses for each hazard in the vulnerability analysis. The reason for this is because that over the past 20 years, the US Census Bureau and the Bureau of Economic and Business Research have shown that Madison County and its incorporated jurisdictions are growing at a slow rate of speed. The LMS Working Group cannot identify any future buildings and infrastructure that could be accurately analyzed in the next 5-10 years. Madison County is only projected to grow by 436 residents by the year 2030. (Source: University of Florida BEBR)

Vulnerability of Future Development Patterns

The number one goal established in the Madison County Comprehensive Plan – Future Land Use Element is to direct future commercial, manufacturing and industrial growth to areas around highway interchanges. These are areas that have the necessary infrastructure elements to support and accommodate growth in an environmentally acceptable manner. Madison County does not encourage any growth in environmentally sensitive areas. Residential growth in the unincorporated areas of the County is encouraged only on upland areas. Any structure built in a designated floodplain area is required to be elevated 2 feet above the base flood elevation level, which is an additional 1 foot more than is required by the Suwannee River Water Management District.

1. Tornadoes

Hazard Description:

Tornadoes are nature's most violent storms. Spawned from powerful thunderstorms, tornadoes can cause fatalities and devastate a neighborhood in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 miles per hour. Damage paths can be in excess of one mile wide and 50 miles long. Every state is at some risk from this hazard. Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others. Occasionally, tornadoes develop so rapidly that little, if any, advance warning is possible.

Before a tornado hits, the wind may die down and the air may become very still. A cloud of debris can mark the location of a tornado even if a funnel is not visible. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

The following are facts about tornadoes:

- They may strike quickly, with little or no warning.
- They may appear nearly transparent until dust and debris are picked up or a cloud forms in the funnel.
- The average tornado moves Southwest to Northeast, but tornadoes have been known to move in any direction.
- The average forward speed of a tornado is 30 MPH, but may vary from stationary to 70 MPH.
- Tornadoes can accompany tropical storms and hurricanes as they move onto land.
- Waterspouts are tornadoes that form over water.

- Tornadoes are most frequently reported east of the Rocky Mountains during spring and summer months.
- Peak tornado season in the southern states is March through May; in the northern states, it is late spring through early summer.
- Tornadoes are most likely to occur between 3 p.m. and 9 p.m., but can occur at any time.

Tornadoes extent is based on the Enhanced Fujita Scale. Madison County could potentially be impacted by any intensity of tornadoes with EF0 to EF3 being the most likely.

Table 8: Enhanced Fujita Scale

Classification	3-second gust MPH
EF0	65-85
EF1	86-110
EF2	111-135
EF3	136-165
EF4	166-200
EF5	Over 200

*The Enhanced F-scale still is a set of wind estimates (not measurements) based on damage. Its uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to 28 indicators. These estimates vary with height and exposure. **Important:** The 3 second gust is not the same wind as in standard surface observations.*

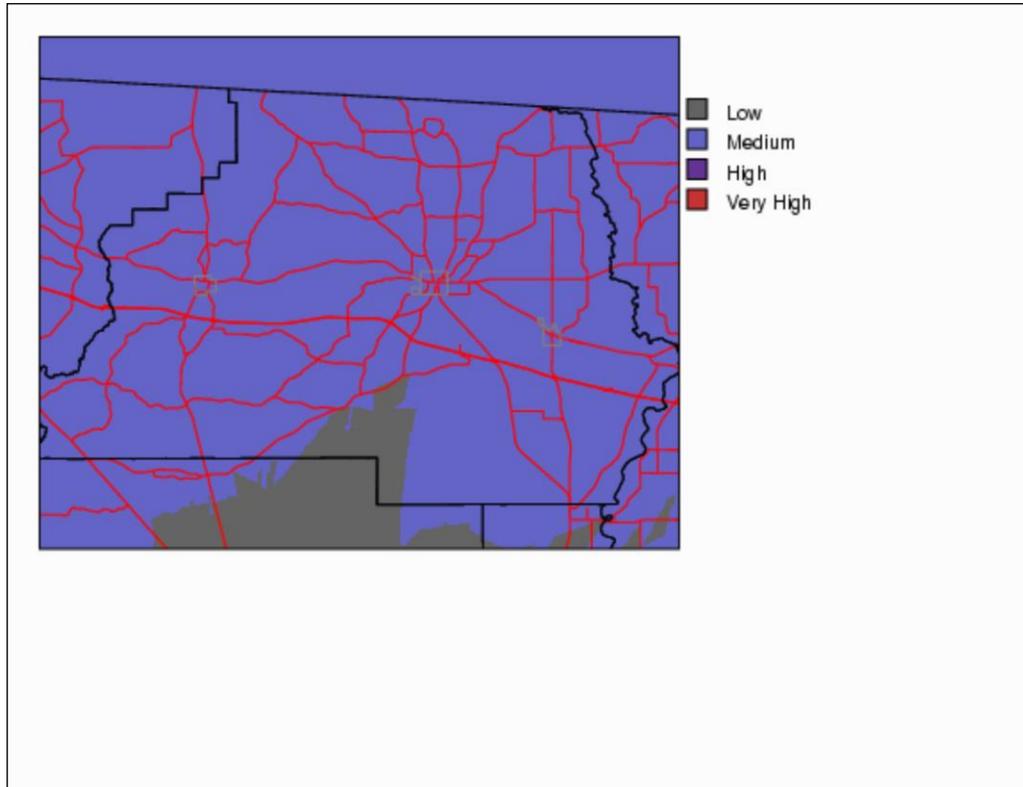
Source: <http://www.spc.noaa.gov/efscale/ef-scale.html>

Hazard Profile:

Madison County experiences severe thunderstorms that occasionally result in tornadoes. From 1950-2014, Madison County has reported ten (16) tornadoes with five (5) deaths directly attributed to their activity. Because of their speed of onset and unpredictable paths, immediate warning must be disseminated to inform residents to seek protective sheltering. There are approximately thirty-five hundred (3,400) mobile homes housing an estimated 7,500 people in Madison County, which are particularly susceptible to tornado related damage. Residents living in mobile homes make up almost forty percent of Madison County's total population. The greatest areas of vulnerability lie within the municipalities of Lee, Greenville, and Madison, although the rural areas of the county are also vulnerable because of the difficulty of warning the residents. The mobile home residents that are within or are in close proximity to the municipalities can be warned quicker due to the more densely populated areas and because some residents are located in mobile home parks. Madison County has a limited number of resources available to respond to and recover from the effects of damaging hazards, therefore the county would require outside resources in a large scale emergency.

Hazard Impact Analysis:

Figure 11: Madison County Tornado Risk



Source: MEMPHIS

Table 9: Madison County Population at Risk for KAC Tornado

Zone	Population						Total
	Minority	Over 65	Disabled	Poverty	Lang. Isolated	Single Parent	
Medium (1 in 250)	8,772	3,060	9,180	4,284	204	1,632	20,400

Source: MEMPHIS

Table 10: Madison County Structures at Risk for KAC Tornado

Zone	Structure						Total
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Gov/Institution	
Low (1 in 500)	0	2	0	0	1	74	77
Medium (1 in 250)	3,112	1,121	258	463	401	4,863	10,218

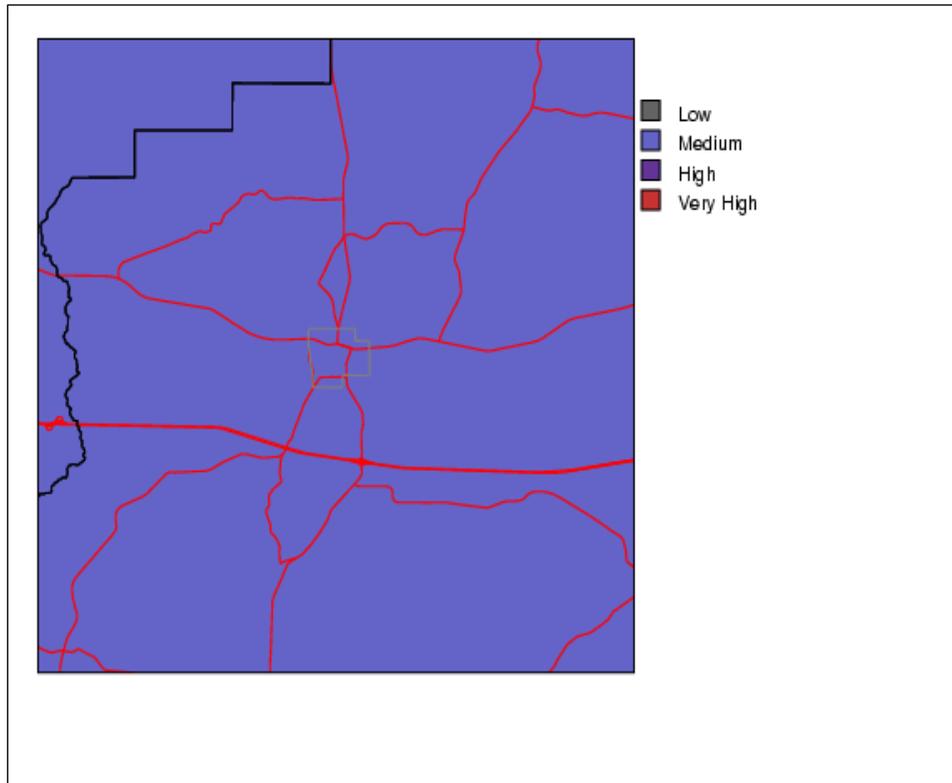
Source: MEMPHIS

Table 11: Madison County Structure Value by Department of Revenue Use for KAC Tornado Risk

Zone	Structure						Total
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Gov/Institution	
Low (1 in 500)	\$0.00	\$63.66T	\$0.00	\$0.00	\$49.31T	\$18.10M	\$18.21M
Medium (1 in 250)	\$504.98M	\$110.27M	\$31.15M	\$160.14M	\$299.87M	\$1.26B	\$2.37B

Source: MEMPHIS

Figure 12: Town of Greenville Tornado Risk



Source: MEMPHIS

Table 12: Town of Greenville Population at Risk for KAC Tornado

Zone	Population						
	Minority	Over 65	Disabled	Poverty	Lang. Isolated	Single Parent	Total
Medium (1 in 250)	605	187	507	294	71	125	890

Source: MEMPHIS

Table 13: Town of Greenville Structures at Risk for KAC Tornado

Zone	Structure						
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Gov/Institution	Total
Medium (1 in 250)	237	50	15	32	21	47	402

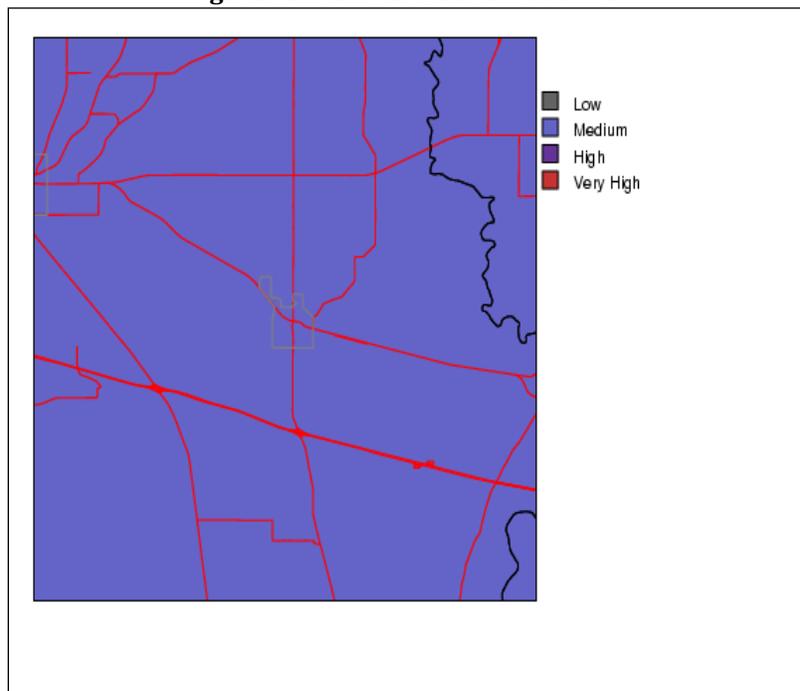
Source: MEMPHIS

Table 14: Town of Greenville Structure Value by Department of Revenue Use for KAC Tornado Risk

Zone	Structure						
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Gov/Institution	Total
Medium (1 in 250)	\$26.67M	\$3.79M	\$3.14M	\$5.50M	\$5.85M	\$6.60M	\$51.56M

Source: MEMPHIS

Figure 13: Town of Lee Tornado Risk



Source: MEMPHIS

Table 15: Town of Lee Population at Risk for KAC Tornado

Zone	Population						Total
	Minority	Over 65	Disabled	Poverty	Lang. Isolated	Single Parent	
Medium (1 in 250)	34	47	228	112	22	39	430

Source: MEMPHIS

Table 16: Town of Lee Structures at Risk for KAC Tornado

Zone	Structure						Total
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Gov/Institution	
Medium (1 in 250)	60	19	4	15	8	34	140

Source: MEMPHIS

Table 17: Town of Lee Structure Value by Department of Revenue Use for KAC Tornado Risk

Zone	Structure						Total
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Gov/Institution	
Medium (1 in 250)	\$6.90M	\$1.37M	\$83.61T	\$2.33M	\$2.19M	\$7.25M	\$20.12M

Source: MEMPHIS

The City of Madison was not a jurisdiction included in the analysis by MEMPHIS and there is no data available to accurately support a vulnerability estimate related to this hazard.

Hazard Probability:

Severe storms and tornadoes have the potential to caused significant damage to Madison County. The probability of a tornado affecting Madison County and the incorporated jurisdictions of Madison, Greenville and Lee is once every three to five years.

Historically, the county has endured tornado events that have killed residents and caused large amounts of damage resulting in costly expenses. The City of Madison suffered a deadly tornado in 1988 that killed four people. The town of Greenville has never been struck directly by a tornado. However, tornadoes have occurred regularly in the immediate area which shows that it is highly probable. Tornado warnings are issued several times a year and are evenly distributed throughout county.

The probability of a Severe Storm affecting Madison County and the cities of Madison, Greenville and Lee are also High, based on the views of the LMS Working Group. Historically, devastating storms have occurred in Madison County. The damage is primarily caused by wind damage to roofs, and tree debris impacting transportation and power services. Other significant impact is related to the subsequent flooding. These storm systems are frequent in nature. As stated with Tornadoes, the events affect the entire region the same regarding frequency, but an event occurring within a city is estimated to be more costly due to the increased population and larger amount of structures.

Hazard Vulnerability Analysis by Jurisdiction:

Madison County: The majority of Madison County is identified by the MEMPHIS system to be in a “Medium” risk area to Tornadoes, with the exception of one “Low” risk area consisting of about 24 square miles on the southern border to Taylor County. Using the Memphis data and analysis, it was found that all three incorporated jurisdictions, Madison, Greenville, and Lee are all located in a “Medium” risk area to Tornadoes. Because of these two factors, the vulnerability to a Tornado event affects Madison County, and the jurisdictions of Madison, Greenville, and Lee in the same respect. Since each of the incorporated cities contains a denser population of people, homes, and businesses, the vulnerability of their jurisdictions is viewed to be higher. It is estimated that a tornado striking any one of the cities would create more damage and deaths than if it were to occur in an unincorporated area of Madison County

Table 18: Madison County Historical Tornadoes

County	Location	Date	Time	Extent	Deaths	Injuries	Property Damage
Madison Co.		7/1/1959	1600	F1	0	0	250
Madison Co.		12/3/1968	1400	F1	0	0	2500
Madison Co.		12/25/1969	1830	F2	0	1	2500
Madison Co.		9/9/1971	1445	F0	0	0	0
Madison Co.		10/20/1976	1200	F1	0	0	25000
Madison Co.		12/29/1983	0045	F1	0	0	25000
Madison Co.		4/3/1987	1015	F0	0	0	2500
Madison Co.		4/19/1988	0230	F3	4	18	25000000
Madison Co.		11/5/1988	0015	F2	1	3	25000
Madison Co.		7/3/1990	1700	F0	0	0	0
Madison Co.	Hopewell	9/29/1998	1900	F0	0	0	25000
Madison Co.	Greenville	9/22/2000	1355	F0	0	0	1000
Madison Co.	Greenville	6/12/2001	0050	F1	0	1	200000
Madison Co.	Lovett	11/12/2004	1240	F1	0	0	5000
Madison Co.	Cherry Lake	3/2/2007	0236	EF1	0	0	5000
Madison Co.	Lee	3/31/2009	1940	EF1	0	0	0

Source: National Climatic Data Center www.ncdc.noaa.gov

City of Madison: The City of Madison is affected by tornadoes in the same respect to Madison County. The vulnerability of Madison is higher than the county due to the larger concentration of people and structures found within the city. The risks of a Tornado affecting the City of Madison are equally high for all areas of the city. A tornado event in the City of Madison would probably cause severe damage to homes and structures. There would be a short term economic impact due to businesses having to recover from any damage sustained and employee absenteeism at work. The loss of life is estimated to be below 10 persons based on past historical events.

Town of Greenville: The Town of Greenville is affected by Tornadoes in the same respect to Madison County. The vulnerability of Greenville is higher than the county due to the larger concentration of people and structures found within the city. The risks of a Tornado affecting the Town of Greenville are equally high for all areas of the town. A tornado event in the Town of Greenville would probably cause severe damage to homes and structures. The loss of life is estimated to be below 10 persons based on past historical events. There would be a short term economic impact due to businesses recovering from any damage sustained and employee absenteeism at work.

Town of Lee: The Town of Lee is affected by Tornadoes in the same respect to Madison County. The vulnerability of Lee is higher than the county due to the concentration of people and structures found within the city. The risks of a Tornado affecting the Town of Lee are equally high for all areas of the town. A tornado event in the Town of Lee would probably cause severe damage to homes and structures. The loss of life is estimated to be below 10 persons based on past historical events. There would be a short term economic impact due to businesses having to recover from any damage sustained and employee absenteeism at work.

Hazard History:

April 19, 1988 – A tornado hit the City of Madison, FL. Four deaths and twenty injuries reported. An estimated twenty-five to thirty homes suffered major damage or were destroyed. The storm caused four million dollars in damages to North Florida Community College (NFCC).

November, 1988 – A tornado destroyed a mobile home occupied by a mother and her baby. The mother was sucked out of the home and died from her injuries. The baby survived.

July 12, 1992 – Thunderstorm moved in quickly on Madison County. The storm resulted in over 1000 homes being damaged, as well as 500 vehicles. No deaths or injuries reported. The storm brought massive amounts of hail, some as large as softballs. Over six inches of rain fell in a 15 minute timeframe during the storm.

1994 – A tornado hit Madison High School and caused over \$ 500,000 in damage. It then jumped over a nursing care facility and hit the Florida Highway Patrol Station. It then destroyed the Driver's License Office.

February 14, 2000 – Madison County suffered a sever storm event on this date. There were power outages and debris caused by high winds. No injuries were reported.

September 22, 2000 – Tropical Storm Helene brought several tornadoes to the area. One tornado touched down northeast of Greenville and we went under a tornado warning for 30 minutes. We suffered minimal damage and no injuries were reported.

June 11, 2001 – The remnants of Tropical Storm Allison brought five tornadoes and six inches of rain to Madison County during the evening hours. There were three mobile homes totally destroyed, and several other homes, cars and barns had moderate damage. No deaths or injuries reported.

April 23, 2002 – Madison County experienced a possible tornado touchdown on this date. It was reported to be near Greenville. There were several uprooted trees and one injury due to a tree falling on an occupied car. One witness claims to have seen the funnel cloud, but it was not confirmed by the National Weather Service.

July 29th, 2003 – On this date, Madison County went under a severe storm warning. The county experienced high winds, lots of rain, and lightning. No major damages or injuries were reported. Some fallen trees and debris blocked some roads.

November 12, 2004 – A F1 tornado touched down briefly in the afternoon and downed numerous trees just east of Hamburg. This event was reported by the Madison County Emergency Management Agency and property damages were estimated at approximately \$5,000.

March 2, 2007 - On this morning, an EF-1 tornado developed quickly and touched down near Cherry Lake. The tornado snapped and uprooted trees along County Road 471. It also damaged the porch and roof of a home. A vehicle was damaged by fallen trees. About 130 acres of planted pine trees were also destroyed. A squall line of severe thunderstorms produced numerous reports of wind damage and isolated tornadoes across the Florida Panhandle and Big Bend from the late evening hours of March 1 into the predawn hours of March 2. An estimated \$5,000 in property damages occurred.

March 31, 2009 – Numerous large pine trees were down in a narrow convergent path. A series of thunderstorms on this day brought flooding, wind damage and spawned a tornado across portions of the Big Bend.

No tornadoes have been reporting in Madison County since the 2010 LMS.

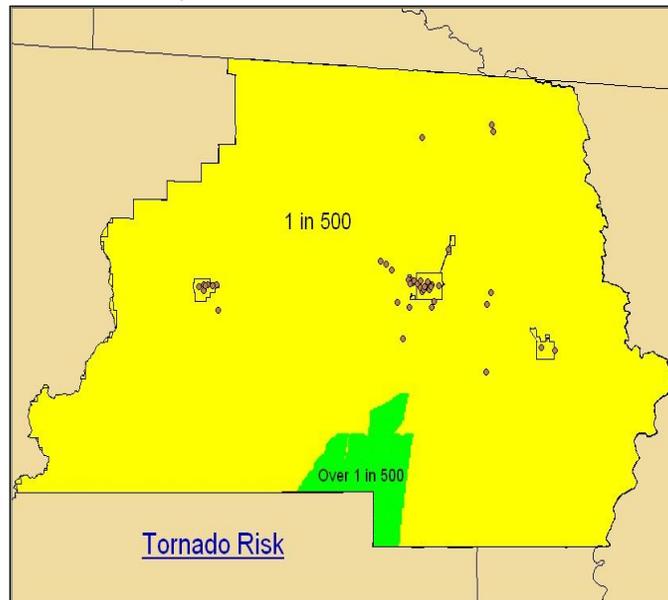
Hazard in Relation to Critical Facilities:

Based on the GIS data as provided by the MEMPHIS system and cross referencing a GIS list of critical facilities in Madison County, there are:

52 Critical Facilities Located in the “1 in 500” Tornado Risk Area.

0 Critical Facilities Located in the “Over 1 in 500” Tornado Risk Area.

Figure 14: Madison County Critical Facilities in Relation to Tornado Risk Areas



2. Hurricanes

Hazard Description:

A hurricane is a type of tropical cyclone, the generic term for a low pressure system that generally forms in the tropics. A typical cyclone is accompanied by thunderstorms, and in the Northern Hemisphere, a counterclockwise circulation of winds near the earth's surface.

All Atlantic and Gulf of Mexico coastal areas are subject to hurricanes or tropical storms. Parts of the Southwest United States and the Pacific Coast experience heavy rains and floods each year from hurricanes spawned off Mexico. The Atlantic hurricane season lasts from June to November, with the peak season from mid-August to late October.

Hurricanes can cause catastrophic damage to coastlines and several hundred miles inland. Winds can exceed 155 miles per hour. Hurricanes and tropical storms can also spawn tornadoes and microbursts, create storm surges along the coast, and cause extensive damage from heavy rainfall.

Hurricanes are classified into five categories based on their wind speed, central pressure, and damage potential (see chart). Category Three and higher hurricanes are considered major hurricanes, though Categories One and Two are still extremely dangerous and warrant your full attention.

Table 19 : Saffir-Simpson Hurricane Scale

Scale Number (Category)	Sustained Winds (MPH)	Damage
1	74-95	Minimal: Unanchored mobile homes, vegetation and signs.
2	96-110	Moderate: All mobile homes, roofs, small crafts, flooding.
3	111-129	Extensive: Small buildings, low-lying roads cut off.
4	130-156	Extreme: Roofs destroyed, trees down, roads cut off, mobile homes destroyed. Beach homes flooded.
5	More than 157	Catastrophic: Most buildings destroyed. Vegetation destroyed. Major roads cut off. Homes flooded.

Source: National Hurricane Center <http://www.nhc.noaa.gov/aboutsshws.php>

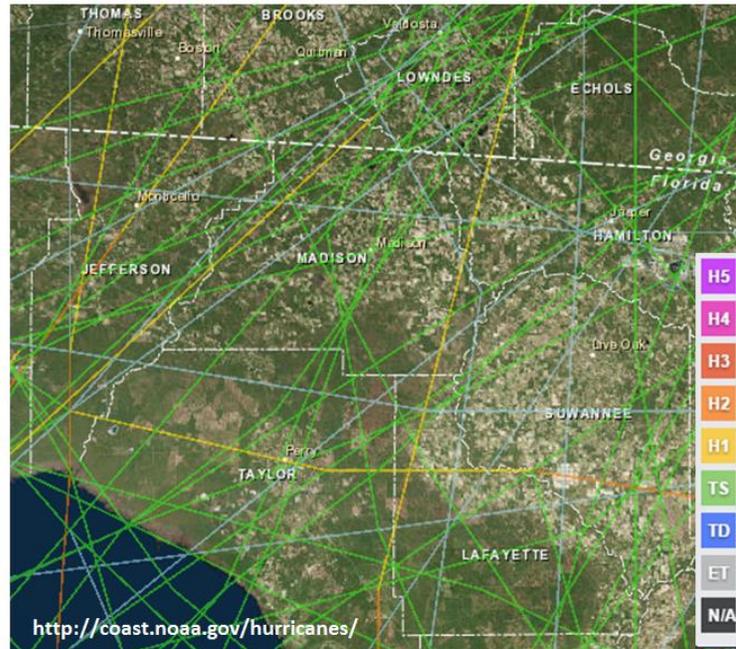
Hurricanes can produce widespread torrential rains. Floods are the deadly and destructive result. Slow moving storms and tropical storms moving into mountainous regions tend to produce especially heavy rain. Excessive rain can trigger landslides or mud slides, especially in mountainous regions. Flash flooding can occur due to intense rainfall. Flooding on rivers and streams may persist for several days or more after the storm.

Hazard Profile:

Over the past 125 years of meteorological study, it's estimated that 30 or more hurricanes passed within 100 nautical miles of Madison County, averaging approximately one storm every 4 years. The potential damage from high winds and flooding would be the most pressing problems for the residents of Madison County. There are approximately thirty-seven hundred (3,400) mobile homes housing an estimated 7,500 people in Madison County which are particularly susceptible to hurricane-related damage. Those living in mobile homes and poorly constructed

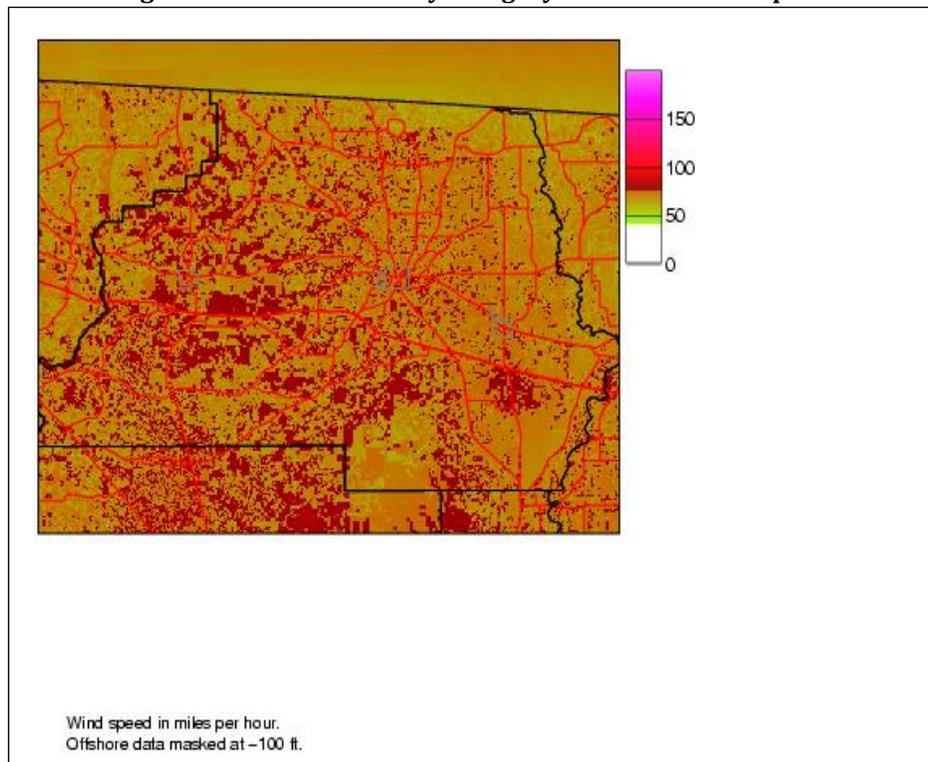
wood frame houses would be most vulnerable to wind and flood damage. The number of people affected in this situation would be considerable and could be as high as 40% of the population. Flooding caused by above normal amounts of rain in short periods of time may make roads impassable and may damage field crops.

Figure 15: Madison County Hurricane Tracks from 1842-2014



The other vulnerable consideration for the county is the vast amount of timber that grows along most of the main highways. The high winds could cause a considerable amount of debris to clog some of the major emergency routes from the downed trees and limbs.

Hazard Impact Analysis:

Figure 16: Madison County Category 1 Maxima Wind Speed

Source: MEMPHIS

Impact Summary

Peak winds 81 mph. Peak water depth 0.0 ft.

Category 1 Maxima Damage Summary:

Tax Parcel based Wind Damage: \$ 31.09 Million

DOR based Flood Damage: \$ 0.00 dollars

DOR Structures in Flood Zone: 0

Census based Wind Damage: \$ 30.99 Million

Census based Flood .Damage: \$ 0.00 dollars

Uninhabitable Housing Units: 41 - 0.5% of total HU.

Table 20: Madison County Population at Risk for Category 1 Maxima

	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
Total	20,400	20,400	6,409	0	0
Minority	8,772	8,772	2,293	0	0
Over 65	3,060	3,060	942	0	0
Disabled	9,180	9,180	2,861	0	0
Poverty	4,284	4,284	1,349	0	0
Lang. Isolated	204	204	91	0	0
Single Parent	1,632	1,632	622	0	0

Source: MEMPHIS

Table 21: Madison County Structures at Risk for Category 1 Maxima

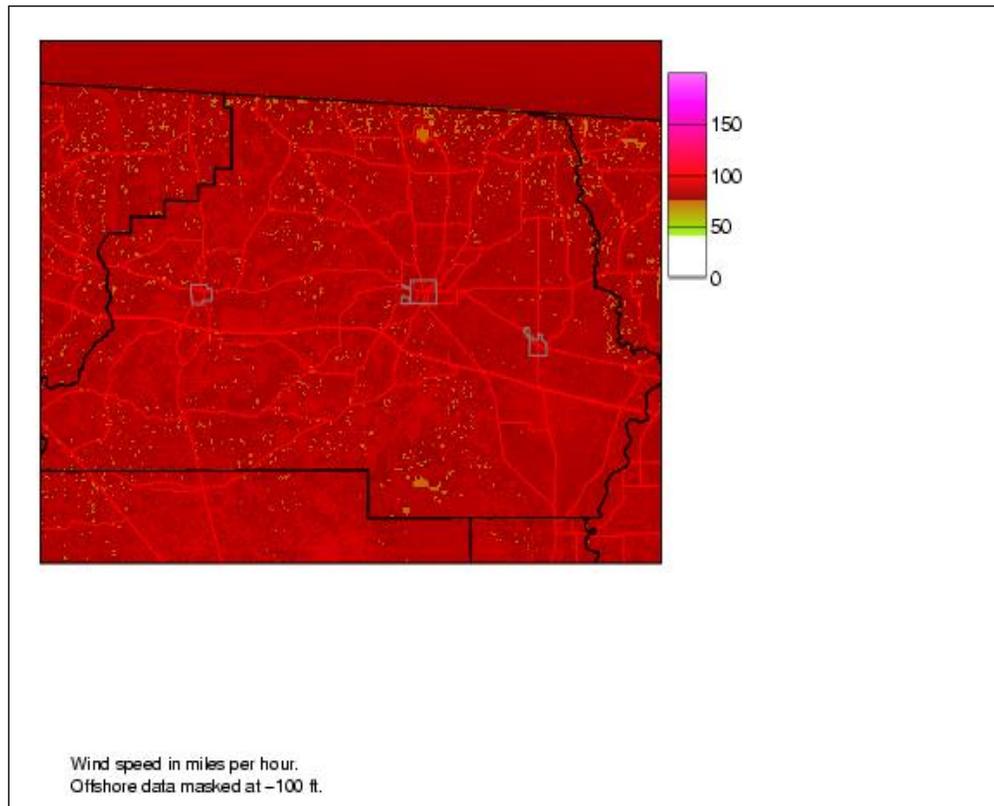
	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
SF Residential	3,112	3,112	771	0	0
Mobile Home	1,123	1,123	231	0	0
MF Residential	258	258	52	0	0
Commercial	463	463	151	0	0
Agriculture	4,937	4,937	1,373	0	0
Gov/Institution	402	402	103	0	0

Source: MEMPHIS

Table 22: Madison County Loss by DOR Use for Category 1 Maxima

	Exposure	Loss	Percent Loss
SF Residential	\$504.98M	5.48M	1.1%
Mobile Home	\$110.33M	6.42M	5.8%
MF Residential	\$31.15M	318.31T	1.0%
Commercial	\$160.14M	1.92M	1.2%
Agriculture	\$299.92M	2.87M	1.0%
Gov/Institution	\$1.28B	14.09M	1.1%

Source: MEMPHIS

Figure 17: Madison County Category 2 Maxima Wind Speed

Source: MEMPHIS

Impact Summary

Peak winds 97 mph. Peak water depth 0.0 ft.

Category 2 Maxima Damage Summary:

Tax Parcel based Wind Damage: \$ 100.16 Million

DOR based Flood Damage: \$ 0.00 dollars

DOR Structures in Flood Zone: 0

Census based Wind Damage: \$ 87.02 Million

Census based Flood Damage: \$ 0.00 dollars

Uninhabitable Housing Units: 142 - 1.8% of total HU.

Table 23: Madison County Population at Risk for Category 2 Maxima

	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
Total	20,400	20,400	20,400	0	0
Minority	8,772	8,772	8,772	0	0
Over 65	3,060	3,060	3,060	0	0
Disabled	9,180	9,180	9,180	0	0
Poverty	4,284	4,284	4,284	0	0
Lang. Isolated	204	204	204	0	0
Single Parent	1,632	1,632	1,632	0	0

Source: MEMPHIS

Table 24: Madison County Structures at Risk for Category 2 Maxima

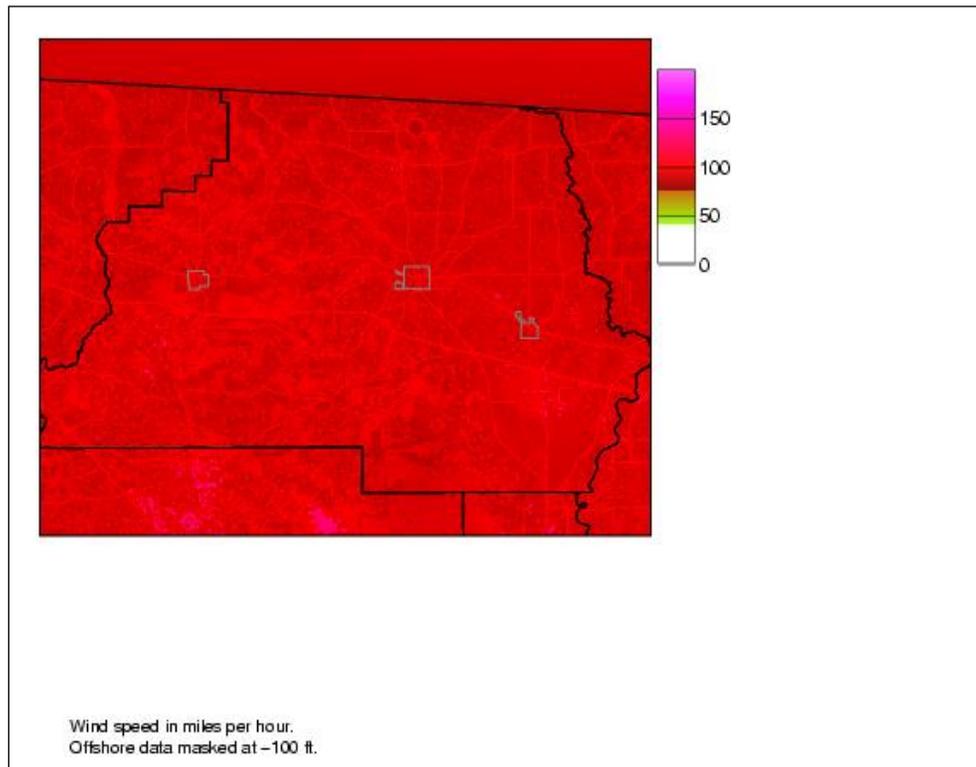
	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
SF Residential	3,112	3,112	3,069	0	0
Mobile Home	1,123	1,123	1,102	0	0
MF Residential	258	258	247	0	0
Commercial	463	463	462	0	0
Agriculture	4,937	4,937	4,865	0	0
Gov/Institution	402	402	398	0	0

Source: MEMPHIS

Table 25: Madison County Loss by DOR Use for Category 2 Maxima

	Exposure	Loss	Percent Loss
SF Residential	\$504.98M	18.34M	3.6%
Mobile Home	\$110.33M	16.67M	15.1%
MF Residential	\$31.15M	1.05M	3.4%
Commercial	\$160.14M	6.11M	3.8%
Agriculture	\$299.92M	10.18M	3.4%
Gov/Institution	\$1.28B	47.81M	3.7%

Source: MEMPHIS

Figure 18: Madison County Category 3 Maxima Wind Speed

Source: MEMPHIS

Impact Summary

Peak winds 116 mph. Peak water depth 0.0 ft.

Category 3 Maxima Damage Summary:

Tax Parcel based Wind Damage: \$ 250.77 Million

DOR based Flood Damage: \$ 0.00 dollars

DOR Structures in Flood Zone: 0

Census based Wind Damage: \$ 202.37 Million

Census based Flood .Damage: \$ 0.00 dollars

Uninhabitable Housing Units: 366 - 4.7% of total HU.

Table 26: Madison County Population at Risk for Category 3 Maxima

	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
Total	20,400	20,400	20,400	359	0
Minority	8,772	8,772	8,772	149	0
Over 65	3,060	3,060	3,060	21	0
Disabled	9,180	9,180	9,180	56	0
Poverty	4,284	4,284	4,284	35	0
Lang. Isolated	204	204	204	0	0
Single Parent	1,632	1,632	1,632	17	0

Source: MEMPHIS

Table 27: Madison County Structures at Risk for Category 3 Maxima

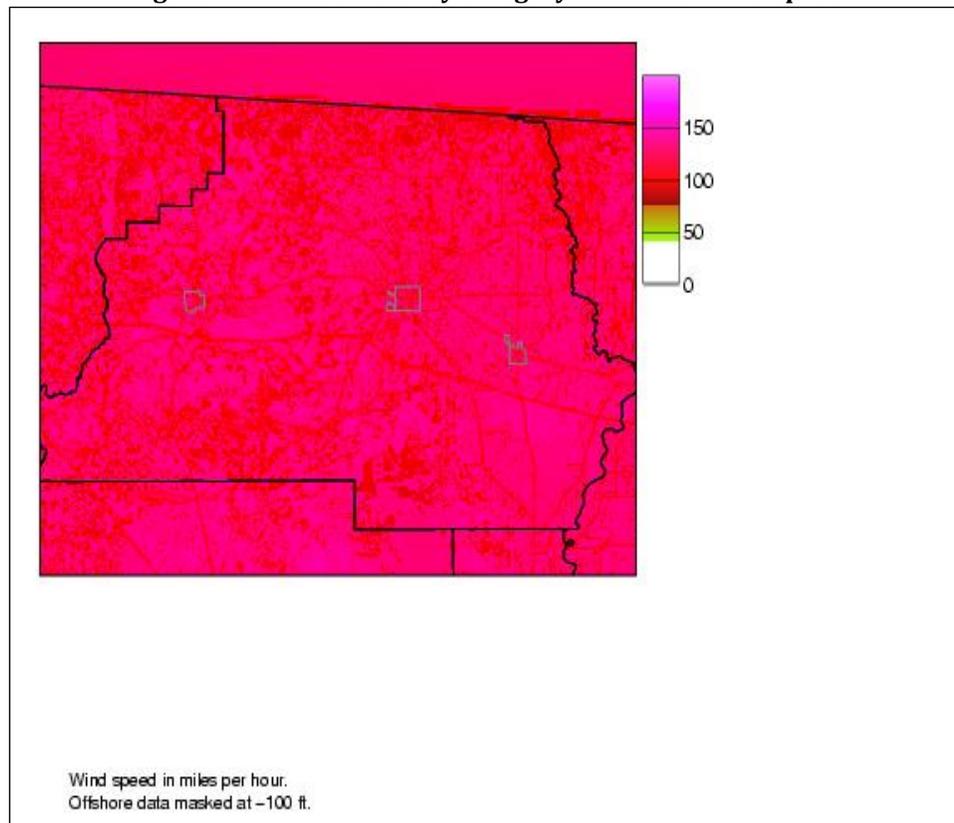
	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
SF Residential	3,112	3,112	3,112	53	0
Mobile Home	1,123	1,123	1,123	18	0
MF Residential	258	258	258	3	0
Commercial	463	463	463	2	0
Agriculture	4,937	4,937	4,937	254	0
Gov/Institution	402	402	402	13	0

Source: MEMPHIS

Table 28: Madison County Loss by DOR Use for Category 3 Maxima

	Exposure	Loss	Percent Loss
SF Residential	\$504.98M	\$46.55M	9.2%
Mobile Home	\$110.33M	\$37.19M	33.7%
MF Residential	\$31.15M	\$2.66M	8.5%
Commercial	\$160.14M	\$15.73M	9.8%
Agriculture	\$299.92M	\$25.62M	8.5%
Gov/Institution	\$1.28B	\$123.02M	9.6%

Source: MEMPHIS

Figure 19: Madison County Category 4 Maxima Wind Speed

Source: MEMPHIS

Impact Summary

Peak winds 141 mph. Peak water depth 0.0 ft.

Category 4 Maxima Damage Summary:

Tax Parcel based Wind Damage: \$ 602.62 Million

DOR based Flood Damage: \$ 586.35 Thousand

DOR Structures in Flood Zone: 2

Census based Wind Damage: \$ 460.01 Million

Census based Flood Damage: \$ 0.00 dollars

Uninhabitable Housing Units: 874 - 11.2% of total HU.

Table 29: Madison County Population at Risk for Category 4 Maxima

	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
Total	20,400	20,400	20,400	17,001	0
Minority	8,772	8,772	8,772	7,504	0
Over 65	3,060	3,060	3,060	2,553	0
Disabled	9,180	9,180	9,180	7,713	0
Poverty	4,284	4,284	4,284	3,524	0
Lang. Isolated	204	204	204	191	0
Single Parent	1,632	1,632	1,632	1,456	0

Source: MEMPHIS

Table 30: Madison County Structures at Risk for Category 4 Maxima

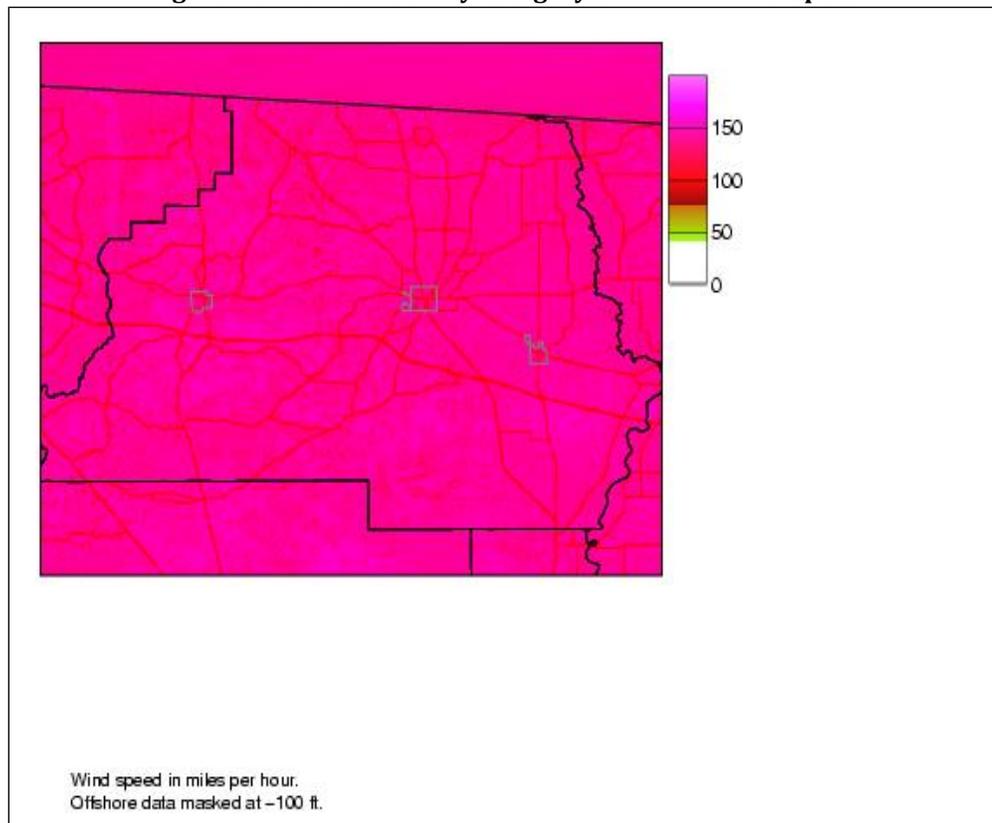
	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
SF Residential	3,112	3,112	3,112	2,873	0
Mobile Home	1,123	1,123	1,123	1,018	0
MF Residential	258	258	258	228	0
Commercial	463	463	463	433	0
Agriculture	4,937	4,937	4,937	4,504	0
Gov/Institution	402	402	402	361	0

Source: MEMPHIS

Table 31: Madison County Loss by DOR Use for Category 4 Maxima

	Exposure	Loss	Percent Loss
SF Residential	\$504.98M	\$113.72M	22.5%
Mobile Home	\$110.33M	\$81.13M	73.5%
MF Residential	\$31.15M	\$6.42M	20.6%
Commercial	\$160.14M	\$37.97M	23.7%
Agriculture	\$299.92M	\$63.21M	21.1%
Gov/Institution	\$1.28B	\$300.18M	23.4%

Source: MEMPHIS

Figure 20: Madison County Category 5 Maxima Wind Speed

Source: MEMPHIS

Impact Summary

Peak winds 167 mph. Peak water depth 0.0 ft.

Category 5 Maxima Damage Summary:

Tax Parcel based Wind Damage: \$ 1.08 Billion

DOR based Flood Damage: \$ 701.01 Thousand

DOR Structures in Flood Zone: 2

Census based Wind Damage: \$ 708.67 Million

Census based Flood .Damage: \$ 0.00 dollars

Uninhabitable Housing Units: 1591- 20.3% of total HU.

Table 32: Madison County Population at Risk for Category Five Maxima

	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
Total	20,400	20,400	20,400	20,400	0
Minority	8,772	8,772	8,772	8,772	0
Over 65	3,060	3,060	3,060	3,060	0
Disabled	9,180	9,180	9,180	9,180	0
Poverty	4,284	4,284	4,284	4,284	0
Lang. Isolated	204	204	204	204	0
Single Parent	1,632	1,632	1,632	1,632	0

Source: MEMPHIS

Table 33: Madison County Structures at Risk for Category Five Maxima

	Total	TS Wind	Hurricane Wind	Ext. Wind	Flooded
SF Residential	3,112	3,112	3,112	3,112	0
Mobile Home	1,123	1,123	1,123	1,123	0
MF Residential	258	258	258	258	0
Commercial	463	463	463	463	0
Agriculture	4,937	4,937	4,937	4,937	2
Gov/Institution	402	402	402	402	0

Source: MEMPHIS

Table 34: Madison County Loss by DOR Use for Category Five Maxima

	Exposure	Loss	Percent Loss
SF Residential	\$504.98M	\$213.58M	42.3%
Mobile Home	\$110.33M	\$108.65M	98.5%
MF Residential	\$31.15M	\$12.15M	39.0%
Commercial	\$160.14M	\$70.05M	43.7%
Agriculture	\$299.92M	\$118.92M	39.7%
Gov/Institution	\$1.28B	\$554.54	43.2%

Source: MEMPHIS

Hazard Probability:

Hurricane season is an annual event that produces a series of storms that randomly impact locations throughout the Caribbean, the Gulf of Mexico and the entire eastern seaboard of the United States. The probability of a hurricane occurring and causing damage is high. Eventually a storm will impact Madison County either directly by force or indirectly through evacuation migration. It is difficult to predict when a storm will hit, where exactly it will strike, the intensity, or the duration, however it is very important for Madison County to prepare for Hurricanes and adopt responsible mitigation measures to lessen the potential damages. The probability of a hurricane impacting Madison County is one every one to five years.

Hazard Vulnerability Analysis by Jurisdiction:

Madison County: Hurricanes can be a costly hazard to Madison County overall. Even though Madison County does not reside on a coastline, the community is still in a highly prone area for Hurricanes to strike from both the Atlantic Ocean and Gulf of Mexico. A Category 5 hurricane would be the maximum extent of hurricane impact. Based off of historical impacts a Category 3 hurricane is the most likely maximum extent. The county stands to suffer great damages due to the high winds and flooding impacting the farms and agriculture. Based on historical record, the Madison County area can expect a hurricane every four years. The effects of a hurricane will include flooding and wind damage. The number of people who would be possibly affected by a hurricane is based on the various factors including the intensity, closeness and direction of the storm. In the event of a hurricane (any category) Madison County would have to evacuate approximately 7,500 mobile home residents, including 34 mobile home parks. Evacuation times could be as high as 24 hours. This time would be necessary to clear any pre-hurricane landfall hazards such as gale force winds and road flooding and to get evacuees into shelter. With every hurricane event, 100% percent of the population and 100% of the Critical Facilities is vulnerable to the effects of a hurricane as well as all buildings and facilities within Madison County. Due to the sheer size of Hurricanes, the regional damage they produce, and the proximity of the jurisdictions of Madison, Greenville, and Lee within Madison County, a county-wide analysis is found to be sufficient and representative with regards to the impacts of this hazard.

City of Madison, Towns of Greenville and Lee: Based on the hurricane's category, strength, and landfall position the effects of the vulnerable areas, facilities and populations will vary. Obviously, the stronger the Hurricane, the higher level of damage can be expected to Madison County and surrounding jurisdictions. But with every hurricane event, 100% percent of the population and 100% of the Critical Facilities is vulnerable to the effects of a hurricane.

Hurricanes can affect the cities economically, before and after the event. Because Hurricanes are slow moving, many residents take the opportunity to evacuate the area. These evacuations can disrupt local businesses and times of operations,

thereby reducing revenue and creating a loss in wages. The communities within Lee and Greenville are also susceptible to the effects of hurricanes through Flooding. Even when hurricanes do not impact the local area directly, their effects can be felt over time. Hurricanes that move North into Georgia can dump large amounts of rainfall into the rivers. In some cases, these over flowing rivers flow through Madison County and more specifically can affect the Towns of Lee and Greenville. Again, based on the facts that Madison County is not a coastal community as well as the sheer size of Hurricanes in general, the risks and vulnerability for the incorporated cities is not substantially different from the risks to the unincorporated county.

Hazard History:

October 4, 1995 - Hurricane Opal – Hurricane Opal made landfall near Pensacola Beach, Florida as a category 3 hurricane on October 4, 1995. Florida's immediate coastal areas suffered extensive damage from the storm surge. Madison County only suffered heavy rains and winds which resulted in minor to no damage. The storms proximity to Madison County was close by Hurricane standards. Estimates of the surge elevation ranged from 5-14 feet above mean sea level. Rainfall totals generally ranged from 5-10 inches over portions of the Florida panhandle, Alabama and Georgia. The greatest rainfall totals of 8-9 inches, however, were recorded in the mountains of North Carolina. The death toll from Opal was 59. Fortunately, Opal had weakened from a category 4 storm at the time of landfall. Opal may now be ranked higher than the fourth costliest U.S. hurricane with \$3 billion in damage.

September 21, 1999 – Hurricane Floyd – Although a direct hit never took place, Madison County EM activated shelters. The shelters hosted over 1,000 people who were evacuating the east coast due to Hurricane Floyd. Most evacuees were from Duval County driving in from I-10. The shelters housed people for 3 days. No deaths or injuries reported within Madison County.

September 2000 – Hurricane Gordon - Madison County had two back to back storms affect the area. Hurricane Gordon moved through the Madison County area on September 17th. It brought only heavy rains. Five days later, Tropical Storm Helene brought numerous strong storms and several tornadoes. No deaths or injuries were reported for either storm within Madison County.

The 2004 Hurricane Season

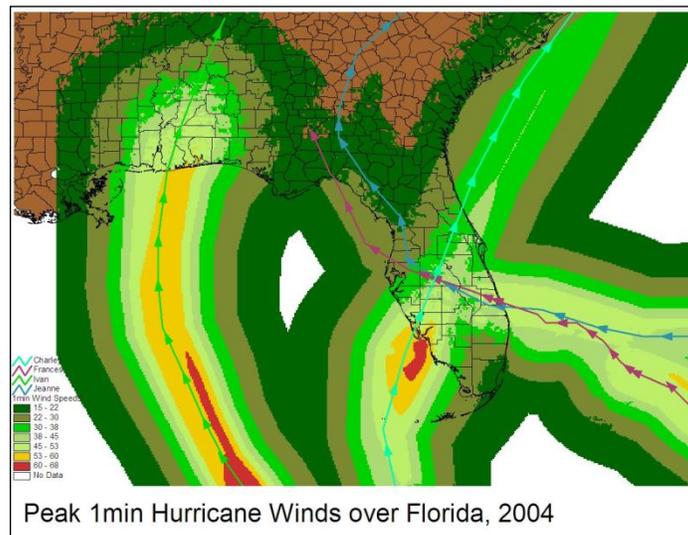
Hurricanes, and the path of destruction they can leave in their wake, are a way of life to Florida residents. The 2004 hurricane season was unprecedented with four major storms hitting the State of Florida with each hurricane causing significant damage.

The 2004 Atlantic hurricane season officially started [June 1, 2004](#), and lasted until [November 30, 2004](#). These dates conventionally delimit the period of each year when most [tropical cyclones](#) form in the [Atlantic Ocean](#). However, this year's season exceeded these conventional limits slightly, as Tropical Storm Otto formed on the last day of the season and lasted two days into December.

The season was notable as one of the deadliest and costliest Atlantic hurricane seasons on record, with nearly 3,000 deaths (mostly in [Haiti](#)) and roughly 42 billion US dollars in damage. The most notable storms for the season are **Hurricanes Charley, Frances, Ivan, and Jeanne**, all of which struck the [U.S. state](#) of [Florida](#).

Two of the four Hurricanes, Francis and Jeanne, directly impacted the Madison County community. Madison County received three FEMA declarations for these storms, PA and IA for Jeanne, and PA for Francis. There were 1700 people in Madison County who requested Public Assistance (PA) from the results of these storms. There were no deaths or injuries directly attributed to these storms, however the damage was wide spread.

Figure 21: Hurricane Tracts of 2004 (Charley, Frances, Ivan, and Jeanne)



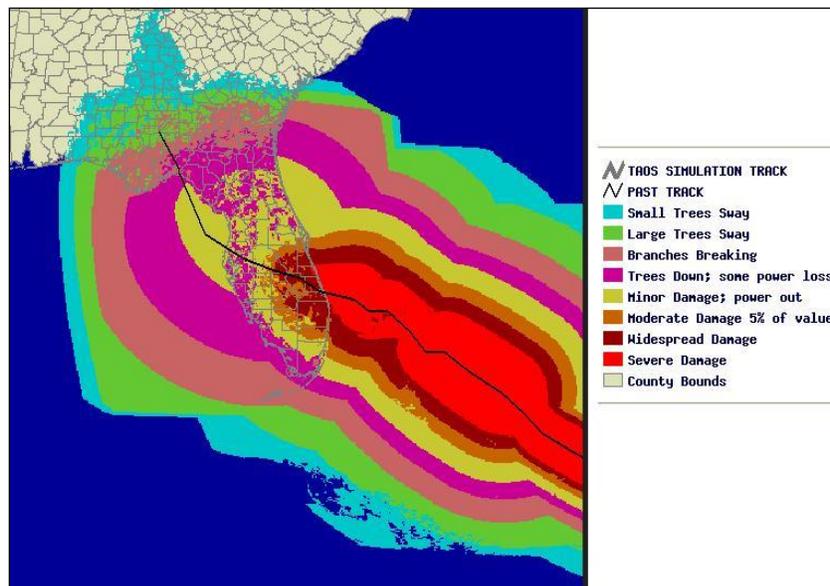
Source: TAOS

2004 - Hurricane Frances - Hurricane Frances was the third major hurricane of the [2004 Atlantic hurricane season](#). The storm's maximum sustained wind speeds were 145 [mph](#) (230 km/h), giving it a strength of category 4 on the [Saffir-Simpson Hurricane Scale](#). Frances then passed over the central sections of the state of [Florida](#) in the [U.S.](#), moved briefly over the [Gulf of Mexico](#) on the other side of Florida, and made a second landfall at the [Florida Panhandle](#).

It affected the central regions of Florida just three weeks after [Hurricane Charley](#), which was the United States's second costliest hurricane with about \$14 billion in damage. Frances then moved northward into [Georgia](#) where it weakened to a [tropical depression](#).

Frances then passed over the central sections of the state of [Florida](#) in the [U.S.](#), moved briefly over the [Gulf of Mexico](#) on the other side of Florida, and made a second landfall at the [Florida Panhandle](#).

Figure 22: Hurricane Francis Damage Modeling Estimates



Source: TAOS

It affected the central regions of Florida just three weeks after [Hurricane Charley](#), which was the United State's second costliest hurricane with about \$14 billion in damage. Frances then moved northward into [Georgia](#) where it weakened to a [tropical depression](#).

Late on [September 5](#), it picked up speed and crossed the [Florida Peninsula](#), emerging over the [Gulf of Mexico](#) near [Tampa](#) as a tropical storm. After a short trip over water, Frances again struck land near [St. Marks, Florida](#). Frances headed inland, weakening to a tropical depression and causing heavy rainfall over the [southern US](#). Hurricane Frances is a fearsome Category 4 storm and the third Hurricane of the 2004 Atlantic Season, after Hurricane Alex and [Hurricane Charley](#).

The total civilian damage from Frances was determined to be approximately \$8,860,000,000. Add in the estimated \$100 million damage done to space and military facilities at [Cape Canaveral, Florida](#) and the total damage is estimated to be

about \$9 billion, making it the fourth costliest hurricane in U.S. history, behind [Hurricane Andrew](#) of 1992 and Hurricanes [Charley](#) and [Ivan](#) of 2004. Some areas of Florida received over 13 inches of rain during the slow onslaught. Much like [Hurricane Charley](#) earlier in the month, the Florida [citrus](#) crops will likely take huge damage.

Power outages affected up to six million people. Over 20 airports closed during the storm. [Orlando, Florida](#)'s theme parks closed Sunday—only the third time [Walt Disney World](#) has closed for a hurricane, but the second time in a month. In the aftermath of the storm, many colleges and school districts remained closed.

Frances also spawned 117 [tornados](#) from [Florida](#) to as far north as [Virginia](#). This amount beats the record number of [tornados](#) for a [hurricane](#), which were 115 for [Hurricane Beulah](#) in [1967](#).

The economic effect was felt early, as the storm struck during [Labor Day](#) weekend, traditionally the final summer vacation weekend in the [United States](#). Many hotel reservations from [South Carolina](#) to [Florida](#) were cancelled as people, seeing the destruction caused weeks earlier by Hurricane Charley, decided to avoid the coastal areas for safety.

President [George W. Bush](#) declared all of Florida a federal disaster area.

2004 - Hurricane Ivan - Hurricane Ivan was the fourth major hurricane of the [2004 Atlantic hurricane season](#). It was a [Cape Verde-type hurricane](#) that reached [Category 5](#) strength at its peak, and early in its path reached unprecedented intensity at low latitudes—Category 4 at only 10.6° N.

After moving into the eastern [Gulf of Mexico](#) its strength lessened to a Category 4, and it continued on a track towards the north-northwest, making landfall in the U.S. near [Gulf Shores, Alabama](#).

As Ivan approached [landfall](#), Florida Lt. Governor [Toni Jennings](#) described it as "the size of [Frances](#) but [with] the impact of [Charley](#)".

After landfall, Ivan moved north and then turned east, bringing heavy rainfall to large areas of the south-eastern [United States](#). Ivan continued inland, maintaining hurricane strength until it was over central [Alabama](#). Late on the 16th, Ivan weakened to a tropical depression over northeastern Alabama. On [September 18](#), remnants of Ivan drifted off the mid-Atlantic coast of the United States into the Atlantic ocean and the low pressure disturbance continued to dump rain on the east coast of the United States.

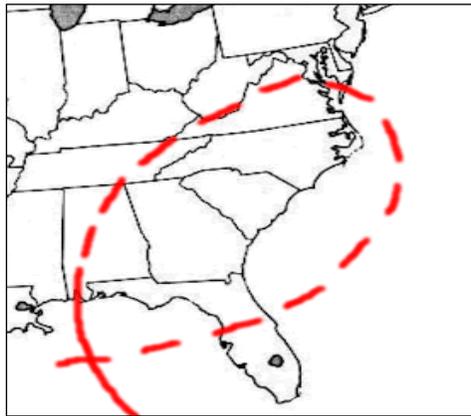
Ivan lost tropical characteristics on [September 18](#) while crossing [Virginia](#). The remnant low crossed the coast of [New Jersey](#) later that day and advisories were discontinued. Nevertheless, on the morning of [September 21](#), some of its remnants combined with a low-pressure system to pelt [Cape Breton Island](#) of [Nova Scotia](#),

[Canada](#) with hurricane-force winds, flooding some roads, felling trees, and leaving thousands without power.

An interesting development occurred on [September 20](#) as a small surface low, caused by the southern remnants of Ivan, moved across the Florida peninsula. As it continued west across the northern Gulf of Mexico, the system organized and took on tropical characteristics. On [September 22](#) the National Weather Service determined that the low was in fact a result of the remnants of Ivan and thus named it accordingly.

On the evening of [September 23](#), the revived Ivan made landfall near [Cameron, Louisiana](#) as a weak tropical storm. Ivan weakened quickly as it travelled overland into southeast Texas.

Figure 23: Path of Ivan and Ivan II



The heaviest damage as Ivan touched the U.S. coastline was observed in [Baldwin County](#) in Alabama on the western side of the storm, and [Pensacola](#) and [Fort Walton Beach, Florida](#) on the eastern and windy leading edge of the storm. Shattered windows from gusts and flying projectiles experienced throughout the night of the storm were common. Early estimates had put damage in the U.S. at \$5–15 billion.

In Pensacola, the [Interstate 10](#) bridge across [Escambia Bay](#) was heavily damaged, with as much as a quarter-mile (400 m) of the bridge collapsing into the bay. The causeway that carries [U.S. Highway 90](#) across the northern part of the same bay was also heavily damaged. Virtually all of [Perdido Key](#), an area on the outskirts of Pensacola that bore the brunt of Ivan's winds and rain was essentially leveled. High surf and wind brought extensive damage to Innerarity Point as well as [Orange Beach](#) just over the border from the Key in [Alabama](#).

Ivan caused an estimated \$13 billion in damage in the U.S. alone, making it the third costliest hurricane on record, being very near [Hurricane Charley](#)'s \$14 billion and but well below [Hurricane Andrew](#)'s \$26 billion. [Hurricane Hugo](#), which had been the second costliest hurricane since [1992](#), dropped to fourth after Charley and Ivan.

2004 - Hurricane Jeanne - Hurricane Jeanne was the fifth major hurricane of the 2004 Atlantic hurricane season. It was also the fourth hurricane and fifth named storm of the season to landfall in Florida. Jeanne affected the U.S. Virgin Islands, Puerto Rico, the Dominican Republic, Haiti, the north-eastern Bahamas, and the U.S. state of Florida. The worst damage occurred in Haiti, where over 3,000 people died as a result of flooding and mudslides caused by the storm. Jeanne made landfall on Hutchinson Island, just east of Stuart, Florida, at Category 3 strength. This is only about two miles (3 km) from Sewall's Point, where Hurricane Frances struck Florida three weeks earlier.

Figure 24: Path of Hurricane Jeanne



Source: National Hurricane Center

Jeanne is the first major (Category 3 or higher) storm to make landfall on the east coast north of [Palm Beach, Florida](#) and south of the mouth of the [Savannah River](#) since at least [1899](#).

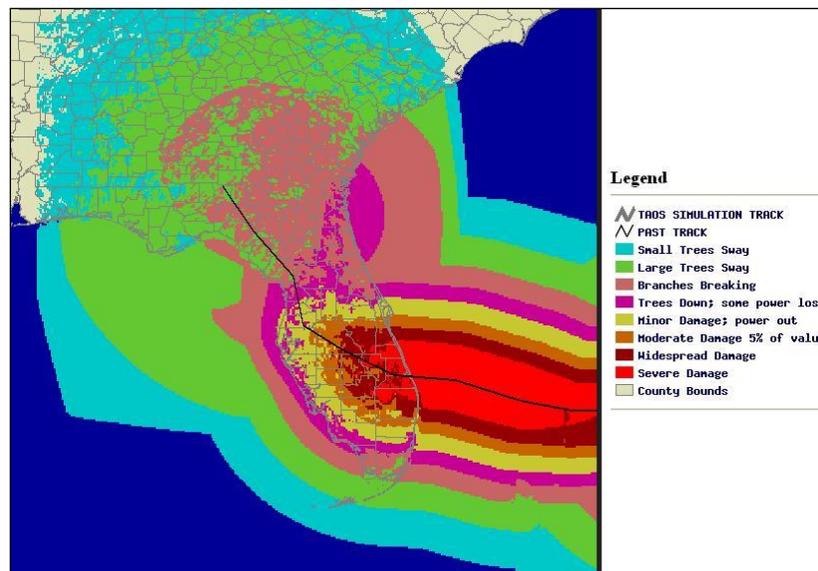
Jeanne's track continued to follow within 20 miles of that of Frances until it reached [Pasco County](#). It then swung more rapidly to the north, and the center remained over land all the way to the [Georgia](#) state line, unlike Frances which exited into the [Gulf of Mexico](#). It became extratropical over [Virginia](#) on [September 28](#) and the remnant returned to sea off the [New Jersey](#) coast the next day.

Millions in Florida were left without electricity, some for the third time in a month. There were only four direct deaths in the mainland United States, three in [Florida](#), one in [South Carolina](#) and one in [Virginia](#), plus one death in Puerto Rico. The final US damage was determined to be around [US\\$6,900,000,000](#), making it the eighth costliest hurricane in United States history. It was difficult to isolate this from

damage caused by [Hurricane Frances](#) (and, around [Polk County](#), [Hurricane Charley](#) as well).

Hurricane Jeanne, the fourth major hurricane to strike Florida in six weeks brought ferocious winds and rain to Florida's East Coast. Jeanne's gusts of 100 mph knocked down power lines, ripped off roofs and whirled debris left behind by the last storms. The hurricane, a dangerous category three storm, came ashore near Stuart, Fort Pierce and Vero Beach on Florida's east coast - the same region battered by Hurricane Frances three weeks earlier. The storm brought Madison County both PA and IA federal assistance.

Figure 25: Hurricane Jeanne Damage Modeling Estimates



Source: TAOS

June 10-11, 2005 - Tropical Storm Arlene came ashore just west of Pensacola, FL on Friday afternoon June 10, 2005. Maximum sustained winds reached 40 mph at Buoy 42039 located 80 miles south of Panama City, FL, with a peak gust of 52 mph late Thursday evening. The lowest sea-level pressure recorded was 997.7 mb at Buoy 42039. Storm total rainfall ranged from two to four inches throughout much of the Florida Panhandle and Big Bend. Storm surge heights associated with Arlene ranged from five feet along the Walton County coast to three to four feet along the Wakulla County coast. Moderate beach erosion occurred from Walton to Franklin County. Storm surges and moderate to heavy wave action, which accounted for 80 percent of the damage, marred walkways in Bay County, washed out much of Alligator Point Road in Franklin County, and pushed seaweed ashore in Wakulla County. Downed trees on power lines caused an estimated 500 customers to lose power in Walton, Washington, and Bay counties.

July 9-11, 2005 - Dennis, a Category 3 Hurricane, moved inland just east of Gulf Breeze, FL, early Sunday afternoon, July 10, 2005. The peak wind gust and lowest sea-level pressure recorded were 67 knots and 979 mb, respectively, at Buoy 42039 located 80 miles south of Panama City, FL. Rainfall totals ranged from 3 to 4 inches in the eastern Florida Panhandle to 6 to 10 inches in the Florida Big Bend. Flooding was reported in southern Leon County where several areas were under 3 to 4 feet of water. Maximum coastal storm surge heights ranged from 4 to 8 feet in Walton, Bay, Gulf, Taylor and Dixie Counties to 8, to 12 feet in Franklin, Wakulla and Jefferson counties. Moderate to severe beach erosion was observed along the beaches of Walton, Bay, Gulf, Franklin and Wakulla counties. Across coastal Walton County, all public dunes and walkovers were damaged. At St George Island, five miles of road and numerous structures were damaged or destroyed by Dennis' storm surge. Dennis' deluge caused several rivers and creeks in the Florida Panhandle and Big Bend to exceed their flood stages, including the Ocklockonee, Aucilla, St Marks rivers, and Spring Creek. An interesting aspect to the flooding is the remarkable surge up to 8 feet that propagated up the rivers. This surge was evident from the mouth of the Suwannee River to as far west as the Choctawhatchee River. The worst property damage occurred along the coast from Walton to Wakulla County, where more than a 1,000 homes and businesses were affected. Also, there were numerous reports of downed trees and power lines across the Florida Panhandle and Big Bend, leaving about 75,000 customers without power. Bay, Dixie, Franklin, Gulf, Taylor, Wakulla and Walton counties were declared federal disaster areas.

June 12-14, 2006 - The center of Tropical Storm Alberto made landfall near Adams Beach along the Taylor County coast, about 50 miles southeast of Tallahassee, Florida, near midday on June 13, 2006. The highest 2-minute wind measured was 36 knots at Keaton Beach around 3 pm EDT on June 13. A peak wind gust of 48 knots was recorded from Gulf Buoy 42036, about 80 miles southeast of Apalachicola. It also recorded the lowest sea level pressure, 995.2 millibars. Rainfall totals for the 48-hour period ending at 8 am EDT on June 14 ranged from 0.26 inches at Marianna to 7.90 inches at Ochlockonee Bay. Maximum storm tides from Alberto varied from 1-2 feet above MLLW along the Bay and Gulf County coasts to 8-9 feet above MLLW along the Taylor and Dixie County coasts. Maximum storm surges ranged from 3-5 feet above normal along the Wakulla, Taylor and Dixie County coasts. Alberto's winds knocked down several trees and power lines throughout portions of the Florida Big Bend and resulted in scattered power outages. Minor surge flooding occurred in coastal communities, especially in Taylor and Dixie counties. About 350 coastal residents of Franklin, Wakulla, Taylor and Dixie counties took refuge in emergency shelters. Reports were provided by the Florida DEM.

Hazard in Relation to Critical Facilities:

All of Madison County's critical facilities are located in a Hurricane risk area.

3. Floods

Hazard Description:

Floods are the most common and widespread of all natural disasters--except fire. Most communities in the United States have experienced some kind of flooding, after spring rains, heavy thunderstorms, or winter snow thaws.

A flood, as defined by the [National Flood Insurance Program](#) is: "A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is your property) from:

- Overflow of inland or tidal waters
- Unusual or rapid accumulation or runoff of surface waters from any source
- A mudflow

The collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood."

Floods can be slow or fast rising but generally develop over a period of days. [Mitigation](#) includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies. Investing in mitigation steps now, such as, engaging in floodplain management activities, constructing barriers, such as levees, and purchasing flood insurance will help reduce the amount of structural damage to your home and financial loss from building and crop damage should a flood or flash flood occur.

Florida is affected by a large number of tropical weather systems. Although storm surge has the greatest potential for loss of life, recent research indicates that inland flooding was responsible for the greatest number of fatalities over the last 30 years. Studies show that 59 percent of the tropical cyclone deaths in the United States resulted from severe inland flooding. Flood or flooding refers to the general or temporary conditions of partial or complete inundation of normally dry land areas of surface water runoff from any source. Floodplains are defined as any land areas susceptible to being inundated by water from any flooding source. In Florida, several variations of flooding occur due to the different effects of severe thunderstorms, hurricanes, seasonal rain and other weather-related conditions and is a natural part of the earth's hydrologic system. Based on frequency, floods are the most destructive category of natural hazards in the United States. The loss of life, personal property, crops, business facilities, utilities, and transportation are major impacts of flooding. Additional losses and economic hardships ensue when supplies or supply routes are damaged or destroyed. Flood waters present an additional hazard as a public health problem when they inundate drinking water facilities,

chemical and waste storage facilities, waste water treatment facilities and solid waste disposal sites. In general, flooding can be divided into two major categories: Coastal and Riverine. In Florida the same hazard, such as a hurricane or severe storm, can result in both types of flooding, sometimes in different area, but many areas of Florida are susceptible to flooding from both storm surge and watershed runoff.

Coastal flooding is usually the result of a severe weather system such as a tropical cyclone, hurricane, tropical storm or “northeaster” which contains the element of high winds. The extent and nature of coastal flooding is related to physiographic features of the terrain and the characteristics of the adjoining body of water. The damaging effects of coastal floods are caused by a combination of higher water levels of the storm surge, the winds, rains, erosion and battering by debris. Flood waters are usually driven ashore by the wind, an event known as storm surge. Loss of life and property damage are often more severe since it involves velocity wave action and accompanying winds. The velocity and range of coastal floods vary in part with the severity of the storm that induces them.

Florida’s low-lying topography combined with its subtropical climate makes it highly vulnerable to inland or riverine flooding. Riverine flooding is associated with a river’s watershed, which is the natural drainage basin that conveys water runoff from rain.

Riverine flooding occurs when the flow of runoff is greater than the carrying capacities of the natural drainage systems. Rainwaters that are not absorbed by soil or vegetation seek surface drainage lines following natural topography lines. These lines merge to form hierarchical systems of rills, creeks, streams, and rivers. Generally, floods can be slow or fast rising, depending on the size of the river or stream. The rivers in north Florida drain portions of Alabama and Georgia, and excessive rainfall in those states often cause flood conditions in Florida. One of the consequences of flooding is repetitive loss properties. A repetitive loss property is one for which two or more NFIP losses of at least \$1000 each have been paid since over a rolling 10 year period. Madison County currently has seven Repetitive Loss Properties identified and located in the county.

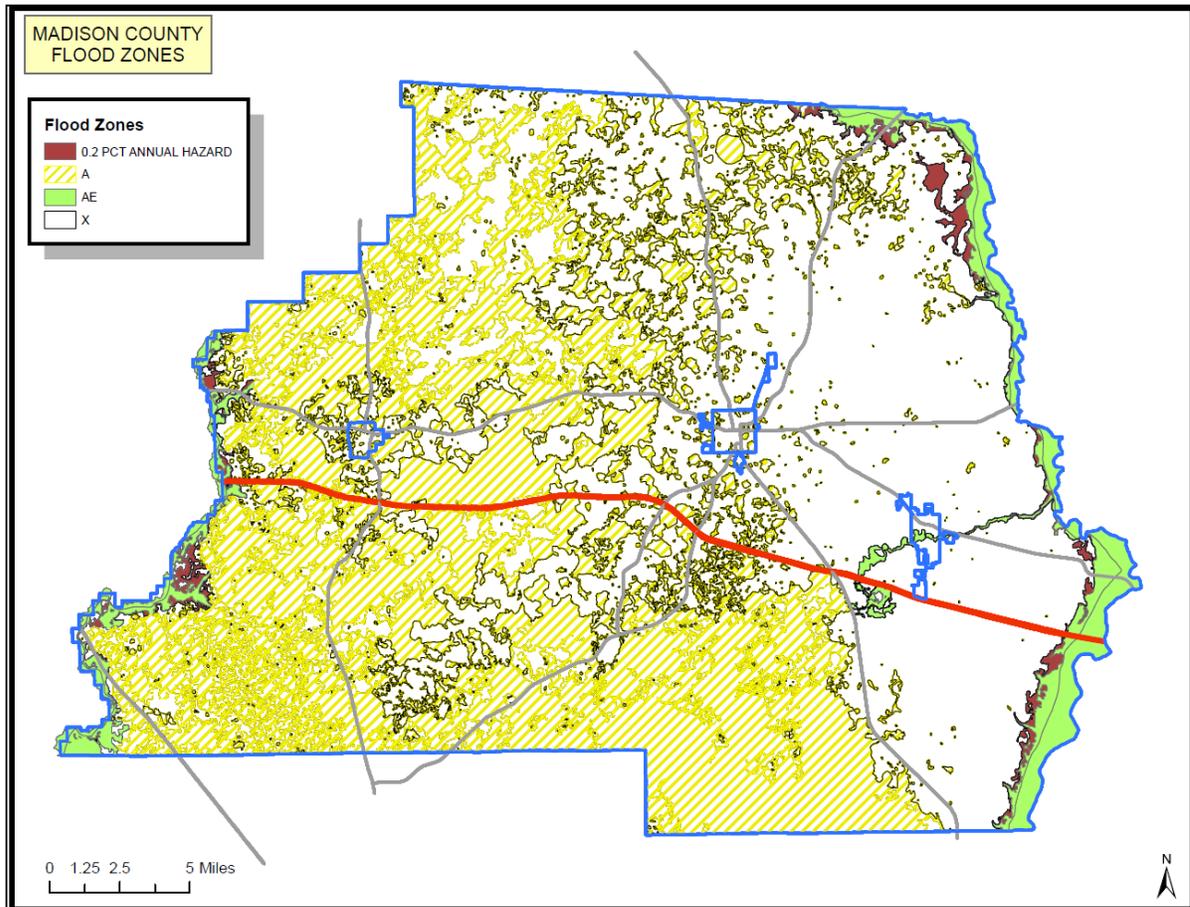
Hazard Profile:

Although Madison County historically experiences only moderate rainfall, its three major rivers (Suwannee, Withlacoochee and Aucilla) originate in Georgia and are affected by the heavy rains characteristic of South Georgia. The major population centers of the county are relatively high and free from flooding, but portions of many of the county's roads are prone to inundation. The most recent flooding occurred with El Nino in 1998, causing considerable property and public road damage, but no loss of life. Floodwaters can adversely affect crops and farming activity, which provide a major source of income for the county. Population potentially affected by flooding would be minimal.

According to the USGS, the greatest height that the Suwannee River reached was 41.34 inches during a flood event. It is reasonable to assume that the county could be hit with a similar flood event in the future.

Hazard Impact Analysis:

Figure 26: Madison County Flood Zones



Source: Madison County Property Appraisers Office, 2015

Hazard Probability:

The probability of a flooding event occurring in Madison County is once each year. One of the most prone areas to flood is located in the southeastern part of the county where the Withlacoochee and Suwannee Rivers merge together. On many past occurrences, the river has breached its capacity and flooded out into surrounding fields and marshes. Many homes and properties located in this flood area have been purchased by Suwannee River Water Management and turned into a conservation area in an effort to reduce the recurring damages to residents.

The probability of flooding in the City of Madison is Low to Medium. Although the city does receive the same level of precipitation as the rest of the county, the maintenance and upkeep of the storm water drainage system allows the water to move out of the city efficiently. When the city is aware of major storms approaching, the city public works department performs a check on the drainage network to clear any debris that may cause flooding problems. This alleviates much of the flooding concerns in the City of Madison. The City of Madison is also not located next to any of the three major Rivers which inhabit Madison County.

The Town of Lee also has a high probability of flooding. The southeastern portion of the county contains a marshy wetland area known as San Pedro Bay. In past events, the Bay has filled to capacity with water through precipitation and then flooded over into surrounding creeks. The creeks flow through the Town of Lee and overwhelm their capacity to handle the drainage. The streets within the downtown area flood-out with each of these events. Many residents and businesses are vulnerable to these events and their damages. When the streets flood, the economic impact is felt because the stores lose business and people can't get to work.

The probability of a flooding event in the Town of Greenville is high. The town's storm water drainage system was built in the 1930's. Over the past 75 years, the system has become clogged through collected debris and has deteriorated to the point that even when there is minimal precipitation, many of the streets flood. One of the main thoroughfares in Greenville is Tram Road where many businesses reside. This area is one of the most affected in Greenville by flooding. It is not uncommon for Tram Street to contain 6-8 inches of water after a storm. As in Lee, the businesses and economy feel the impact as people cannot go to work and businesses cannot open.

Hazard Vulnerability Analysis by Jurisdiction:

The extent of a flood is generally measured in water levels and amount of damage done. Madison County is highly subject to riverine flooding due to heavy rains. They are categorized using the following:

- 100-year flood (1 percent chance per year)
- 50-year flood (2 percent chance per year)
- 25-year flood (4 percent chance per year)
- 10-year flood (10 percent chance per year)

These categories indicate a probability of occurrence (a 100-year flood has a 1% chance of occurrence in one year). The smaller percent chance of occurrence the more devastating the flood.

Madison County: Madison County as a whole is very vulnerable to the effects of flooding. The three main rivers, the Suwannee, Withlacoochee and Aucilla flow

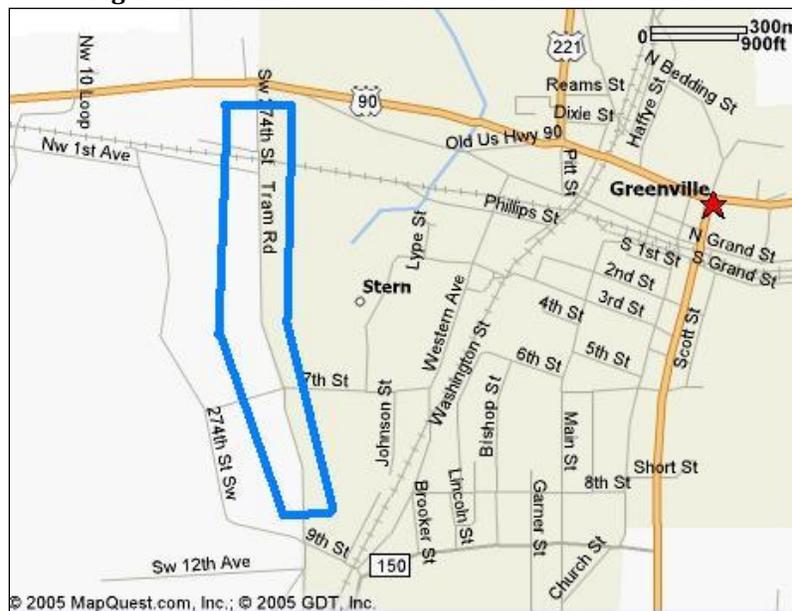
through the county and have all caused problems to varying degrees in the past. As delineated by the Future Land Use maps, most of the land immediately adjacent to the Suwannee, Withlacoochee and Aucilla Rivers are designated as either Agriculture or Conservation. These designations prohibit or severely limit development in the areas and indicate a natural or environmentally sensitive nature, which could be flood prone at times.

San Pedro Bay has been known to flood and cause damage historically. Economically, the county is challenged by flooding and has seven known repetitive loss properties. Areas of the Suwannee River are known to flood frequently and cause damage to homes as well.

City of Madison: The City of Madison is less vulnerable to floods and their impacts due to the upkeep and maintenance of their storm water system. Because of the maintenance, the storm water system can efficiently channel waters away from the city and keep streets clear of flooding. Because of this, the city's residence and businesses are not as impacted compared to the two other towns. The Public Works Department points out the fact that only 5-6 homes within the city have flood insurance because of the lack of need.

Town of Greenville: The vulnerability of a flooding faced by the town of Greenville is very high. The current storm water drainage is old and challenged when it comes to large rain events. The economy is heavily impacted and vulnerable because the main road, Tram Road, is one of the worst effected streets but is also one of the most important business areas. When Tram Road floods, people can not get to and from work and businesses are not able to operate under normal conditions.

Figure 27: Tram Road and Flood Prone Areas in Blue



The Town of Greenville is frequently impacted by flooding associated with weather systems that produce large amounts of rain or severe storm events. Historically, streets and yards flood on the North and Eastern parts of town during any heavy rainfall events. The town is surrounded on three sides by low lying land. Since about 2/3 of the Greenville residents are served by individual septic tank systems, many septic tanks back up during these events, creating potential health hazards. The backup of these septic systems cause a financial strain on the residents when they must have a company come and pump out their septic following each event. Water in the area stays for relatively long periods making it difficult for persons to get into and out of their homes due to street and yard flooding. Fortunately, no homes have been destroyed due to Flooding in recent years.

A CDBG grant in 2005 was used to elevate SW Tram Rd and install more and larger culverts to lessen the flooding along this road. The Town of Greenville, in conjunction with the Department of Transportation, also obtained a CDBG grant in 2009-2010 to install larger culverts, open ditches and generally work on the drainage system. These projects have done a lot to lessen some flooding in the city however they will always have problems due to the low elevation and surrounding wetlands.

Town of Lee: The Town of Lee and its residents are vulnerable to Flooding when storm systems produce heavy amounts of rain. These systems occur about every 5-6 years on average. The flooding in Lee is a result of several events that occur. The "Bays" or San Pedro Bay is located South East of SW CR 14 and East of S CR 53. Once these bays are filled to capacity with water, the excess water runoff is spilled into several of the smaller surrounding creeks. These creeks eventually run together into Norton Creek. The Norton Creek area is located between County Road 53 and County Road 413 in Madison County. This watershed is approximately 47 square miles located just west of the Withlacoochee River. Land use within the watershed is a mixture of open land, wetlands, and residential areas. There are large ponding areas, as well as sinkholes, including the Lee Sink Hole, within the watershed. Flooding of the low lying areas within the Town of Lee, and backwater from the Withlacoochee River has been reported.

In addition, San Pedro Bay consists of slow moving water mixed with vegetation which is constantly decaying and building up contaminants including Tannic Acid. When San Pedro Bay overflows due to flooding; much of this rotting and decaying vegetation along with its contaminants is flushed out of the bay and into the local water table, impacting the Town of Lees water quality.

Hazard History:

1998 – Heavy rains caused the Withlacoochee and Suwannee Rivers to flood in the Southern part of Madison County. Several homes were damaged, but most of the problems were a result of roads being flooded and impassable. For the first time in

history, Madison County received PA from the Federal Government. It resulted in funds of about \$ 250k, which were subsequently used in flooding mitigation projects within the county.

The following updated information was provided by the National Climatic Data Center (www.ncdc.noaa.gov) and the U. S. Geological Survey (www.usgs.gov):

May 16, 2008 – Four to six inches of rain caused areal flooding throughout much of Madison County. High water on US Highway 90 closed all but one lane in front of the Winn Dixie in Madison. Flooding was also reported near North Florida Community College. Slow moving thunderstorms deposited up to six inches of rain within a three-hour period, which produced areal flooding throughout Madison County. March-April, 2009 – Major flooding occurred in eastern portions of Madison County in late March and early April of 2009. Two major tributaries of the Suwannee River, the Withlacoochee and the Alapaha rivers, set new records for flooding.

NE Belleville Rd was underwater for close to a month and the county had to begin pumping the water off the road back into the river. There were people in this area who could only access their homes by boat for weeks.

The Withlacoochee at Pinetta reached a new record height on midnight of April 7. USGS measured the peak height at 41.34 feet, the highest the river had been measured in 77 years of records. The previous record for the river's height was set in the 1948 flood, when the river reached a height of 38.64 feet.

The magnitude of the flow in the Withlacoochee for April 7 indicates an approximate 2% chance of occurrence any year. Preliminary data indicate the peak discharge was 56,100 cubic feet per second, which indicates that the volume of water flowing through the river was at the second highest in the period of record. In the 1948 flood, the discharge was higher, at 79,400 cubic feet per second.

The Alapaha River near Jennings also made history on April 8 by discharging 26,000 cubic feet per second, breaking the previous record of 18,800, which was set in February of 1986.

U.S. Highway 90, one of two major east-west routes across north Florida, was closed at the Suwannee River bridge on the Madison-Suwannee county line about 70 miles east of Tallahassee.

In Madison County, a 71 year old Lee handyman was swept away by rising flood waters and drowned on April 5. His body was recovered on April 14.



Over the last 5 years Madison County has experienced several flood events. In April – May 2014 heavy rains caused retentions ponds to overflow, roadways closed for weeks due to being covered with water, yards were full of water making access to homes difficult. These floods were slow to recede requiring bottled water to be distributed by the Red Cross and temporary gravel driving paths to be built by the County. *Photos: WCTV Tallahassee*

Hazard in Relation to Critical Facilities:

All of the Critical Facilities in Madison County are located in Flood Zone X.

4. Wildfires

Hazard Description:

There are three different classes of wild land or wildfires. A surface fire is the most common type and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire is usually started by lightning and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles around. Wildfires present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity, and low precipitation during the summer, and during the spring, moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires.

Hazard Profile:

Madison County has experienced many small to moderate scale forest fires, 90% of which involved five acres or less. An exception is the 1986 fire in the San Pedro Bay wetland that burned over 26,000 acres of timber. Over half of the county is planted in pine, and much of the county is always vulnerable to forest fires, although the threat to the population at large is small. Unlike most of the United States, where most of the wildfires occur in the summer (July through September); Florida's "*wildfire season*" normally runs from December to June.

With this in mind, you would think that most of the acreage burned would also be during the winter. That is not the case. The number of acres burned due to wildfire peaks in May. Why do you think that is? The answer is that most of the fires that occur during the winter are caused by people, and are usually easy to get to by road. Also the winter months are cooler and compared to April and May they are normally wetter. In April and May Florida has a "dry spell". This is because the frontal passages from the north and west are no longer moving through the state and the summer thunderstorm activity has not started yet. That is not to say that there are

not some thunderstorms around, there are, and that is a big part of the problem. Even though it would seem that all those summer lightning fire would be responsible for more acres burned, again that is not the case, those few lightning fires in April and May burn a great deal more on average than do the summer fires.

These Lightning fires are often not as easy to get to as the winter man caused fires. For these two reasons 1. the drier weather, and 2. the difficulty of getting to the fires, they often have built to a size that makes them much more difficult to control. Just as the number of fires and acres burned changes through the year from month to month, the number of fires and acres burned changes from year to year. Some years Florida gets more rain, and people help by being more careful with fire in the wild-lands. Other years the weather does not cooperate, and that is when the Florida Division of Forestry really needs the help of the people in Florida.

Table 35: Madison County Wildfire Causes 1/1/2010 - 9/4/2015

Cause	Fires	Percent	Acres	Percent
Campfire	10	2.96	23.4	2.97
Children	3	0.89	0.5	0.06
Debris Burn*	0	0	0	0
Debris Burn--Auth--Broadcast/Acreage	21	6.21	75.5	9.58
Debris Burn--Auth--Piles	13	3.85	30.7	3.89
Debris Burn--Auth--Yard Trash	54	15.98	167.2	21.2
Debris Burn--Nonauth--Broadcast/Acreage	19	5.62	41.7	5.29
Debris Burn--Nonauth--Piles	17	5.03	13.4	1.7
Debris Burn--Nonauth--Yard Trash	17	5.03	55.2	7
Equipment use*	0	0	0	0
Equipment--Agriculture	8	2.37	11.4	1.45
Equipment--Logging	7	2.07	5.6	0.71
Equipment--Recreation	3	0.89	0.3	0.04
Equipment--Transportation	62	18.34	21.3	2.7
Incendiary	9	2.66	20.6	2.61
Lightning	19	5.62	152	19.28
Miscellaneous --Breakout	0	0	0	0
Miscellaneous --Electric Fence	2	0.59	7.1	0.9
Miscellaneous --Fireworks	0	0	0	0
Miscellaneous --Power Lines	26	7.69	43.8	5.55
Miscellaneous --Structure	9	2.66	33.4	4.24
Miscellaneous--Other	11	3.25	9.1	1.15
Railroad	1	0.3	0.1	0.01
Smoking	2	0.59	3	0.38
Unknown	25	7.4	73.2	9.28
Total	338		788.5	

Source: Florida Forest Service <http://tlhfor013.doacs.state.fl.us/PublicReports/FiresByCause.aspx>

Hazard Probability:

The probability of a wildfire in Madison County is one every one to five years. Within the county during the summer, it is common for wildfires to occur and be responded to daily. The cities conduct citizen education to help keep wildfires from occurring in the jurisdictions. The cities also have a better response capability within their jurisdictions to extinguish a fire before it escalates into a wildfire.

Hazard Vulnerability Analysis by Jurisdiction:

The extent of wildfire impacts is typically measured in the number of acres burned. However, the associated impacts cannot be easily calculated. A small fast moving fire in the urban interface could cause property damage or injuries while a large fire in a rural area could cause neither. Typically most wildfires in Madison County are under 250 acres and do not cause minimal structural damage.

Madison County: Since most of the County wooded forest, the area is extremely susceptible to fires. Whether the fire is caused by lightning or by human interaction, the resulting danger and damage is the same. Though loss of life is possible with fires, there is usually enough warning time to evacuate the impacted populations. Therefore the primary vulnerability is buildings and structures and the related economic impact. Another potential impact is the economic losses to the timber industry in the area. Large timber farms are located within Madison County. During hot summers these farms can become vulnerable to a wildfire thereby damaging the local economy. San Pedro Bay is extremely vulnerable to wildfires. Historically, the Bay has caught fire and burned for weeks on end.

City of Madison, Towns of Greenville and Lee: The City of Madison is not very vulnerable to wildfires. The City of Madison has noted however that to the south of the city is an area with a higher vulnerability to wildfires and does pose a risk for fires to approach from that direction.

Greenville at one time was an important timber and sawmill community. A wildfire could significantly impact the economics of the community if a wildfire were to damage surrounding timber farms.

Lee is surrounded by areas of crops, farmland and the San Pedro Bay. Every summer, the local fire department is on average called to respond to 1-2 wildfires a month. The amount of damage and vulnerability to the town of Lee is related to the locations where these wildfires are ignited and how long they burn in relation to the arrival of first responders.

Hazard History:

June 5, 1985 - The fire started at 5:05 PM. Bee Haven Bay, Madison County FL 27,600 acres burned.

Summer of 1998 – A 32,000 acre wildfire burned for seven weeks in San Pedro Bay. After the sixth week, once the fire on the surface was contained, a helicopter flew over to assess the damage. Using a heat sensor, it found that 4,000 acres of peat underneath the bog was still burning. There were no records of deaths or injuries for this event. That same summer, a wildfire to the south threatened the community of Perry in Taylor County. It came within six miles of the town limits and at times there were discussions to evacuate the town.

June, 2000 – A brush fire occurred at Shady Grove and burned about 200 acres. Sheriff deputies closed down Hwy 14 as it was impassable due to smoke.

August, 2000 – A fire in San Pedro Bay burned about 150 acres.

May 30, 2001 – Mallory Swamp in Lafayette and Dixie County caught fire and required the response of emergency personnel from 4 counties. It burned more than 61,000 acres. Although it did not take place in Madison County, it did occur within the regional area of Madison County and had similarities to the conditions found in San Pedro Bay.

May 2001 – Lightning sparked a wildfire in the Koon Pond area. It burned more than 1200 acres. No injuries.

November 21, 2001 – Madison County Fire fighters and Florida Division of Forestry battled a 90 acre wildfire in Southern Madison County. No deaths or injuries reported. An outdoor burning ban was issued for Madison County to help alleviate the chance of future fires.

The following information concerning recent fire events was provided by Elijah Terrell, the Forest Area Supervisor for Madison County:

April 2, 2006 – The Morris Steen Road Fire escaped a controlled burn and burned twenty acres. It occurred in Madison County section 8 2S 7E, which is one mile north of Shady Grove. The fire spotted across Highway 221 and the CSX railroad tracks. Highway 221 was closed temporarily due to smoke. Several fire departments from Madison and Taylor counties were involved.

March 20, 2007 – The Madison/Jefferson Fire was an incendiary fire which spotted across Highway 221 near the Madison/Jefferson County line and burned 45 acres. The fire involved road closure and participation from both Madison and Jefferson County fire departments.

March 22, 2007 – The Hill Lake Fire escaped from a camp fire in the northern part of San Pedro Bay and burned 77 acres. The fire burned young planted pines and swamp material before being suppressed by Division of Forestry crews.

April 16, 2007 – The Mill Creek Fire burned 50 acres near the Twin Rivers State Forest. It was a lightning fire that burned through the night and was discovered creeping around the following day by a Division of Forestry airplane. It was suppressed by Division of Forestry crews.

May 15, 2007 – The Kelly Fire burned 46 acres in San Pedro Bay. It was a lightning fire that burned through the night and was found creeping around the next day by a Division of Forestry helicopter. It burned planted pines and swamp material. The fire was suppressed by crews from the Division of Forestry.

May 11, 2008 – The Aucilla Plantation Fire burned 30 acres in the Open Sand Loop Road area. The fire was caused by downed power lines from high winds. It burned planted pines and swamp fuels in a vacant sub-division. The Greenville Volunteer Fire Department and Division of Forestry crews extinguished the blaze.

March 6, 2009 – The Rutherford 2 Fire burned 4 acres off of Rutherford Road. It escaped from a controlled burn and threatened one home before spotting across a dirt road. The fire was extinguished by the Lee Volunteer Fire Department, Madison Fire Rescue, and Division of Forestry crews.

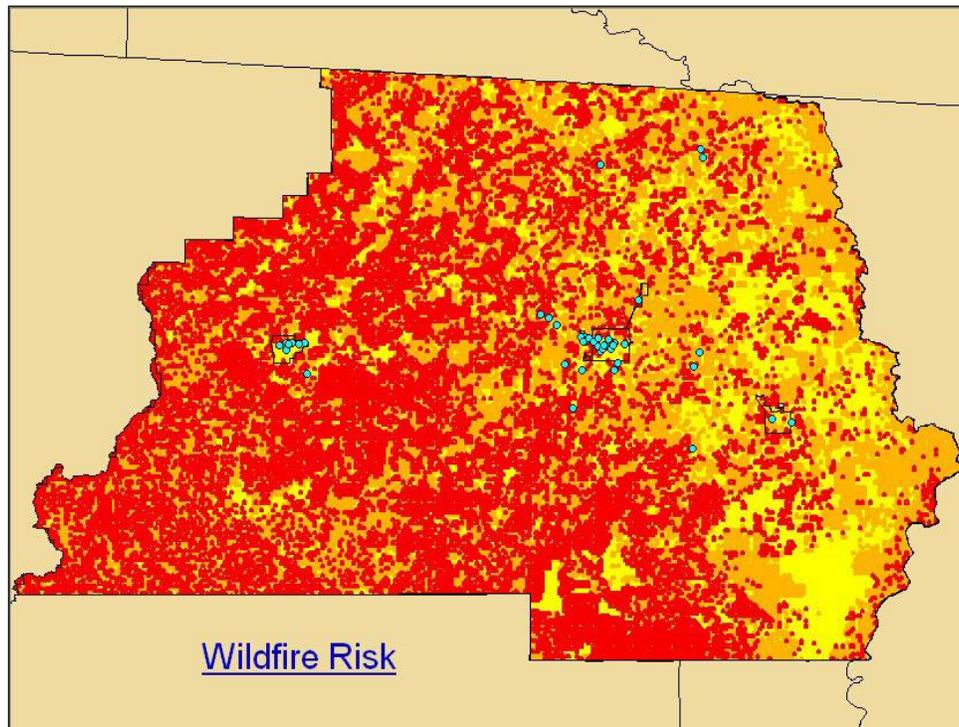
May 26, 2012 – The Madison 911 Center received a report of a brush fire in the vicinity of 6216 NE Colin Kelly Highway (also known as Highway 145 or the Valdosta Highway). As fire units were being dispatched the call was upgraded to a structure fire and brush fire with one home ablaze and two more in danger.



Photos: WCTV Tallahassee

Hazard in Relation to Critical Facilities:

Figure 28: Critical Facilities in Relation to Wildfire Risk



Source: MEMPHIS

Based on the GIS data as provided by the MEMPHIS system, and cross referencing a GIS list of critical facilities in Madison County, there are

30 Critical Facilities Located in Low Wildfire Risk Areas

Gas Transmission Station #37134
 Greenville City Hall
 Greenville Elementary
 Greenville Fire Department
 Greenville Hills Academy
 Greenville Hills Academy
 Greenville Post Office
 Joann Bridges Academy
 Madison City Hall
 Madison Coody Well
 Madison Correctional Institute
 Madison County Comm. Center
 Madison County EOC
 Madison County Health Department
 Madison County High School

Madison County Hospital
 Madison Fire Department
 Madison Police Department
 Madison Post Office
 Madison Water Dept./Garage
 New Testament Christian Center
 North Florida Comm. College
 Pinetta Elementary
 Pinetta Post Office

Madison County Courthouse
 Madison County Courthouse Annex
 Madison County EMS

Progress Energy Substation
 Tri County Electric – C. Lake
 Tri County Electric Substation 2

16 Critical Facilities Located in MEDIUM Wildfire Risk Areas:

C. Lake Waste Water Plant
 Embarq Communications
 Florida Highway Patrol
 Greenville Water Treatment Plant
 Lee City Hall
 Lee Elementary
 Madison Academy
 Madison Barrs Field Well

Madison Chason Well
 Madison County Air Strip
 Madison Co. Road Dept.
 Madison Co. Waste Water Plant
 Pine Lake Nursing Home
 Tri County Electric - Madison
 Tri County Electric - Overstreet
 Tri County Electric Substation

6 Critical Facilities Located in HIGH Wildfire Risk Areas:

Greenville Waste Water Treatment Plant
 Lake Park of Madison
 Lee Post Office
 Madison Central School
 Madison Nursing Center
 Tri-County Electric – Greenville

5. Winter Storms

Hazard Description:

A winter storm can range from moderate snow over a few hours to blizzard conditions with high winds, freezing rain or sleet, heavy snowfall with blinding wind-driven snow and extremely cold temperatures that lasts several days. Some winter storms may be large enough to affect several states while others may affect only a single community. All winter storms are accompanied by cold temperatures and blowing snow, which can severely reduce visibility. A severe winter storm is one that drops 4 or more inches of snow during a 12 -hour period, or 6 or more inches during a 24 hour span. An ice storm occurs when freezing rain falls from clouds and freezes immediately on impact.

All winter storms make driving and walking extremely hazardous. The aftermath of a winter storm can impact a community or region for days, weeks, and even months. Storm effects such as extreme cold, flooding, and snow accumulation can cause hazardous conditions and hidden problems for people in the affected area. People can become stranded on the road or trapped at home, without utilities or other services. Residents, travelers and livestock may become isolated or stranded without adequate food, water and fuel supplies. The conditions may overwhelm the capabilities of a local jurisdiction. Winter storms are considered deceptive killers as

they indirectly cause transportation accidents, and injury and death resulting from exhaustion/overexertion, hypothermia and frostbite from wind chill, and asphyxiation; house fires occur more frequently in the winter due to lack of proper safety precautions. "Wind chill" is a calculation of how cold it feels outside when the effects of temperature and wind speed are combined. On November 1, 2001, the National Weather Service (NWS) implemented a replacement Wind Chill Temperature (WCT) index for the 2001/2002 winter season. The reason for the change was to improve upon the current WCT Index, which was based on the 1945 Siple and Passel Index. A winter storm watch indicates that severe winter weather may affect your area. A winter storm warning indicates that severe winter weather conditions are definitely on the way. A blizzard warning means that large amounts of falling or blowing snow and sustained winds of at least 35 miles per hour are expected for several hours.

Madison County could experience minimum temperatures at or close to 0 degrees Fahrenheit. A record of -2 was recorded in Tallahassee on January 21, 1985. The average low temperature in Madison County usually occurs in January near 38.2 degrees.

The probability of a Winter Storm impacting Madison County is one every one to three years.

Table 36: 1981-2010 Temperature Normals

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Max	63.6	67.3	73.4	79.2	86.1	90.4	91.4	91.1	88.0	81.1	72.8	65.2	79.2
Mean	50.9	54.4	60.0	66.0	73.7	79.3	81.0	80.8	77.3	69.0	60.4	52.9	67.2
Min	38.2	41.6	46.6	52.7	61.3	68.2	70.6	70.4	66.6	56.9	47.9	40.6	55.2

Source: <http://climatecenter.fsu.edu/products-services/data/1981-2010-normals/madison>

Hazard Impact Analysis:

Madison County structures are not at risk from a winter storm.

Hazard Vulnerability Analysis by Jurisdiction:

Madison County: Winter Storms are more common in Madison County than most counties in Florida due to its geographic location in the Northern Florida. Winter Storms can impact all of the Madison County planning area and jurisdictions. Past events have caused widespread damage from falling trees and power lines, leading to power outages and the activation of emergency shelters. In some cases, Interstate 10, the major transportation route between Tallahassee and Jacksonville has been shut down due to these storms leaving motorists stranded and emergency

responders scrambling to provide assistance. Vulnerability in Madison County due to winter storms and freezing conditions can be characterized in three categories:

- Human health issues due to exposure. In severe conditions many Floridians will be unprepared for extreme cold. The geographic location of Florida creates warm, tropical temperatures most of the year. Therefore, some residents will not have sufficient heating capabilities and could be exposed to the elements. Residents have also been known to cause themselves injury or death by using dangerous heating practices, including the indoor use of electric and propane heaters designed for the outdoors.
- Agricultural and livestock issues due to exposure. Much of Madison County's economy is based on agriculture and livestock, so extreme cold conditions will severely impact this sector. Prolonged periods of cold will result in the financial loss to farmers from damaged crops and animals further endangering the businesses of many small and medium sized farms.
- Transportation issues due to icy driving conditions. Interstate 10 is the major transportation corridor through Madison County. With winter storms, this and other roads have become icy causing dangerous conditions for commercial and residential traffic throughout the county. Accidents are a high probability with the subsequent injuries and economic impact. Also, an increase in costs to the county will be felt for providing services such as police for accident reporting and road/traffic control, public works for debris removal and road repairs, and emergency services for managing the event.

Madison County is more economically vulnerable to the effects of a Winter Storm due to the risks faced by the agriculture and livestock industry. Cold temperatures can drastically affect the crops and growth for that season. Many crops can die off and leave an economic burden for farmers. Madison County is less vulnerable than the cities to injuries and deaths from a Winter Storm/Freeze because of a lower concentration of people.

City of Madison, Towns of Greenville and Lee: The overall vulnerability to Winter Storms is the same to each of the cities but slightly different than the vulnerability faced by the county. The major differences being the Cities are more vulnerable to transportation and traffic issues due to the greater number of roads and local population density. Also the larger number of people will increase the probability of injuries, illnesses or deaths related to the cold. The city of Madison has pointed out that many of the problems faced by the County are related to transportation issues and limbs falling. However, the City of Madison faces a different issue with the water system since they run the Water service for the county. In many cases, pipes can freeze and burst. This creates more work and overtime for the Public Works department.

The health risks associated with Winter Storms are also a considerable problem. With Florida being so hot in the summer many people have their gas pumps and

pilot lights turned off. When a fast moving freeze develops in the area, everyone wants their pilot lights reignited simultaneously causing a backup of service calls and overtime. The city is trying to combat these issues by offering free propane water heaters to the public. It is an effort to make propane a useful product year round and eliminating many of the customers who discontinue their service each summer season.

From a historical/economic standpoint, the city and county residents were heavy into the Tobacco industry for much of the 1900's. It's questioned whether some of the hard winter freeze events felt during the 1980's and 90's led to the demise of the once prospering industry. During the winter storm of 1980 there was widespread crop damage to tobacco. Most of the farmers in the area lost their crops that year and were plagued financially; many went out of business. Those who did not, fell fate to the winter storms to come.

Hazard History:

March 1980 – Madison County suffered a strong winter storm in March of 1980. A weather system, warned to be cold, turned into a serious freeze event. The system brought large amounts of sleet and freezing rain to the area. Roads were frozen over and impassable. Icicles over 1 and 2 feet in length caused a danger for pedestrians as they dangled from rooftops. There were numerous car wrecks due to the conditions; however, no deaths were attributed to the event. The tobacco industry was damaged heavily and many farmers saw their entire crop destroyed that year.

Winter freeze in 1989-90 A winter storm during Christmas in 1989 brought 1/2" to 1 inch of snow in Madison and ice on I-10 and I-75. The Florida Department of Transportation had to close portions of I-75 North of Ocala as well as part of I-10 in the Madison County area. A shelter in Madison was opened to house motorists that were stranded on the I-10 corridor.

March of 1993 – A severe winter storm brought freezing rain and sleet to Madison County. The storm, which many in the area refer to as “The Storm of The Century”, came in from the Gulf of Mexico and brought high winds and a 10-12 foot storm surge to surrounding counties. Trees across the county were snapping from the weight of the ice on limbs. The trees fell on surrounding power lines causing the electricity to go out in the county. Also, many homes were damaged by falling trees causing serious roof damage. The power was out for two days in most areas and up to a week in parts of the county. Many wrecks were reported on I-10. No deaths were reported however there were several injuries.

January 2014 – A winter storm impacted Northern Florida in January 2014. Icy roads caused major transportation issues and low temperatures were dangerous to people and animals. County and city government offices were closed 1/28 – 1/29, 2015. Schools were closed 1/28 – 1/30 2015.

Hazard in Relation to Critical Facilities:

Impacts to critical facilities are minimal. Closure of government services due to a winter storm impacts services provided to citizens.

6. Droughts

Hazard Description:

A drought is a period of drier-than-normal conditions that results in water-related problems. Precipitation falls in uneven patterns across the country. When no rain or only a small amount of rain falls, soils can dry out and plants can die. When rainfall is less than normal for several weeks, months, or years, the flow of streams and rivers declines. Water levels in lakes and reservoirs fall, and the depth to water in wells decreases. If dry weather persists and water supply problems develop, the dry period can become a drought. The first evidence of drought usually is seen in records of rain fall. Within a short period of time, the amount of moisture in soils can begin to decrease. The effects of a drought on flow in streams and rivers or on water levels in lakes and reservoirs may not be noticed for several weeks or months. Water levels in wells may not reflect a shortage of rainfall for a year or more after the drought begins. A period of below-normal rainfall does not necessarily result in drought conditions. Some areas of the United States are more likely to have droughts than other areas. In humid, or wet, regions, a drought of a few weeks is quickly reflected in a decrease in soil moisture and in declining flow in streams. In arid, or dry, regions, people rely on ground water and water in reservoirs to supply their needs. They are protected from short-term droughts, but may have severe problems during long dry periods because they may have no other water source if wells or reservoirs go dry.

Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can provoke dust storms and low visibility. Droughts occur when a long period passes without substantial rainfall. A heat wave combined with a drought is a very dangerous situation.

Drought Emergency Information

1. Heat kills by pushing the human body beyond its limits. Under normal conditions, the body's internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain a normal temperature.
2. Most heat disorders occur because the victim has been overexposed to heat or has over exercised for his or her age and physical condition. Other conditions that

can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality.

3. A prolonged drought can have a serious economic impact on a community. Increased demand for water and electricity may result in shortages of resources. Moreover, food shortages may occur if agricultural production is damaged or destroyed by a loss of crops or livestock.

Hazard Profile:

Periodic droughts have been a problem in Madison County and the potential for one exists each year. Should a prolonged drought occur during the summer months, with temperatures above normal levels, there would be severe losses in all areas of agricultural production. These losses would include poultry production, livestock operations and approximately 35,000 acres of tobacco, soybeans, corn and watermelons.

As stated in the Madison County CEMP, there has been no occurrence of droughts severe enough to threaten the lives of the Madison County residents, although periodic droughts have been a problem in Madison County region. However, there is a secondary risk of forest, grass and muck fires because of drought conditions. This will, therefore, be an added concern for the county, as well as, the State Division of Forestry.

In addition, the CEMP hazard assessment outlines that extreme heat is rare and is a minimal threat to human safety as well as to the cattle and agricultural industries in Madison County. Each year, temperatures rise into the high 90's and isolated low 100's.

Madison County utilizes the Keetch-Byram Drought Index (KBDI) to monitor drought conditions. The Keetch-Byram drought index (KBDI) is a continuous reference scale for estimating the dryness of the soil and duff layers. A drought hit the region that registered a 700 reading on the Keetch Byram Index. It is reasonable to assume that the county could encounter a similar drought event in the future.

Hazard Impact Analysis:

Madison County structures are not at risk from a drought event.

Hazard Vulnerability Analysis by Jurisdiction:

Madison County: Droughts occur equally and at the same rate across the entire Madison County area, however, the vulnerability to the county versus the cities are quite different. The Madison County economy depends heavily on agricultural business and farming. The County areas with the high level of agriculture, livestock, and timber forest are much more economically vulnerable than the cities. When Droughts occur, the county suffers heavily through reduced crop growth and the

onset of wildfires. A severe drought may have an adverse impact on farm crops as well as on the poultry and cattle raising industry. Droughts and heat waves lead to increases in wildfire which can devastate agricultural areas with damages. Additionally, lack of moisture in the soil can severely damage the growth of timber, one of the counties most important industries. As a result, the county is more economically vulnerable than the cities to Droughts.

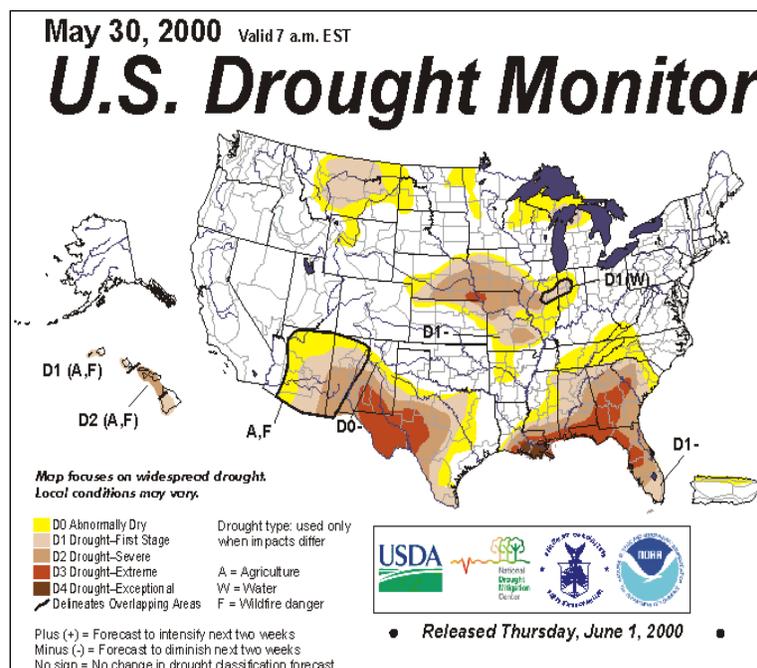
City of Madison, Towns of Greenville and Lee: All three cities are equally vulnerable to the effects regarding drought. Compared to the county, the cities are less economically vulnerable to droughts but are more vulnerable to loss of life. The urban environment found in the cities and the surrounding areas has a higher population of humans at risk from heat related illnesses and possible deaths. There are more resources available within the cities found to offer aid these problems, but the human risk is higher than the rest of the county in nature.

As mentioned above, economically the cities do not share an equal vulnerability faced by the risks of the county.

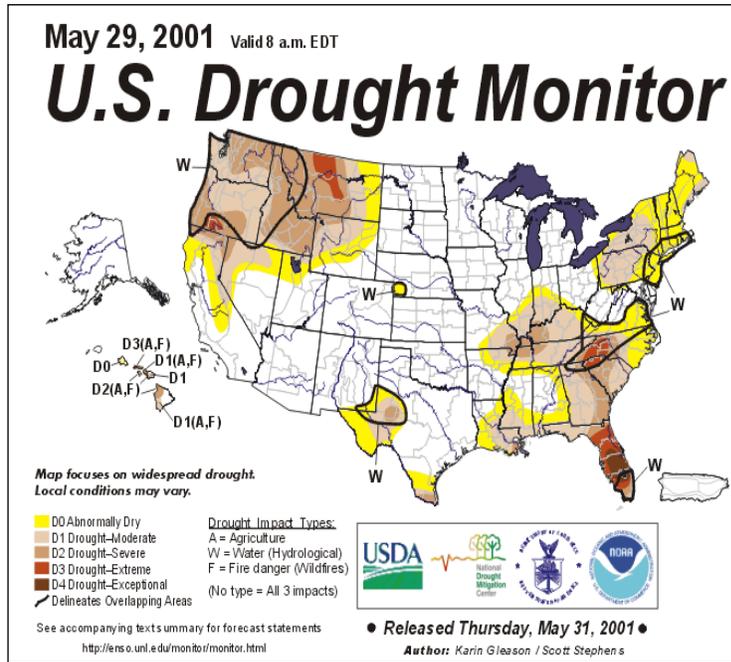
Hazard History:

April of 1998 – Drought hit the region that brought a 700 reading on the Keetch – Byram Drought Index. There were severe damages to the crops within the county. Many wildfires broke out in April/May of that year due to dryness. Taylor County to the south was declared and received a fire suppression grant from the damages. At one point there were volunteers from 48 states assisting with the situation.

May 2000 – Madison County was listed at 627 on the Keetch - Byram Index, which is an extremely high mark. The potential for wildfires was very high and the local fire departments were on heightened alert. There was a state wide ban issued on outdoor burning.



May 2001 – The Keetch - Byram Index reached 620 (800 is desert conditions). Fire Chief Allen Blanton recommended a state of emergency be declared as well as no burn policy if the index reached 650.



May 2002- Madison County suffered a month long drought without precipitation as well as high levels of temperatures. The Keetch - Byram Index was at 601, which is nearing “Dangerous Levels”. The FDOF and local fire departments were on a heightened level of awareness.

July 2002 – Madison County received daily heat advisories by the National Weather Service during July. Heat indexes were reaching the 110-115 degree range. Warnings were issued to stay indoors. This is following a May/June drought that had Fire responders on high alert the past months.

Table 37: Drought history 2010-2015

Date	Type	Deaths	Injuries	Damage
11/30/2010	Drought	0	0	0
12/1/2010	Drought	0	0	0
1/1/2011	Drought	0	0	0
2/1/2011	Drought	0	0	0
5/31/2011	Drought	0	0	0
6/1/2011	Drought	0	0	0
7/1/2011	Drought	0	0	0
8/1/2011	Drought	0	0	0

9/1/2011	Drought	0	0	0
10/1/2011	Drought	0	0	0
11/1/2011	Drought	0	0	0
12/1/2011	Drought	0	0	0
1/17/2012	Drought	0	0	0
2/1/2012	Drought	0	0	0
3/1/2012	Drought	0	0	0
4/1/2012	Drought	0	0	0
5/1/2012	Drought	0	0	0
6/1/2012	Drought	0	0	0
1/29/2013	Drought	0	0	0
2/1/2013	Drought	0	0	0

Source: <http://www.ncdc.noaa.gov/>

These drought events were included in Storm Data when the intensity of the moisture deficiency and other factors resulted in a D2 classification, or higher, as indicated in the US Drought Monitor.

Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: <ul style="list-style-type: none"> ▪ short-term dryness slowing planting, growth of crops or pastures Coming out of drought: <ul style="list-style-type: none"> ▪ some lingering water deficits ▪ pastures or crops not fully recovered
D1	Moderate Drought	<ul style="list-style-type: none"> ▪ Some damage to crops, pastures ▪ Streams, reservoirs, or wells low, some water shortages developing or imminent ▪ Voluntary water-use restrictions requested
D2	Severe Drought	<ul style="list-style-type: none"> ▪ Crop or pasture losses likely ▪ Water shortages common ▪ Water restrictions imposed
D3	Extreme Drought	<ul style="list-style-type: none"> ▪ Major crop/pasture losses ▪ Widespread water shortages or restrictions
D4	Exceptional Drought	<ul style="list-style-type: none"> ▪ Exceptional and widespread crop/pasture losses ▪ Shortages of water in reservoirs, streams, and wells creating water emergencies

Source: <http://droughtmonitor.unl.edu/AboutUs/ClassificationScheme.aspx>

Madison County could experience maximum temperatures over 100 degrees Fahrenheit. A record of 105 degrees was set in Tallahassee on June 15, 2011. The

average high temperature in Madison County usually occurs in July near 91.4 degrees.

Table 38: 1981-2010 Temperature Normals

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Max	63.6	67.3	73.4	79.2	86.1	90.4	91.4	91.1	88.0	81.1	72.8	65.2	79.2
Mean	50.9	54.4	60.0	66.0	73.7	79.3	81.0	80.8	77.3	69.0	60.4	52.9	67.2
Min	38.2	41.6	46.6	52.7	61.3	68.2	70.6	70.4	66.6	56.9	47.9	40.6	55.2

Source: <http://climatecenter.fsu.edu/products-services/data/1981-2010-normals/madison>

Hazard in Relation to Critical Facilities:

There are no critical facilities at risk for a drought event.

7. Sinkholes

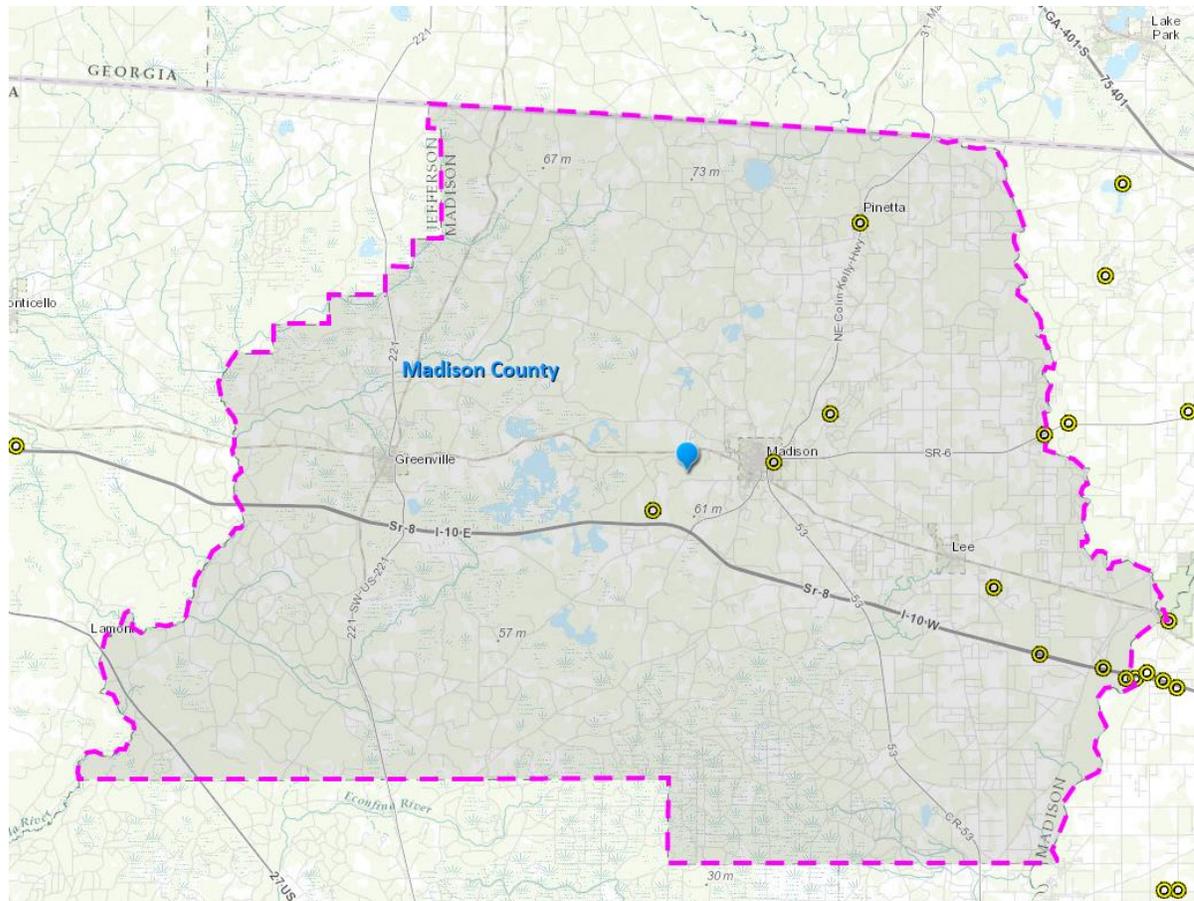
Hazard Description:

Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground. Sinkholes are dramatic because the land usually stays intact for a while until the underground spaces just get too big. If there is not enough support for the land above the spaces then a sudden collapse of the land surface can occur. These collapses can be small or they can be huge and can occur where a house or road is on top.

The most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania.

Hazard Profile:

Based on MEMPHIS, most of Madison County is at a low risk of sinkholes, however, there are three to four identified areas that pose a much higher risk to the community. Two of these identified locations are close in proximity to the townships of Madison and Lee.

Figure 29: Madison County Identified Sinkhole Locations

Source: Florida Geological Service <http://ca.dep.state.fl.us/mapdirect/?focus=fgssinkholes>

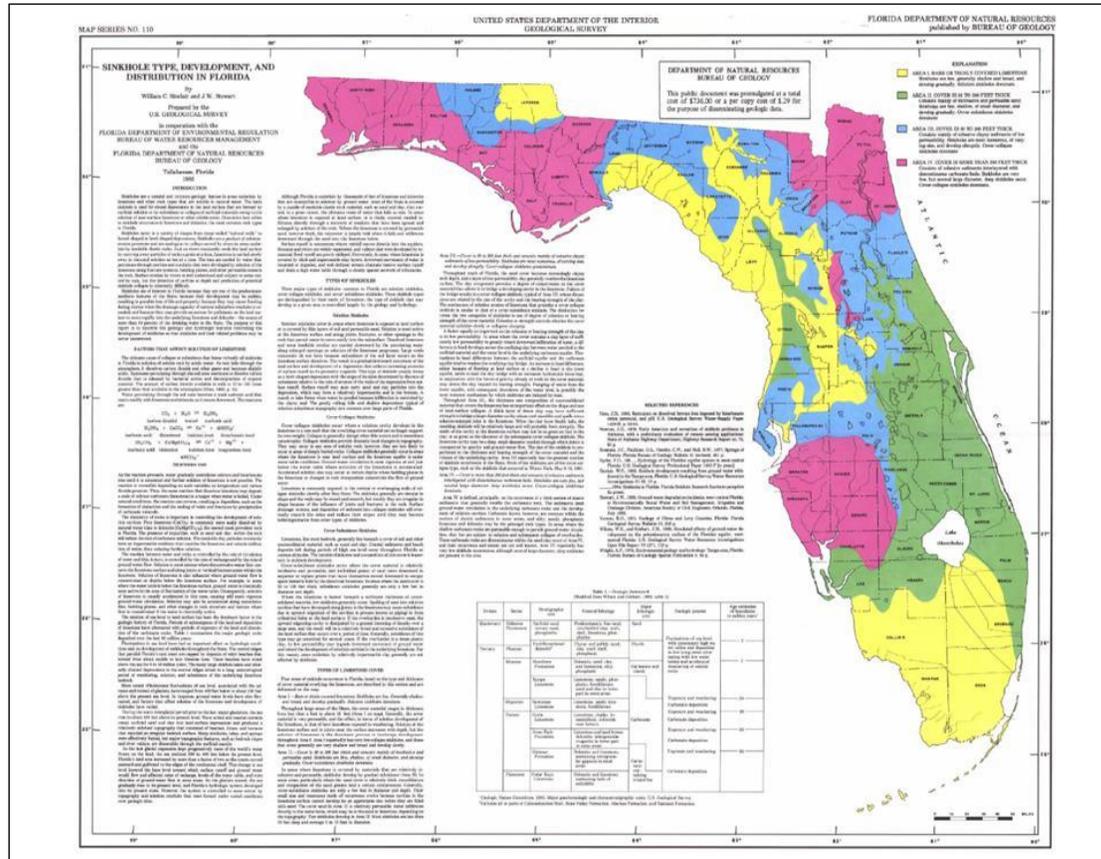
There are as many as 150 sinkholes reported each year in Florida. This is due to the fact that Florida is basically all limestone with a thin layer of sediment covering it, usually very loose sand. But the covering on the porous limestone below is often only temporary. Limestone is very soluble. And as water moves through it, small holes develop and grow into larger holes. The overburdened sediments can cover the hole for a certain amount of time, but once the holes gets larger than their ability to bridge across it, the sediments collapse into it.

There are usually sinkholes common wherever you have limestone terrain. Sinkholes are rare in the southern part of the state, with central Florida and the Big Bend seeing the most.

The Following Map from the Department of the Interior, Geological Survey, shows that Madison County has two distinct risk zones for sinkholes. Most of the County is in the blue area designating it a high risk area with a range of 30-200 feet of earth

covering the underlying limestone. The higher risk area on the Eastern side of the county in Yellow identifies it as having a bare or thin cover on the limestone. The Town of Lee is located in this elevated risk area.

Figure 30: Sinkhole Risk Zones in Relation to Madison County



Source: Department of the Interior, Geological Survey

Sinkholes forming from natural causes

Sinkholes have a strong occurring relationship with the years that follow a Drought. When an area has a long-term lack of rain and water levels decrease, there’s usually a correlated link to an increase in incidences of sinkholes being reported. Historically, years where dry-weather has been followed by wet-weather, there have been some of the greatest increases sinkhole occurrences.

Sinkholes forming from man-made causes

Ground water pumping in specific areas when water levels are already low and are forced lower can trigger a more sudden collapse of overburdened sediments and create sinkholes that might not have other wise happened. Increases in ground water pumping, loading at land surface, retention pond building, and altering a

landscape where you're changing the overburdened thickness are all activities that can induce sinkholes.

Sinkhole extent is measured in the depth and size of the hole. There is a sinkhole in Lee that has existed for more than 50 years. It is approximately 2 acres in size and measures 34 feet deep at the center. Although unlikely, it is possible that a similar sinkhole could form in the county.

Hazard Probability:

The probability that a sinkhole will occur in Madison County sometime in the near future is every fifty to one-hundred years, but the likelihood of this hazard causing significant damage to the county in general is very low. These events are isolated and can range in size from just a few feet wide to a couple of acres. When sinkholes form in an unpopulated area, they usually go unnoticed and cause little to no damage. However, when they occur in a populated area, the results can be severe. Vulnerability from sinkholes includes impact to structures, roadways, or other infrastructure. All structures, utilities, systems, and populations are equally vulnerable. Impacts could range from minor damage to a home or road, to an entire city block. Even a small sinkhole could cause foundations or walls to shift or crack. Sinkholes typically reduce real estate values which has a direct impact on the economy and the tax base of local governments. Increase in insurance costs and uninsured losses becoming more frequent as affordable insurance becomes less available. In past cases in Florida, entire homes have been swallowed up due to sinkholes forming under them. When this occurs, there is little that the community can do to prevent it. The probability of a sinkhole affecting the City of Madison is high, based on the MEMPHIS analysis. However, the representatives of the City of Madison have stated that it is a low priority to them because of the infrequent occurrence combined with the minimal expense that it has caused in the past. The probability of a sinkhole in Lee is Medium to High because of the surrounding area historically.

Hazard Vulnerability Analysis by Jurisdiction:

Madison County: The vulnerability of Madison County is low regarding sinkholes. There are three locations identified by the USGS within the county. There's a low risk of death or injuries to residents based on the rural surroundings of the county. A sinkhole is most likely going to occur in an area of unpopulated land and will have little to no economic impact.

City of Madison, Towns of Greenville and Lee: Each of the cities face similar vulnerabilities to the impacts of sinkholes. The increased infrastructure and populations heighten the economic vulnerabilities. Of the three cities, Madison and Lee have the highest vulnerability due to the past historical sinkhole events, as well as, documentation provided by the USGS and the Memphis System. If a sinkhole occurs in one of the cities, the vulnerability to damaging structures is higher than that faced by the county.

Hazard History:

In 2000, a sinkhole formed 7 miles south of the City of Madison along County Road 360. Part of the road was damaged due to the event and had to be repaired. The Madison County Public Works Department filled the hole in and repaved the road. There is a sinkhole located in Lee that has existed for more than 50 years. It is roughly the size of 2 acres of land and is located just south of Interstate 10. The sinkhole is 34 feet deep at the center.

In Marcy 2014, a sinkhole formed at the eastern shoreline of Lake Frances. The hole was 12-feet deep and 4-feet wide. City of Madison work crews responded by vacuuming the water out of the hole, then filling the hole with dirt. Additionally the crews fortified a nearby street pole with support beams to keep it from falling on Lake Shore Drive. The pole carries electrical power to operate the aerating fountain on Lake Frances.



Picture: Madison Florida News

Hazard in Relation to Critical Facilities:

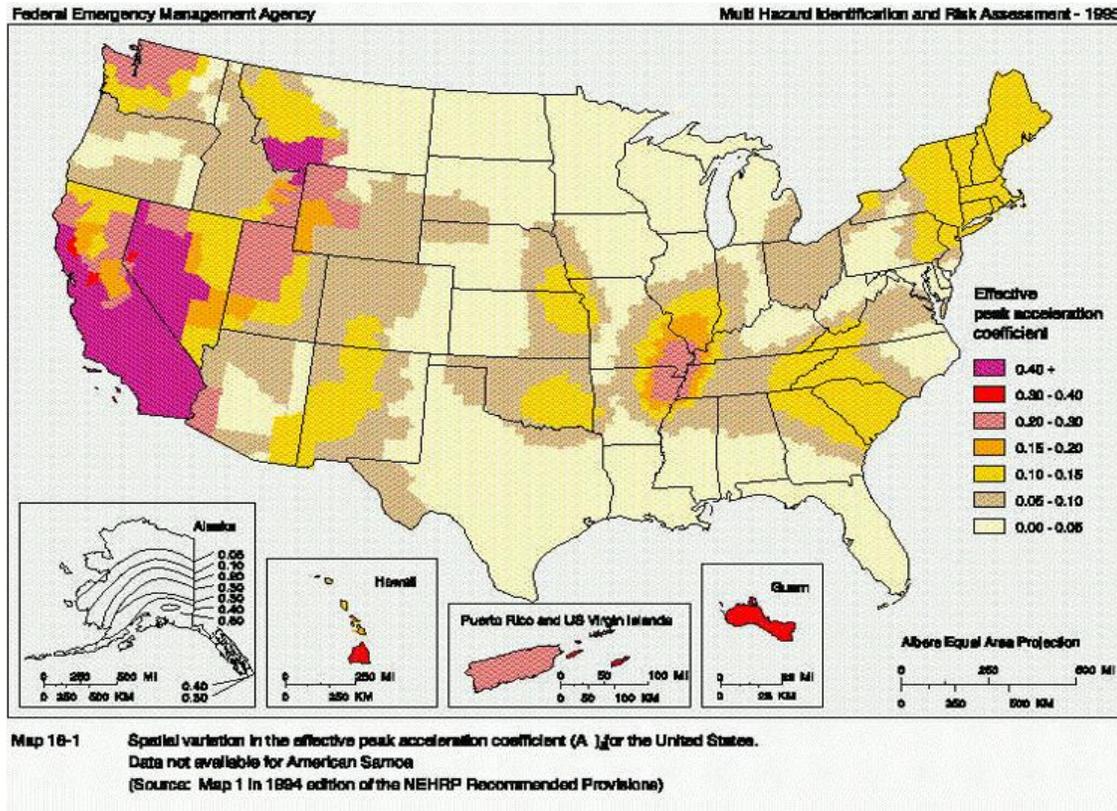
Critical facilities have the same likelihood of being impacted by a sinkhole as any other structure. No critical facilities have been impacted by a sinkhole in Madison County.

8. Earthquakes

Hazard Description:

Most earthquakes are causally related to compressional or tensional stresses built up at the margins of the huge moving lithospheric plates that make up the earth's surface. The immediate cause of most shallow earthquakes is the sudden release of stress along a fault, or fracture in the earth's crust, resulting in movement of the opposing blocks of rock past one another. These movements cause vibrations to pass through and around the earth in wave form, just as ripples are generated when a pebble is dropped into water. Volcanic eruptions, rock-falls, landslides, and explosions can also cause a quake, but most of these are of only local extent.

Figure 31: Tectonic Plate Earthquake Frequency in the United States



According to the theory of plate tectonics, the earth's crust is divided into several major plates, some 50 miles thick, which move slowly and continuously over the 124 interior of the earth. Most earthquakes are initiated when, due to slowly accumulating pressure, the ground slips abruptly along a geological fault plane on or near a plate boundary. The resulting waves of vibration within the earth create ground motion at the surface that vibrates in a very complex manner. The point where the fault first slips is termed the "focus" or "hypocenter" of the earthquake. A

theoretical point on the earth's surface directly above the focus is termed the "epicenter" of the earthquake.

Earthquakes are among the most frightening and devastating of natural events—they strike without warning, allowing no time for preparation or evacuation.

Nationwide, at least 39 states are considered at risk from moderate to great earthquakes. Earthquakes have struck many areas of the United States, including Alaska and the Central and East Coast states.

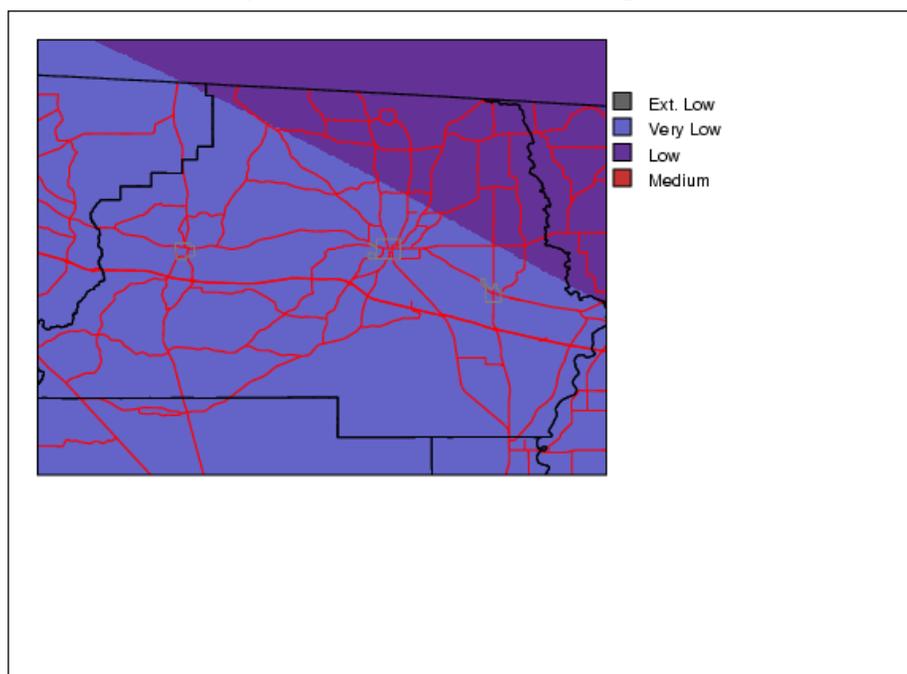
Hazard Profile:

If an earthquake were to affect Madison County and the cities of Madison, Greenville and Lee, it would most likely not cause significant damage or loss of life. The following maps and reports from the MEMPHIS system estimate the potential damages for the County. Vulnerability could be very minor cracking of concrete or plaster walls. Some shaking could move items on store shelves or cause them to fall.

Earthquake extent is measured by the Modified Mercalli Intensity Scale which measures detectability/level impact or by the Richter Scale which measures logarithmic magnitude scale of earthquake energy. There have been no Richter Scale recorded earthquake events in Madison County. It is not expected that Madison County will ever encounter an earthquake event that is large enough to be recorded.

Hazard Impact Analysis:

Figure 32: Madison County Earthquake Risk



Source: MEMPHIS

Table 39: Madison County Population at Risk for USGS 50 Year Earthquake

Zone	Population						
	Minority	Over 65	Disabled	Poverty	Lang. Isolated	Single Parent	Total
Very Low	7,320	2,154	7,051	3,449	191	1,342	15,564
Low	728	575	1,374	470	0	208	3,169

Source: MEMPHIS

Table 40: Madison County Structures at Risk for USGS 50 Year Earthquake

Zone	Structures						
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Government/ Institution	Total

Source: MEMPHIS

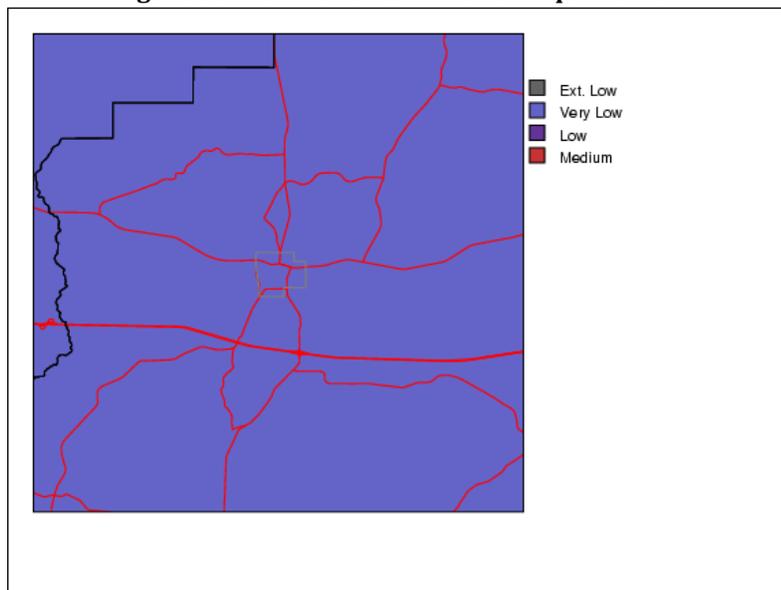
Table 41: Madison County Value of Structures at Risk for USGS 50 Year Earthquake

Zone	Structures						
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Government/ Institution	Total
Very Low	\$412.62M	\$82.42M	\$30.59M	\$157.77M	\$277.85M	\$979.54M	\$1.94B
Low	\$92.36M	\$27.91M	\$556.97T	\$2.37M	\$22.07M	\$302.69M	\$447.97M

Source: MEMPHIS

The City of Madison was not a jurisdiction included in the analysis by MEMPHIS and there is no data available to accurately support a vulnerability estimate related to this hazard.

Figure 33: Town of Greenville Earthquake Risk



Source: MEMPHIS

Table 42: Town of Greenville Population at Risk for USGS 50 Year Earthquake

Zone	Population						
	Minority	Over 65	Disabled	Poverty	Lang. Isolated	Single Parent	Total
Very Low	549	167	464	267	65	113	812

Source: MEMPHIS

Table 43: Town of Greenville Structures at Risk for USGS 50 Year Earthquake

Zone	Structures						
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Government/ Institution	Total
Very Low	237	50	15	32	21	47	402

Source: MEMPHIS

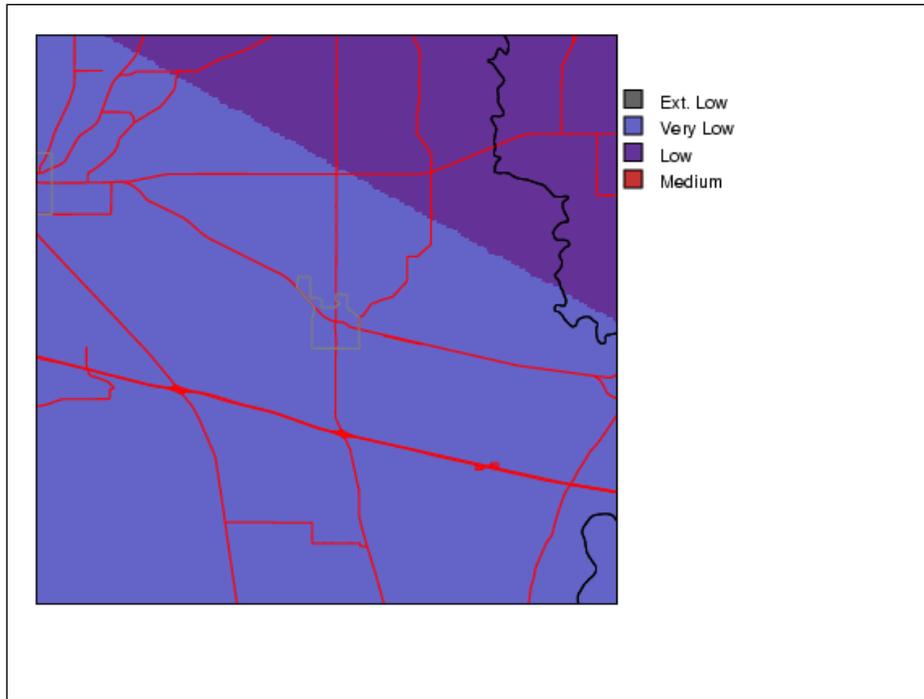
Table 44: Town of Greenville Value of Structures at Risk for USGS 50 Year Earthquake

Zone	Structures						
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Government/ Institution	Total
Very Low	\$26.67M	\$3.79M	\$3.14M	\$5.50M	\$5.85M	\$6.60M	\$51.56M

Source: MEMPHIS

Figure 34: Town of Lee Earthquake Risk

MEMPHIS



Source:

Source: MEMPHIS

Table 45: Town of Lee Population at Risk for USGS 50 Year Earthquake

Zone	Population						
	Minority	Over 65	Disabled	Poverty	Lang. Isolated	Single Parent	Total
Very Low	29	39	184	92	17	32	350

Source: MEMPHIS

Table 46: Town of Lee Structures at Risk for USGS 50 Year Earthquake

Zone	Structures						
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Government/ Institution	Total
Very Low	60	19	4	15	8	34	140

Source: MEMPHIS

Table 68. Town of Lee Value of Structures at Risk for USGS 50 Year Earthquake

Zone	Structures						
	SF Residential	Mobile Home	MF Residential	Commercial	Agriculture	Government/ Institution	Total
Very Low	\$6.90M	\$1.37M	\$83.61T	\$2.33M	\$2.19M	\$7.25M	\$20.12M

Source: MEMPHIS

Hazard Probability:

The probability is one every 100 to 500 years that an earthquake will impact Madison County. Madison County is in the low risk category for seismic activity and there are no past local recorded incidents.

Hazard Vulnerability Analysis by Jurisdiction:

Madison County: It is understood that the effects of an earthquake event are geographically widespread and affect an entire region when they occur. Using the Memphis data and analysis, it was found that the three incorporated jurisdictions, Madison, Greenville, and Lee are all located in a "Very Low" area of risk to Earthquakes. Because of these two factors, the vulnerability to an Earthquake incident affects Madison County, and cities of Madison, Lee, and Greenville in the same respect. Even with the three incorporated cities each containing more people and infrastructure than the county, the estimated effects felt by these areas should not cause a considerable more amount of damage.

City of Madison: The City of Madison is affected by earthquakes in the same respect to Madison County

Town of Greenville: The Town of Greenville is affected by earthquakes in the same respect to Madison County

Town of Lee: The Town of Lee is affected by earthquakes in the same respect to Madison County

Future Development and Earthquakes:

As the County grows through larger population and added infrastructure, there will be more vulnerability to earthquakes. However the probability remains very low that this event will impact Madison County.

Hazard History:

Madison County does not sit near a fault line, so the discussion regarding earthquakes is provided more as a regional aspect rather than a local one. For this reason, the historical accounts provided are including those occurrences that have been found to affect the State of Florida. Although Florida is not usually considered to be a state subject to earthquakes, several minor shocks have occurred. Only one of these caused damage in the State of Florida.

A shock occurred near St. Augustine, in the northeast part of the State, in January 1879. The Nation's oldest permanent settlement, founded by Spain in 1565, 129 reported that heavy shaking knocked plaster from walls and articles from shelves.

Similar effects were noted at Daytona Beach, 50 miles south. At Tampa, the southernmost point of the felt area, the trembling was preceded by a rumbling sound at 11:30 p.m. Two shocks were reported in other areas, at 11:45 p.m. and 11:55 p.m. The tremor was felt through north and central Florida, and at Savannah, Georgia.

The next tremor to be felt by Floridians was centered outside the State. It was the famous Charleston, South Carolina, shock in August 1886. The shock was felt throughout northern Florida, ringing church bells at St. Augustine and severely jolting other towns along that section of Florida's east coast. Jacksonville residents felt many of the strong aftershocks that occurred in September, October, and November 1886.

On June 20, 1893, Jacksonville experienced another slight shock, apparently local, that lasted about 10 seconds. Another minor earthquake shook Jacksonville at 11:15 a.m. October 31, 1900. It caused no damage.

A sudden jar caused doors and windows to rattle at Captiva in November 1948. The apparent earthquake was accompanied by sounds like distant heavy explosions. Captiva is located on Captiva Island, in the Gulf west of Fort Myers.

On November 18, 1952, a slight tremor was felt by many at Quincy, a small town about 20 miles northwest of Tallahassee. Windows and doors rattled, but no serious effects were noted.

There have been no earthquake events in Madison County since the last plan update in 2010.

Hazard in Relation to Critical Facilities:

Based on the GIS data as provided by the MEMPHIS system, and cross referencing a GIS list of critical facilities in Madison County, there are:

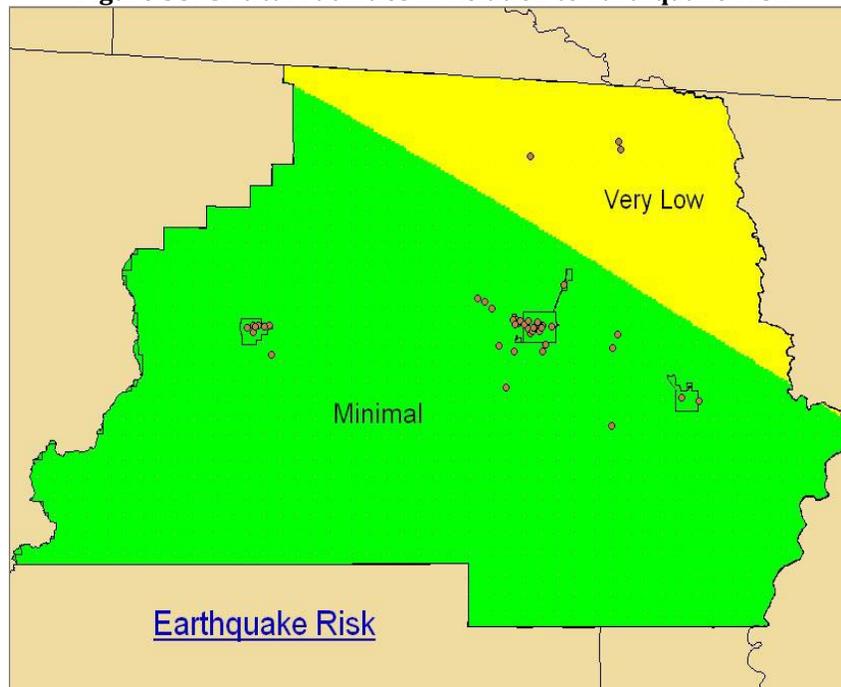
47 Critical Facilities Located in Minimal Earthquake Risk Areas.

Embarq Communications	Madison County Comm. Center
Florida Highway Patrol	Madison County Courthouse
Gas Transmission Station #37134	Madison County Courthouse Annex
Greenville City Hall	Madison County EMS
Greenville Elementary School	Madison County Health Dept.
Greenville Fire Department	Madison County High School
Greenville Hills Academy	Madison County Hospital
Greenville Hills Academy (R. Program)	Madison County Road Dept.
Greenville Post Office	Madison County EOC
Greenville Waste Water Plant	Madison County Fire Department
Greenville Water Treatment Plant	Madison Nursing Center
Joann Bridges Academy	Madison Police Department
Lake Park of Madison	Madison Post Office
Lee City Hall	Madison Waste Water Plant
Lee Post Office	Madison Water Dept./Garage
Lee Elementary School	New Testament Christian Center
Madison Academy	North Florida Comm. College
Madison Barrs Field Well and W. Tower	Pine Lake Nursing Home
Madison Chason Well	Progress Energy Substation
Madison City Hall	Tri County Electric - Greenville
Madison Coody Well	Tri County Electric - Madison
Madison Correctional Institute	Tri County Electric - Overstreet
Madison County Air Strip	Tri County Electric Substation 2
Madison County Central School	

5 Critical Facilities Located in Very Low Earthquake Risk Areas.

Cherry Lake Water Treatment Plant
 Pinetta Elementary
 Pinetta Post Office
 Tri County Electric – Cherry Lake
 Tri County Electric Substation 1

Figure 35: Critical Facilities in Relation to Earthquake Risk



Source: MEMPHIS

9. Man-Made Hazards

The following Man-made hazards have been identified by the LMS Committee as a very low threat to Madison County. The committee will review these hazards annually for projects that could mitigate the effects these hazards and update the plan accordingly.

1. Mass Migration/Civil Disturbance

Madison County had no history of civil disorder since the 1970's and no mass migration, nor are conditions in place, which could lead to such a scenario today. In the event of a change in the community leading to civil disorder or riots, the Madison County Sheriff's Office would coordinate response including any requests for mutual aid to handle such incidents should coordination with State authorities be required. However, the probability is very low and not considered a planning issue. Mass migration is not anticipated but would be handled in cooperation and with assistance from State and Federal resources.

2. Biological

Biological hazards are those associated with any insect, animal or pathogen that could pose an economic or health threat. They are a pervasive threat to the agricultural community. The possibility exists for the importation of pathogens that

could have a widespread effect on the livestock industries. In addition, there is the remote possibility of an adverse affect to the general population through naturally occurring pathogens (i.e. influenza, emerging infectious diseases or by way of a terrorist action).

Exotic Pest and Diseases – Madison County’s large agricultural areas are vulnerable to exotic pests and/or diseases. The Madison County Agricultural Extension Agent will assist in this area.

Disease Outbreaks – Any part of Madison County may be vulnerable to disease outbreaks. The Madison County Health Department will identify and handle any outbreaks with assistance from State resources.

3. Technological

A technological hazard is one, which is a direct result of the failure of a manmade system or the exposure of the population to a hazardous material. There is the potential for specific technological hazards to affect a segment of the population and/or interfere with critical government, law enforcement, public works and public health/medical functions. There is an even greater problem when this technological failure results in a direct health and safety risk to the population. A number of things occur daily in Madison County, including a hazardous material spill, or failure of the electrical power grid, which could constitute a threat to the population or produce widespread unmet needs. Each of these potential hazards would require a coordinated and speedy response, as well as attention to the short and long term effects. The primary hazards associated with this category include: hazardous materials spill, mass communication failure, major power disruption, critical infrastructure disruption/failure and release of a radioactive isotope into the environment.

Madison County’s level of vulnerability to such an incident is further described below:

a. Surface transportation spills –

The occurrences of railway and highway accidents do pose a major threat to Madison County. Interstate Highway 10, and Highways 221 and 53 are major thoroughfares for interstate commerce and transportation. These roadways pass through populated areas and pose the greatest risk of critical casualty, hazardous materials incidents and disruptions of vital evacuation routes and pose a threat. It is estimated that approximately thirty (30) percent of the residents of the County could be affected by a transportation accident involving hazardous materials. The county has no commercial airport and the CSX railway runs through the county and transport commercial products. Among the hazardous materials transported by road are gasoline, propane, chlorine and ammonia

b. Non-commercial Hazardous Materials –

Much of Madison County is rural residential or agricultural. Many properties have sheds, barns and storage buildings, which contain a mixed group of chemicals. Paints, insecticides, fertilizers, petroleum products, lubricants and other common household or agricultural products may be found in the possession of many residents. While it can be assumed few people store and dispose of these items in full compliance with the law, most materials are in such small quantity as to minimize concern of a full “hazmat” incident

4. Terrorism

Any violent or dangerous act done to intimidate or coerce any segment of the general population (i.e. government or civilian population) for political or social objectives constitutes terrorism. Historically, there had been few successful acts of terrorism committed in the State. However, with the heightened level of national terrorism events, and because of the number of facilities within the State associated with tourism, the military, government, cultural, academic, and transportation, the potential is considered to be high nationwide. While it is assumed that terrorists would target larger more high-density population areas, there is a possibility of an incident of domestic terrorism. In Madison County, terrorism assessments have identified facilities that have the potential for being targets for terrorist attacks with the intent of causing catastrophic levels of loss of life, injury, and property and environmental damage. Terrorist acts may also take the form of other hazards when the particular action induces such things as the release of hazardous and biological materials.

Table 48: Madison County Hazard Extent

Hazard	Extent
Tornado	According to the National Climatic Database Center, the greatest magnitude tornado to hit Madison County was a F3. It is reasonable to assume that the county could be hit with a similar tornado in the future.
Hurricane	According to the National Climatic Database Center, the greatest magnitude hurricane to hit Madison County was a Category 3. It is reasonable to assume that the county could be hit with a similar hurricane in the future.
Flood	According to the USGS, the greatest height that the Suwannee River reached was 41.34 inches during a flood event. It is reasonable to assume that the county could be hit with a similar flood event in the future.
Wildfire	According to the county, the greatest acreage ever burned during a wildfire was approximately 32,000 acres. It is reasonable to assume that the county could be hit with a similar wildfire event in the future.
Winter Storm	According to the National Climatic Database Center, the lowest temperature ever recorded in northern Florida was -2 degrees. It is reasonable to assume that the county could encounter similar temperatures in the future.
Drought	A drought hit the region that registered a 700 reading on the Keetch Byram Index. It is reasonable to assume that the county could encounter a similar drought event in the future.
Sinkhole	There is a sinkhole in Lee that has existed for more than 50 years. It is approximately 2 acres in size and measures 34 feet deep at the center. Although unlikely, it is possible that a similar sinkhole could form in the county.
Earthquake	There have been no Richter Scale recorded earthquake events in Madison County. It is not expected that Madison County will ever encounter an earthquake event that is large enough to be recorded.
Mass Migration	Madison County had no history of civil disorder since the 1970's and no mass migration, nor are conditions in place, which could lead to such a scenario today.
Biological	Biological hazards are those associated with any insect, animal or pathogen that could pose an economic or health threat. They are a pervasive threat to the agricultural community. The possibility exists for the importation of pathogens that could have a widespread effect on the livestock industries
Technological	There is the potential for specific technological hazards to affect a segment of the population and/or interfere with critical government, law enforcement, public works and public health/medical functions. There is an even greater problem when this technological failure results in a direct health and safety risk to the population.
Terrorism	While it is assumed that terrorists would target larger more high-density population areas, there is a possibility of an incident of domestic terrorism in Madison County.

Table 49: Madison County Hazard Vulnerability and Probability

Hazard	Vulnerability	Likelihood of an event occurring (probability)
Tornado	Tornadoes can cause damage to trees, mobile homes, poorly constructed structures and power lines. They are unpredictable and the most vulnerable individuals are those exposed to the outdoors during the event, such as those that are driving.	1-5 years
Hurricane	Areas closer to coastlines are more likely to be affected by the effects of both the wind damage and the storm surge associated with tropical cyclones. Non-elevated and poorly constructed structures are more vulnerable to these affects.	1-5 years
Flood	Non-elevated and structures within flood zones are more susceptible to flooding than other structures.	Less than 1 year
Wildfire	The buildings within areas designated as Wildland-Urban Interface and Wildland-Urban Intermix are considered to have the highest vulnerability to wildfires in comparison to the rest of the county.	5-10 years
Winter Storm	Winter Storms will not cause damage to any structures. Florida's primary vulnerability to this hazard is freezing temperatures that impact agriculture, specifically the citrus industry. The state has agriculture and livestock; however, the citrus industry is very important to the overall economy.	1-3 years
Drought	Drought will not cause damage to any structure in Madison County. Populations more at risk to extreme heat would include elderly populations, the homeless and mobility restricted persons. Outside pets and wild animals are vulnerable because they may be constantly exposed to the outside heat.	1-2 years
Sinkhole	All structure types are vulnerable to sinkholes.	50-100 years
Earthquake	Buildings with foundations resting on unconsolidated landfills, old waterways or other unstable soil types are most at risk. Buildings or trailers/manufactured homes not tied to a reinforced foundation that is anchored to the ground are also at risk, since they can be shaken off their mountings during an earthquake. The populations residing in these structures would be the most at risk.	100-500 years
Mass Migration	Madison County had no history of civil disorder since the 1970's and no mass migration, nor are conditions in place, which could lead to such a scenario today.	50-100 years
Biological	Madison County had no history of biological incidents, nor are conditions in place, which could lead to such a scenario today.	50-100 years
Technological	Madison County has had technological incidents in the past, primarily of the hazardous material category. These incidents have been handled at the local level and have been minor in nature.	1-2 years
Terrorism	While it is assumed that terrorists would target larger more high-density population areas, there is a possibility of an incident of domestic terrorism in Madison County.	50-100 years

Section 4 – Mitigation Strategy

Disasters, whether natural or man-made, cost billions of dollars and have tragic results: lives are lost, families separated, homes destroyed and jobs lost. After a disaster, businesses may be in chaos for weeks, and many never recover. Communities must rebuild damaged roads, bridges and public buildings. Although not all disasters can be prevented, Disaster Mitigation can reduce the damage.

Disaster Mitigation is any action or measure that either prevents that occurrence of a disaster or reduces the severity of its effects. The concept of Disaster Mitigation has been around for many years, even though the term may not be familiar to everyone. The only way to break this disaster/recovery/disaster cycle is by identifying vulnerable areas before the disaster and taking appropriate steps to protect against the disaster and minimize the damage. Disaster Mitigation efforts will reduce the human suffering that results from disasters.

The goal of mitigation is to reduce the future impacts of a hazard including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. However, mitigation should be based on risk assessment.

As directed in the Madison County CEMP, the EM Director is designated as the Mitigation Coordinator. The Mitigation Coordinator is responsible for the creation and continuous update of the Local Mitigation Strategy, which was ruled in compliance by DCA/FDEM in 1999. The Mitigation Coordinator is responsible for the post-disaster mitigation function.

Madison County has a number of responsibilities involving the development and implementation of local Emergency Management Programs. The three (3) municipalities, Madison, Greenville, and Lee are working partners in pre-disaster and post-disaster mitigation. Inherent in these efforts are initiatives which are intended to avoid, reduce and mitigate the effects of the recognized hazards to which the county is recognized as to being vulnerable.

Incorporation into other planning mechanisms

This adopted plan is now one of the primary county instruments along with the County Comprehensive Plan, the Comprehensive Emergency Management Plan, County Land Development Regulations, and the County Strategic 5-year Plan. As enhancements and modifications are made to these various planning situation in the county and propose new initiatives as required. These new initiatives will be considered in conjunction with the other planning mechanisms and their subsequent goals. Capital improvement plans will need to incorporate a study of potential impacts from natural hazards and prioritize any projects that will reduce the vulnerability to these hazards.

Madison County has incorporated the requirements of the LMS into the **Madison County Emergency Management Scope of Work (5 year plan)**: Goal # 4 from the Plan, seen below, pertains to the updating and use of the LMS plan and continuous work within the LMS Working Group.

The LMS Working Group will continue as the lead agency for promotion of mitigation against natural disasters. This group will continually monitor the mechanisms in the future, the Local Mitigation Strategy will be consulted to be sure that these changes consider the impacts of natural disasters and potential mitigation strategies.

GOAL 4:

IDENTIFY THE MOST PARTICULAR HAZARDS TO AFFECT OUR COUNTY AND DEVELOP A HAZARD MITIGATION PROGRAM.

Strategy 1: Identify hazards and work on mitigation/solutions on a continued time table.

Task 1: To have available or distribute the Hazardous Materials Vulnerability Analysis to other agencies in the county.

Task 2: Distribution of the 2004 Hurricane Survival Guide via newspapers, and made available at our local Emergency Management office.

Task 3: Continue public speaking on Emergency Management to all local civic clubs, schools, and governmental agencies in Madison County.

Task 4: Distribute coloring books and bookmarks on severe weather to 1st and 2nd grade students in both the public and private schools in Madison County.

Strategy 2: Develop and update the Local Mitigation Strategy.

Task 1: To identify potential mitigation projects for our County and to seek possible funding sources for these projects.

Task 2: To continue to work with our LMS Committee on any future mitigation projects. Committee members, including representatives from all municipalities, will conduct at least one meeting annually to update and exchange information, identify future mitigation projects, and report on other activities. Minutes from these meetings will be included in the LMS.

Strategy 3: Continued improvement of our EM Program, the E.O.C. and the EM storage facility with the purchase of additional EM equipment.

Task 1: Purchase EM equipment that will enhance our disaster response and shelter operation, and assist Madison County in becoming self-sufficient.

Task 2: Possibly purchase new EM vehicle to enhance response capabilities.

Task 3: Maintain Internet/e-mail capability in the local Emergency Operations Center.

The LMS has been incorporated into the **Madison County Comprehensive Emergency Management Plan (CEMP)**. The following guidelines can be found in Annex III of the CEMP.

II. GENERAL

1. The Madison County Emergency Management Director is also designated as the Mitigation Coordinator. This position is responsible for the creation and continuous update of the Local Mitigation Strategy, which was ruled in compliance by DCA/DEM in 1999. The Mitigation Coordinator is responsible for both the pre and post-disaster functions of mitigation.
2. In order to develop a unified LMS Plan, Madison County has developed a working LMS Committee. The Madison County LMS Committee is established pursuant to authorization by the Madison County Board of County Commissioners (BOCC). It is through this Committee that the necessary tasks will be formulated that allow the development of strategies on guiding principles, hazard identification and vulnerability assessment and mitigation initiatives on an on-going basis. The LMS Committee holds routine and special meetings to ensure that documents and projects continue to move forward. From time to time new projects are added and old projects are deleted when completed. It should also be noted that the three municipalities and Madison County's agencies and departments participate in mitigation strategy planning, and are part of the LMS team.

Madison County has developed a mitigation strategy in order to reduce potential future losses due to natural hazards. Existing plans and policies have already been developed by the County that are crucial components to the overall hazard mitigation strategy. The Madison County LMS is incorporated into existing authorities, policies, programs and codes are adopted official mechanisms for county government and can all be expanded and improved as required. The blueprint for the Madison County Mitigation Strategy can be found throughout a variety of plans within the county including, but not limited to:

- Madison County Comprehensive Emergency Management Plan
- Madison County Comprehensive Plan
- Greenville Comprehensive Plan
- City of Madison, Code of Ordinances
- Town of Lee, Ordinances
- Greenville Ordinances
- Town of Lee, Land Development Regulations

The LMS Working Group is the lead agency for proposing new ideas to the county commissioners and city officials for improving overall mitigation efforts. A complete

list of authorities, policies, programs and sources which comprise the overall blueprint for reducing potential losses in Madison County can be seen below. As these authorities, policies, and programs change over time, the LMS group will revise the list and implement into the current LMS.

The following guiding principles have been identified in existing County ordinances and existing Plans:

1. Reduce the risk of property damage and loss of life.
2. Provide safe and sanitary housing in suitable environments.
3. Maintain the integrity of natural functions.
4. Protect floodplains and wetlands.
5. Coordinate planning with municipalities, other counties and regional, state and federal entities.

PLAN, POLICY PROGRAM OR ORDINANCE RELATING TO HAZARD MITIGATION	SOURCE	NOTES
Reduce the risk of property damage & loss of life		
The County's land development regulations shall reduce the risk of property damage and loss of life.	Madison County Comprehensive Plan, Policy V.2.2	
It is the responsibility of local government to provide for the health and safety of its residents.	Madison County Comprehensive Emergency Management Plan, Executive Summary	

<p>Objectives of the Flood Damage Prevention Chapter: 1) protect life and health; (2) Minimize expenditure of public money for costly flood control; (3) Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; (4) Minimize prolonged business interruptions, (5) Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, and streets and hedges located in floodplains; (6) Help maintain a stable tax base by providing for sound use and development of flood-prone areas in such a manner as to minimize future flood height areas, and (7) Ensures that potential home buyers are notified that property is in a flood area.</p>	<p>City of Madison, Code of Ordinances, Section 11. 5, Article 1</p>	
<p>The County's land development regulations shall provide for the regulation of development within 100-year floodplains in order to maintain the flood-carrying and flood storage capacities of the floodplains and reduce the risk of property damage and loss of life.</p>	<p>Madison County Comprehensive Plan, Policy V.2.7</p>	
<p>Carbon bisulphide is prohibited for fumigation.</p>	<p>City of Madison Code of Ordinances: Section 11 -2</p>	

<p>Greenville shall assist the private sector and other state, federal or local agencies in the elimination of five percent of substandard housing annually including the establishment of provisions for the structural and esthetic improvement of housing.</p>	<p>Greenville Comprehensive Plan, Housing Element, Objective 1</p>	<p>Greenville has joined with Madison County on establishing minimum mobile home standards. Review zoning enforcement practices and support building inspection.</p>
<p>Greenville shall continue its participation in the National Flood Insurance Program</p>	<p>Greenville Comprehensive Plan, Conservation</p>	<p>Greenville is not currently in NFIP. Recommend that the Town adopt the program</p>
<p>Ensure that the character and location of land uses maximize the potential for economic benefit and enjoyment of natural and man-made resources by citizens while minimizing the threat to health, safety and welfare posed by hazards, nuisances, incompatible land uses and environmental degradation.</p>	<p>Greenville Comprehensive Plan, Ordinance 201: Chapter 1 - Goal Statement</p>	<p>Recommend review of land use map for zone designation, (e.g. parks in commercial/industrial).</p>

Provide safe & sanitary housing in suitable environments		
Provide decent, safe housing- in suitable environments...	Madison County Comprehensive Plan, Goal III	1. Conduct public education for SHIP Program. 2. Earmark additional SHIP funding focuses on new construction
Restricts land use that is: dangerous to health, safety and property, vulnerable in flood, alteration of natural flood plains, streams, channels, barrier, use of fill, grading, dredging which may increase erosion.	Town of Lee Ordinance 87-1	
All development and redevelopment occurring in the 100 year floodplain of the Suwannee River system shall meet building & design standards of the National Flood Insurance Program, the County and the Suwannee River Water Management District.	Madison County Comprehensive Plan, Objective S.4	
The Flood Damage Prevention chapter applies only to all areas of special flood hazard as designated by the Federal Emergency Management Agency in its Flood insurance Rate Map #120152t Further a development permit shall be required prior to the commencement or any development activities in these areas. No structure or land shall be located, or extended, converted or structurally altered without full compliance of this chapter and other applicable regulations.	City of Madison Code of Ordinances, Section 11.5, Division3	
In the special flood area, the building inspector is required to advise permittees where additional federal or state permits are required. The building inspector must verify that a registered professional engineer or architect that structure is designed to be securely anchored to withstand velocity waters and hurricane wave wash.	City of Madison Code of Ordinances, Section 11.5-31	
The County shall include within the land development regulations a hazardous building code which shall require the rehabilitation or demolition and clearance of housing and other structures which pose a threat to public safety.	Madison County Comprehensive Plan, Policy III.5.1	
Adopt and enforce subdivision regulations and housing codes to ensure newly constructed homes are safe and do not adversely impact the environment.	Greenville Comprehensive Plan, Housing Element, Policy 2.5	Effective
Adopts building and fire prevention codes.	Madison County Ordinance 96-78	

Adopts Standard Building Code, Standard Plumbing Code, National Electric Code, CABO One and Two family Dwelling Code, Standard and Unsafe Building Abatement Code, Standard Housing Code.	City of Madison Code of Ordinances: Section 8-1	
Establishes the use of the Southern Standard Building Code.	Lee Ordinance 75	Code in use. Municipality is aware of planned revision by state building codes.
Adopts Stand Building Code, National Electric Code, CABO One and Two Family Dwelling Code, Standard and Unsafe Building Abatement Code, Standard Housing Code.	Greenville Ordinance 198	In use. Municipality is aware of planned revision by state building codes.
Owners of frame building shall not build additional stories.	City of Madison Code of Ordinances: Section 8-4	
No construction shall be performed unless a permit has been obtained.	City of Madison Code of Ordinances: Section 8-4	1
Adopts National Electric Code. All electrical wiring, installation, construction and appliances within the city must be done in accordance with the regulations.	City of Madison Code of Ordinances: Section 10-1	
All electric work must be inspected by the designated agent of the City.	City of Madison Code of Ordinances: Section 10-3	
Adoption of the Fire Prevention Code recommended by the American Insurance Association.	City of Madison Code of Ordinances: Section 11-1	
Greenville will target CDBG funds to programs aimed at the conservation, rehabilitation or demolition of housing that has been declared a public threat by the building inspector.	Greenville Comprehensive Plan, Housing Element, Objective 2	Town has not yet completed. Greenville is active in code enforcement for owner action.
All buildings be constructed with outer walls of stone, brick or concrete and not less than 12 inches thick on the first and second floors, not less than 16 inches on higher floors. Any building of more than one story must have a roof of noncombustible material. All awnings must utilize noncombustible materials	City of Madison Code of Ordinances, Section 8-3	

<p>Standards for areas of special flood hazard: (1) New construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure. (2) Manufactured homes shall be anchored. Methods of anchoring may include over-the-top frame ties to ground anchors. Standard shall be in addition and consistent with applicable state requirements for resisting wind forces. (3) New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage. (4) New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage. (5) Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located as to prevent water from entering or accumulating within the components during conditions of flooding. (6) New and replacement water systems shall be designed to minimize or eliminate infiltration of floodwaters into the system. (7) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters. (8) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding. (9) Any alteration, repair, reconstruction or improvement to a structure which is in compliance with the provisions of this chapter shall meet the requirements</p>	<p>City of Madison, Code of Ordinances, Section 11.5-43</p>	
<p>Specific standards in all areas of special flood hazard where base flood elevation data has been provided as set forth in Section 11.5-17 or Section 11.5-31(11): New residential construction or substantial improvement shall have the lowest floor elevated to above base flood elevation</p>	<p>City of Madison, Code of Ordinances, Section 11.5-44</p>	

Maintain the integrity of natural Functions		
Conserve through appropriate use and protection, the resource of the County to maintain the integrity of natural functions.	Madison County Comprehensive Plan, Goal V, Conservation Element	
The County shall establish provisions within the site plan review process by 1992 to protect air quality by requiring the appropriate citing of development and associated public facilities.	Madison County Comprehensive Plan, Policy V.I.I	
The County's land development regulations shall prohibit uses within or adjacent to the surface waters of the County which would degrade the present water quality classification, as established by the rules of the Florida Department of Environmental Regulation.	Madison County Comprehensive Plan, Policy V.2.2	
The County shall only allow hazardous or bio-medical waste treatment facilities as special exceptions within areas designated rural development. Further, the County's land development regulations shall include conditions for such approval of a hazardous or bio-medical waste treatment facility as a special exception. In no case shall a hazardous or bio-medical waste treatment facility be located within an Environmentally Sensitive	Madison County Comprehensive Plan, Policy V.2.13	
Development that impacts upon forest and vegetative communities, limestone or limestone dolomite in all land use areas shall be subject to special review requirements. (Note: lengthy and more restrictive than other land use)	Madison County Comprehensive Plan, Policy V.6.1	

Greenville shall adopt a hazardous waste management program for proper storage, recycling, collection and disposal of hazardous waste by 2001.	Greenville Comprehensive Plan, Conservation Element, Objective 7	Not done at this time
Industries and businesses using hazardous materials shall avoid using sites with known underground cavities and sites with potential for sinkhole formation.	Madison County Comprehensive Plan, Policy V.2.18	Should be addressed as a requirement in the Development Review Process
Regulations will be developed and adopted by April 1, 1992 which will protect environmentally sensitive land...	Greenville Comprehensive Plan, Future Land Use Element Policy 4.7	Requires update, if still necessary.

Development permits will be issued by Greenville only if the developer demonstrates that either a state or federal air quality permit is not requirement or that the necessary permit has been obtained	Greenville Comprehensive Plan, Conservation Element, Policy 1.1	No industry in Town-
Permits for new development will be issued only if the development contains surface water management plans consistent with policies of the Comprehensive Plan, the Department of Environmental Regulations and Suwannee River Water Management District.	Greenville Comprehensive Plan, Conservation Element, Policy 2.1	
Non-conforming land uses shall not be altered or expanded. If they are destroyed or damaged more than 75 % of their assessed value, any reconstruction shall be in conformity with the Future Land Use Map.	Greenville Comprehensive Plan, Future Land Use Element, Policy 1.6	Effective

Protect floodplains and wetlands		
Floodplains in Madison County will be protected.	Madison County Comprehensive Plan, Objective V.7.	
Purpose of the Flood Damage Prevention Chapter: control the alteration of natural floodplains, stream, channels and natural protective barriers that are involved in the accommodation of floodwaters. Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.	City of Madison Code of Ordinances, Section 11.5, Article 1	
The County's land development regulations shall require a 35-foot natural buffer around all wetlands and prohibit the location of residential, commercial and industrial land uses within the buffer areas, but allow agriculture, silviculture and resource-based recreational activities within buffer areas subject to best management practices.	Madison County Comprehensive Plan, Policy V.2.4	
Wetland protection shall be provided by a minimum 35 feet natural buffer from wetlands to improved areas... Within the 35 feet, no structure (other than permitted -- docks, piers, walkways elevated on piles) are allowed. Clearing of natural vegetation except for walkway and residential improvements are not allowed.	Town of Lee Land Development Regulation, 4.5.7	

No development will be allowed within the 100 year floodplain as designed by FEMA unless development adheres to all FEMA building regulations and restrictions.	Madison County Comprehensive Plan, Policy III. 1.2	
The County's land development regulations shall require a 75-foot regulated natural buffer adjacent to all perennial rivers, streams and creeks identified as regionally significant areas with the Comprehensive Plan and prohibit the location residential, commercial and industrial land uses.	Madison County Comprehensive Plan, Policy V.2. 14	Policy is in effect for rivers, but enforcement requirement needed for streams and creeks.
Perennial rivers, streams and creeks shall have a 35 feet buffer. Residential improvements shall be prohibited. Agriculture, silviculture, and recreation permitted.	Town of Lee Land Development Regulations, 4.5.7.4	
The County's land development regulations shall require a 50-foot regulated natural buffer adjacent to all other perennial rivers, streams and creeks and prohibit the location of residential, commercial and industrial land uses within the buffer area.	Madison County Comprehensive Plan, Policy V.2. 15	Recommend that this be changed to 75-foot buffer.

Development of Industrial areas located in fracture zones, areas of known/sinkhole formation, and Karst Geography features will be required to be checked by ground penetrating radar to identify underground cavities and areas of potential sinkhole formation. Areas containing potential fracture zones, areas of potential sinkholes, will be so identified from the data gathered by Department of Environmental Regulation, or the Suwannee River Water Management District.	Madison County Comprehensive Plan, Policy V.2. 17	
The County's land development regulations shall include provisions which prohibit the construction of structures or landscape alterations which would interrupt natural drainage flows, including sheet flow and flow to isolated wetland systems.	Madison County Comprehensive Plan, Policy IV.2.9	
The County's land development regulations shall include a provision which requires a certification, by the preparer of the permit plans, that all construction activity undertaken shall incorporate erosion and sediment controls during construction.	Madison County Comprehensive Plan, Policy IV.2.10	
The Town of Greenville shall protect the natural functions of the wetlands..	Greenville Comprehensive Plan, Ordinance 201: Policy 4.2	Recommend that the Town reduce the residential density. There is a need for w/w collection.

No hazardous materials or hazardous waste shall be stored within the floodplain.	Madison County Comprehensive Plan, Policy V.2.20	
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Development in prime aquifer recharge areas identified the Suwannee River Water Management District --- /ill be restricted by allowing low-density and low intensity development and prohibiting potentially contamination uses...	Greenville Comprehensive Plan, Ordinance 201: Policy 4.3	
The County shall, through the development review process, require that post-development runoff rates and pollutant loads do not exceed pre-development conditions.	Madison County Comprehensive Plan, Policy V.2.5	
Development on sites which include areas within the one-hundred year floodplain shall be required to be located outside of the floodplain wherever possible.	Madison County Comprehensive Plan, PolicyV.7.2	
Subdivisions shall be required to include buildable area outside of the floodplain on each lot, wherever possible.	Madison County Comprehensive Plan, Policy V.7.3	
Fill within floodplains shall be limited to the minimum which is necessary for development and access.	Madison County Comprehensive Plan, Policy V.7.4	
Fill shall be placed and designed so as to minimize interference with natural water flows.	Madison County Comprehensive Plan, Policy V.7.5	

Development on sites which include areas within the one-hundred year floodplain shall be required to be located outside of the floodplain wherever possible	Madison County Comprehensive Plan, Policy V.3.2	
Subdivisions shall be required to include buildable area outside of the floodplain on each lot, wherever possible.	Madison County Comprehensive Plan,	
Fill within floodplains shall be limited to the minimum which is necessary for development and access.	Madison County Comprehensive Plan, Policy V.3.4	
Fill shall be placed and designed so as to minimize interference with natural water flows.	Madison County Comprehensive Plan, Policy V.3.5	
Development that impacts upon forest and vegetative - communities, limestone or limestone dolomite in all land use areas shall be subject to special review requirements. (Note: lengthy and more restrictive than other land use)	Madison County Comprehensive Plan, Policy V.6.1	
Development on sites which include areas within the one-hundred year floodplain shall be required to be located outside of the floodplain wherever possible.	Madison County Comprehensive Plan, Policy V.7.2	
Subdivisions shall be required to include buildable area outside of the floodplain on each lot, wherever possible.	Madison County Comprehensive Plan, Policy V.7.3	
Fill within floodplains shall be limited to the minimum which is necessary for development and access.	Madison County Comprehensive Plan, Policy V.7.4	
Fill shall be placed and designed so as to minimize interference with natural water flows.	Madison County Comprehensive Plan, Policy V.7.5	
No hazardous materials or hazardous waste shall be stored within the floodplain.	Madison County Comprehensive Plan, Policy V.2.20	
No hazardous materials or hazardous waste shall be used, generated or stored within the floodplain.	Madison County Comprehensive Plan, Policy V.7.6	
For all projects not exempted from Chapter 40B-4 and 17-25, F.A.C. within the County, stormwater management systems must be installed such that the peak-rate of post-development runoff will not exceed the peak-rate of pre-development runoff for storm events.	Madison County Comprehensive Plan, Policy VHI.2.1	
The land development code will ensure that for all new development, post-development drainage flows will equal pre-development flows in order to avoid exacerbating existing poor drainage conditions.	Greenville Comprehensive Plan Environmental Element, Policy 3.1	Applied

Greenville shall prepare and adopt a Future Land Use Plan by 10/91 that directs development away from wetland areas and high hazard flood prone areas through 2001.	Greenville Comprehensive Plan, Conservation Element, Objective 6	Dated
The County shall, by 1992, include subdivision improvement standards within the land development regulations which, where required by such regulations the sub-divider shall be required to make improvements such as...install stormwater facilities...	Madison County Comprehensive Plan, Objective VIII.3	
Non-conforming land uses shall not be altered or expanded. If they are destroyed or damaged by more *~ than 75% of their assessed value, any reconstruction be in conformity with the Future Land Use Map.	Greenville Comprehensive Plan. Ordinance 201: Policy 1.6	Requires further review. Appears not to be followed in practice.

Madison County Comprehensive Plan, Policy V.3.2 Development on sites which include areas within the one-hundred year floodplain shall be required to be located outside of the floodplain wherever possible.	Madison County Comprehensive Plan, Policy V.2.20	
Subdivisions shall be required to include buildable area outside of the floodplain on each lot, wherever possible	Madison County Comprehensive Plan, Policy V.3. 3	
Fill within floodplains shall be limited to the minimum which is necessary for development and access.	Madison County Comprehensive Plan, Policy V.3. 4	
Greenville shall not allow development which would destroy functional integrity of adjacent water bodies, wetlands and flood prone areas.	Greenville Comprehensive Plan, Conservation Element, Objective 3	Effective
Fill shall be placed and designed so as to minimize interference with natural water flows.	Madison County Comprehensive Plan, Policy V.3. 5	

Coordinate planning with municipalities, other counties and regional, state and federal entities		
The County shall coordinate its comprehensive planning with the School Board, Water Management District, Regional Planning Council, adjacent counties and the municipalities of Madison, Greenville and Lee. The coordination mechanisms shall include, as appropriate, inter-local agreements, written and verbal communications, participation on technical advisory committees, utilization of mediation process and joint meetings with appropriate other local, regional, state and federal governing bodies and agencies of their designated	Madison County Comprehensive Plan, Objective VII.1	
In special flood area the building inspector shall notify adjacent communities and the Suwannee River Water Management District prior to any alteration or relocation of watercourse and submit copy of notification to FEMA.	City of Madison, Code of Ordinances, Section 11.5-31	
Greenville will ensure the equitable and reasonable sharing of authority, responsibility and resources among the different levels of government through the process of intergovernmental coordination.	Greenville Comprehensive Plan, Intergovernmental Coordination, Goal	Effective and on-going
Greenville will adopt land development regulations with administrative procedure requiring that the Town coordinate with State, regional and federal agencies for the purposes of mitigation potential adverse impacts of future development and redevelopment activities.	Greenville Comprehensive Plan, Future Land Use Element, Objective 8	Done
Requests for redevelopment orders or permits shall be coordinated as appropriate, with adjacent counties, special districts, the Regional Planning Council, Water Management District and state and federal agencies.	Greenville Comprehensive Plan, Future Land Use Element	On-going
Coordinate with Madison County to review building codes and land development regulations to improve efficiency and reduce building costs.	Greenville Comprehensive Plan, Housing Element, Policy 2.5	On-going
County shall participate in acquisition planning process of state and regional agencies for lands and unique natural areas located within the 100 year flood plain of the	Madison County Comprehensive Plan, Policy S.2.3	The County is not doing this. Recommend that a person or committee be designated with this
Greenville shall coordinate with Madison County to develop an emergency response plan to handle incidents involving hazardous waste.	Greenville Comprehensive Plan, Conservation Element, Policy 7.1	Inter-local agreements are in place and coordinated training is on-going.

Ordinance establishes County Fire Rescue Board and inter-local agreements for fire protection.	Madison County Ordinance 95-69	
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Description of Mitigation Goals

A major part of the Madison County Local Mitigation Strategy is to develop the LMS plan in conjunction with State and Federal guidance. The State of Florida DEM developed a set of mitigation goals and objectives as part of their statewide DMA2000 Hazard Mitigation Plan. Madison County has reviewed these state-level goals and objectives and has developed the following set of five goals.

Goal 1: Enhance and maintain county capability to implement a Comprehensive countywide hazard loss reduction strategy

Objective 1.1: Review existing county agency programs, plans and policies to determine their effectiveness and efficiency in reducing risk and vulnerabilities to natural and manmade hazards, on annual basis.

Objective 1.2: As a means of enhancing intra and inter-governmental coordination, establish and support an on-going liaison between Federal, State, Regional and Local Governments as well as the private sector and general public through the LMS Working Group.

Objective 1.3: Integrate the pre and post disaster mitigation functions with the response and recovery functions detailed in the Madison County Comprehensive Emergency Management Plan (CEMP)

Objective 1.4: Design a process for prioritizing the local projects for mitigation related funding programs.

Objective 1.5: Establish a mediation process to resolve conflicts between County Agencies' existing plans, programs and mitigation related policies and integrate them into the Madison County Local Mitigation Strategy.

Objective 1.6: Review and recommend at least annual updates of the county's risk and vulnerability assessments; including updates and/or changes to the inventory of critical facilities and infrastructure.

Objective 1.7: Coordinate funding resources and opportunities among county agencies.

Objective 1.8: Support the development and use of disaster loss reduction related to building codes and standards designed to reduce vulnerability and risk to all hazards.

Goal 2: Increase public and private sectors awareness and support for disaster loss education practices as a means of developing a culture of hazard mitigation in Florida.

Objective 2.1: Create an Education and Outreach Committee of the LMS Working Group to organize and develop a comprehensive countywide mitigation education and outreach strategy.

Objective 2.2: Conduct a summit for education stakeholders to present and promote mitigation education programs.

Objective 2.3: Develop a business continuity awareness program designed to educate the business community on the benefits of mitigation in reducing their vulnerabilities and risk to natural and man-made hazards.

Objective 2.4: Develop, and promote outreach strategies designed to educate residents and visitors of Madison County's endemic hazards, their associated risk and vulnerabilities, and the applicable mitigation actions.

Objective 2.5: Identify and incorporate available hazard mitigation education and outreach programs/products into local public school education programs.

Objective 2.6: Establish an ongoing education and outreach effort to educate elected officials on the importance of hazard mitigation to include annual report to the Madison County commissioners and other appropriate officials.

Objective 2.7: Develop a public awareness campaign on the benefits of pre and post disaster mitigation through the dissemination of mitigation success stories.

Objective 2.8: Develop a strategy for working with the print, electronic and broadcast media on the dissemination of mitigation education and outreach material.

Goal 3: Reduce Madison County's hazard vulnerability through the application of scientific research and development.

Objective 3.1: Establish partnerships with public and private research universities and Madison County educational facilities. This scientific partnership will assist in assessing Madison County's vulnerability to natural and anthropogenic hazards in order to develop the means to reduce the potential for damage from their impacts on society.

Goal 4: Protect the County’s cultural, economic and natural resources.

Objective 4.1: Support mitigation initiatives that are compatible with the protection of county’s cultural, economic and natural resources.

Objective 4.2: Promote land acquisition programs that support mitigation opportunities compatible with the protection of natural and cultural resources.

Objective 4.3: Encourage the development of drainage improvement systems based on their compatibility with the natural environmental system functions.

Goal 5: Reduce the vulnerabilities of county and city owned facilities and infrastructure to natural and man-made hazards

Objective 5.1: Establish hazard mitigation priorities for retrofitting of existing county and city critical facilities and infrastructure based upon risk and vulnerability assessment.

Objective 5.2: Ensure that county and city facilities and infrastructure are located, designed and constructed to complement/support local priorities as defined in the Local Mitigation Strategies.

Section 5 – Mitigation Projects

A project list table is provided in Appendix A and shows the status for each mitigation project including responsible agency, potential funding source, and timeline for completion. The deferred projects have been placed on hold until adequate funding becomes available.

The mitigation actions/projects are prioritized by the LMS Working Group based on several variables: the cost-benefit of each project, each local jurisdictions individual priority ranking of each project, and the frequency and level of damage sustained from events that each of the individual projects address. The major factor to the ranking of the LMS projects is based on the cost-benefit review as viewed by the LMS Working Group. For each project, the LMS Working Group held discussions regarding the expected estimated dollars lost and structures damaged from past and future events addressed by each project, and then used these discussions as a means of prioritizing the projects. An example description of this review process can be seen below:

Example of the LMS Working Group discussions for each Project and the ranking of the B/C:

A street is known to flood on average every 6 months due to heavy rainfall and causes about \$10,000 worth of damage per event. Over the next 10 years, the city can expect that the street will flood an average of 20 times based on historical recordings if nothing is done (twice a year x 10 years average), costing the city an expected \$ 200,000 in damages. The city recognizes that adding a larger storm water drain project would eliminate the effects of this hazard on the street, and would cost an estimated \$90,000 to implement. Although the upfront costs of the project would be considerable in the short term, the long term costs would benefit the city by a 2 to 1 (200%) margin over the next 20 years.

Prior to LMS projects being accepted, all mitigation projects are first brought forward and discussed at open LMS meetings. The members analyze the cost effectiveness and technical feasibility of each project, as well as ensure that each project is environmentally sound prior to being voted upon for addition to the finalized LMS Project List. All mitigation projects must first submitted to the LMS Working Group by a member for consideration of acceptance to the LMS Project List. With each project submission, the group votes whether to add the project to the LMS Project List. Once the feasibility and environmental requirements are found to be met, and a favorable vote among LMS Working Group members is conducted, the project is then added.

Implementation of Mitigation Actions

Each jurisdiction within the Madison County LMS is able to submit mitigation actions and projects to the LMS Working Group at any time during the calendar year. The project evaluation table on page 124 describes how projects are prioritized. At the time of submission, each jurisdiction is required to complete a Hazard Mitigation Project Evaluation Criteria Worksheet in order for the project to be added to the LMS Working Group Project List. The Hazard Mitigation Project Evaluation Criteria Worksheet includes a wide-range of information related to a specific mitigation action or project. This information includes, but is not limited to: the responsible department, potential financial resources, timeframe of completion and the goals achieved. Also included is a cost/benefit review of each mitigation action or project.

As discussed in the previous section, the cost/benefit review has been performed by each individual jurisdiction and is heavily weighted over all other variables in the ranking of each of the jurisdictions individual projects. The mitigation actions/projects are prioritized by each jurisdiction based on several variables: the cost-benefit of each project, each local jurisdictions individual priority ranking of each project, and the frequency and level of damage sustained from events that each of the individual projects addresses. The major factor to the ranking of the LMS projects was based heavily on the cost-benefit analysis as viewed by each jurisdiction. For each project, the jurisdiction estimated dollars lost and structures damaged from events addressed by each project and then used these estimates as a means of ranking the projects for each community.

As a benchmark for progress, completed mitigation actions and projects will be highlighted on the project list. Projects that are deferred will remain on the project list and a description will be listed as to why the project was deferred. A project that is identified to be deleted from the project list will remain on the project list for one reporting cycle along with a description as to why the project will be removed.

Madison County LMS Project Prioritization Table

Criteria	Measure	Points
Supports Public Health and Safety	<i>Immediate</i> – Alleviates existing health or safety hazards	Immediate – 100 points
	<i>Intermediate</i> – Alleviates potential health or safety hazards	Intermediate – 75 points
	<i>Long-Term</i> – Promotes or maintains health or safety	Long-Term – 50 points
Protects People	Number of people protected	1,000+ = 50 points 101 to 1,000 = 40 points 11 to 100 = 30 points 10 or less = 20 points
Protects Property	Residential (including rental) Business (commercial and non-profit) Secondary homes (cabins, retreats, etc.) Vacant lots/acreage	Residential – 4 points per property (maximum of 80) Business – 3 points per property (max. of 60) Secondary – 2 points per property (max. of 40) Vacant – 1 point per property (max. of 20)
Reduces Future Damage	Reduces risk of future damages (e.g. reduces development in 100-year floodplain) <u>and</u> is cost effective	Significant reduction in risk – 60 points Moderate – 30 points Little to none – 0 points
Supports Essential or Critical Services	Essential services provided by local government (e.g. gas, electric, garbage, sewer, roads, water, fire, police/sheriff, shelters, designated public facilities, and/or emergency operations) Businesses designated as essential services by City Council or County Commission (through Emergency Management)	Essential public services – 20 points Essential business service – 15 points

Funding Sources for Hazard Mitigation Projects

The following are additional potential funding sources for the LMS Projects

Hazard Mitigation Grant Program (HMGP)

The Hazard Mitigation Grant Program is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (PL 93-288 as amended). It is a partnership that is designed to assist states, local governments, private non-profit organizations and Indian Tribes in implementing long-term hazard mitigation measures following a major disaster declaration.

The objectives of the Hazard Mitigation Grant Program are: 1) To prevent future losses of lives and damage to property due to disasters; 2) To implement state or local hazard mitigation plans; 3) To enable mitigation measures to be implemented during immediate recovery from a disaster; and 4) To provide funding for previously identified mitigation measures that benefit the disaster area.

Pre-Disaster Mitigation (PDM)

The Department of Community Affairs (DCA), Division of Emergency Management (DEM) is pleased to announce the availability of Pre-Disaster Mitigation (PDM) competitive grants for Fiscal Year (FY) 2005. The PDM program was authorized by Section §203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by Section §102 of the Disaster Mitigation Act of 2000, to assist communities to implement hazard mitigation programs designed to reduce overall risk to the population and structures before the next disaster occurs. DEM is soliciting project applications and encourage your local government to identify and submit applications that address eligible mitigation activities that are designed to reduce your community's overall risk to hazards. The total funds available nationwide is approximately \$255,000,000 and these funds will be awarded on a competitive basis.

The Pre-Disaster Mitigation application deadline is 5:00 PM (EST), March 9, 2005. By the deadline all applications and any associated attachments must be submitted to the State of Florida.

Community Development Block Grant (CDBG)

Congress allocated the funding to assist in recovery from federally declared disasters that occurred between August 31, 2003 and October 1, 2004. Funds are for disaster relief, long-term recovery and mitigation directly related to the effects of the disasters. Congress has directed that the funds go “to areas facing the greatest need.”

Community Development Block Grant disaster relief funding has been made available to the state by the U.S. Department of Housing and Urban Development, pursuant to the Military Construction Appropriations and Emergency Hurricane Supplemental Appropriations Act.

([Docket No. FR-4959-N-01, Federal Register/Volume 69, Number 237](#)). Florida received \$100,915,626 for affected communities.

Section 6 - Monitoring, Evaluating and Updating the Plan

The Madison County LMS Working Group is committed to maintaining and updating this plan. This finalized adopted plan represents a snapshot in time for Madison County while the overall mitigation strategy is a process that is on-going. As events occur over time, appropriate mitigation actions and strategies will be discussed within the LMS working group to help mitigate the impact to citizens and Madison County. These efforts will be organized by the Madison County Emergency Management Agency. The LMS Working Group chair is responsible for monitoring, evaluating, and updating the LMS including assessing the effectiveness of the plan and LMS goals. However, the LMS Working Group will continue to be the primary agent for further development of the plan and the on-going mitigation process.

This adopted plan can be revised and updated by the LMS Working Group as needed to address new and on-going vulnerabilities. When significant revisions are made to this plan in the future such as this current update to the 2015 LMS, it is the county's decision whether additional resolutions are required.

Updating

The LMS Chair (Madison County Emergency Management Director) is responsible for updating the plan within five years from the date of the last FEMA approval. This process includes the following chronological schedule and method:

- Every year within the 5-year update timeframe, the LMS Chair will make notes in the LMS of items that require changes based on the evaluation process.
- During both the second and third year of the 5-year timeframe, the LMS Chair will begin updating the actual document sections with the most recent data available. This will be done with the help and acknowledgement of the LMS Working Group members. After each of these document updates, the Chair will bring forth the changes to the LMS Task Working Group

- Based on the review input from the LMS Working Group, the Chair will make changes where required.
- During the end of the third year and the beginning of the fourth year, the LMS Chair will gather the new FEMA update element requirements so that the updated plan will act in accordance with federal regulations.
- The LMS Chair will then give a presentation about the 5-year update to the LMS Working Group members and describe how they can assist and why they should participate.
- The LMS Chair will update all sections of the LMS with the most recent data and processes available.
- This updated document will then be presented to the LMS Working Group members for review.
- After making the revisions from the review, the LMS Chair will send the document to the FDEM State Hazard Mitigation Officer for initial review. This will be done approximately 6 months before the plan's expiration date.
- Upon FDEM approval, the county and all jurisdictions will adopt the LMS by resolution.

During the five year cycle, the LMS Working Group will meet on an annual basis to discuss and revise the Madison County LMS. During these meetings, topics of discussions are to include:

1. Review of the contents of the current LMS
2. Updating the list of Critical Facilities
3. Updating the list of Historical Hazards from the previous year
4. Evaluation of current Mitigation Projects
5. Recommendation and group discussion of adding/modifying Mitigation Projects

At the LMS Working Group's discretion, more meetings and initiatives will be advanced to continue monitoring, evaluating and updating this plan.

Madison County LMS and Continued Public Participation

The community is encouraged to participate in the on-going mitigation planning process in Madison County. There will be three primary ways for the public to continue to participate in this LMS process.

- **LMS Working Group Meetings** – The annual LMS Working Group meetings will be open to the public. Each meeting will be publicly advertised through the local media and held in a public location. Agencies, public citizens, and private organizations will be encouraged to attend these meetings and provide their comments and feedback with respects to future developments of the LMS.
- **Internet Correspondence.** – The adopted LMS plan will be posted on the Madison County Emergency Management website (www.madisoncountyfl.com), for review and download by the public and other communities & agencies. Comments and feedback and be emailed to the Emergency Management Agency who will convey the information to the LMS Working Group.
- **LMS Mailing List** – The LMS Working Group will maintain an on-going list of any interested citizens or organizations. Notifications will be sent to this list of people when any actions are taken regarding LMS meetings and events in Madison County.

References and Acknowledgments

State of Florida Hazard Mitigation Plan August 24, 2013
 The Greater Madison County Chamber of Commerce
www.madisonfl.org
www.originalfloridabusines.org
www.methaz.org/lmsmaps
www.MadisonPA.com
www.floridadisaster.org
 Madison County Local Mitigation Strategy – 1999, 2005, 2010
 Comprehensive Emergency Management Plan (CEMP)
 Property Appraisers GIS Data
 NFIP Repetitive Loss List
 Critical Facilities List

LMS Adoption and Resolution Documents

The jurisdictions represented in the Madison County LMS are as follows:

Madison County, Florida
 City of Madison
 Town of Greenville
 Town of Lee

All of the above jurisdictions anticipate signing resolutions adopting the 2015 LMS Plan update, once it has been approved by the Florida Division of Emergency Management.

Plan Integration:

Plans that the Mitigation Requirements of the LMS could incorporate include:

Comprehensive Emergency Management Plan: This document contains elements which address natural and man-made emergencies which affect the County. The comprehensive emergency management plan outlines the purpose, organization of, responsible agencies and officials of Madison County in the mitigation of, preparation for, response to, and recovery from emergencies and disasters. During the next update of the plan the risk assessment, goals, and objectives of the LMS will be reviewed and if appropriate information will be added to the mitigation section of the CEMP.

County and Municipal Comprehensive Plans: These plans contain goals, objectives and policies to guide the pre-disaster mitigation programs to address natural disasters, hazardous materials and fire.

Florida Statutes allow local governments to amend comprehensive plans several ways. The regular amendment cycle is the option most likely to be used to incorporate or implement local mitigation strategy. Amendments to comprehensive plans are usually considered once a year. Deadlines for applications vary by community. During the next update of the plan the risk assessment, goals, and objectives of the LMS will be reviewed and if appropriate information will be added to the comprehensive plans possibly adding new goals or objectives to these plans.

County and Municipal Land Development Regulations, Zoning Ordinances and Building Codes: Land development regulations or codes usually contain a codification of the land development ordinances of a community. They can be used to carry out actions that mitigate damage to new buildings and structures through design considerations. They also can be used to define type, density and intensity of land uses in identified areas that account for natural and human caused hazards. Low density zoning categories can also be used to reduce the amount and type of land uses exposed to certain types of hazards. This LMS plan makes recommendations to upgrade the building regulations, if followed then this can be considered successful integration of the LMS.

Responsible Party/ies: County and Municipal governments/ planning departments

Current Integration:

The 2009 update of the Madison County Local Mitigation Strategy plan coincided with the Comprehensive Emergency Management Plan update. Madison County

Emergency Management officials took advantage of the opportunity to integrate demographic data and vulnerability assessment statistics from the LMS into the CEMP.

Appendix A: Mitigation Projects

Priority	Description of Project or Initiative	Goal for Hazards Mitigated	Mitigation Goals Achieved	Funding Source	Jurisdiction (Location)	Agency Responsible for Implementation	Estimated Costs	Status				Timeframe to Complete
								New	Ongoing	Deferred	If Deferred Why?	
The projects located in this color are completed projects.												
	Renovation of the MLK Lift Station.	Hurricanes, Tornadoes and Floods	Yes	CDBG	City of Madison	City of Public Works	\$600,000					The MLK Lift Station was renovated and brought up to code. The project was funded through CDBG and was completed in 2012.
	Reclamation of the Greenville Landfill.	Hurricanes, Tornadoes and Floods	Yes	N/A	Town of Greenville	Greenville Special Projects Consultant	Between \$250,000 - \$600,000					This project involved excavating and disposal of solid waste from the former 5-acre municipal landfill and reclamation of the land for future use. The town is currently paying \$30,000 annually to conduct semi-annual water quality tests. The reclamation will provide mitigation for possible future intrusion into the Florida Aquifer. This project was completed in 2012.
	Centralized Wastewater System	Hurricanes and Floods	Yes	CDBG and SRF Grant Funds	Town of Lee	Town of Lee Manager	\$2,500,000					This project has been completed and included centralizing the wastewater system in the Town of Lee. The goal was to reduce, and eliminate the septic tanks in the town as they could have potentially cause serious health risks during excessive flooding.

	The 911 Dispatch/Communications center has been retrofitted to serve the entire county, including police and fire services.	All Hazards	Yes	HMGP	All jurisdictions in Madison County	Madison County Emergency Management	N/A	As of November 2013, the EMS portion of the retrofit has been completed. The dispatch center will be completed and functioning as of January 2014.			
	Greenville Potable Water Wellfield	Hurricanes, Tornadoes and Floods	Yes	N/A	Town of Greenville	Greenville Special Projects Consultant	Between \$300,000 - \$400,000	This project involved the acquisition of suitable land and infrastructure costs with development of a new wellfield. This project was needed as the town's two wells were located at the water treatment plant area which was too close to the CSX Railroad. The project was completed in 2012			
	Demolition of the Old Tobacco Barn located next to the EOC.	Wildfires	No	TBD	City of Madison	Madison County Emergency Management	\$15,000		x	The barn is currently a fire hazard and could potentially be very destructive if not removed.	Completed
	Purchase a reverse 911 system that could be operated from the dispatch center, the EOC, or a remote authorized location.	All Hazards	No	ODP Grant Funds	All jurisdictions in Madison County	Madison County Emergency Management	\$25,000		x	Funding	Completed

	Install gravity sewer lines at CR53 back in Quail Hollow.	Hurricanes and Floods		TBD	City of Madison	City of Public Works	N/A	x			Funding	Completed	
1	Community Awareness Education Training	All Hazards	1,2,4,5	N/A	All jurisdictions in Madison County	Madison County Emergency Management	TBD	Ongoing				Ongoing	
2	Wind retrofit the Madison County Annex building.	Hurricanes, Tropical Storms, Tornadoes	5	HMGP	City of Madison	Madison County Emergency Management	\$133,300	The Annex building was approved for funding through the HMGP in the Fall of 2013. Details will be available at the next LMS meeting on the status.				In Progress	
3	Install a 800 megahertz radio system and additional towers for interoperability for the sheriff, EM, Fire and Road Departments.	All Hazards	1,2,4,5	TBD	All jurisdictions in Madison County	Madison County Emergency Management	TBD	x			At this time, the county is currently working on a 10 inter 10 call agreement and enhanced communications plan.		
4	Purchase a backup generator for the Annex building.	All Hazards	5	HMGP	City of Madison	Madison County Emergency Management	TBD	x				Within a one-year timeframe.	
5	Wind retrofit the City Hall.	Hurricanes, Tropical Storms, Tornadoes	4,5	HMGP	City of Madison	Madison County Emergency Management					x	Funding	Within a five-year timeframe

6	Purchase a backup generator for the City Hall building.	All Hazards	4,5	HMGP	City of Madison	Madison County Emergency Management	TBD	x					Within a one-year timeframe.
7	Provide water storage tanks and generators for Coody and Barr Wells.	Wildfires, Hurricanes, Floods, and Droughts.	4,5	TBD	City of Madison	The City of Madison	N/A			x		Funding	Within a five-year timeframe
8	Renovate the Pawnee Life Station.	Hurricanes, Tornadoes and Floods	4,5	CDBG	City of Madison	City of Public Works	\$400,000		x			Funding	Within a five-year timeframe
9	Harden the police department and install a backup generator.	All Hazards	4,5	USDA grant and loan	City of Madison	Madison Director of Community Development	\$500,000	The demolition is complete. Currently, the renovation on the upstairs level is in progress. A loan was obtained for \$500,000 and partial payment was received through the USDA grant. The estimated timeframe for completion is April 2014.					Within a one-year timeframe.

10	Implement a stormwater plan for the City of Madison to mitigate flood prone areas.	Hurricanes and Floods	1,2,4,5	HMGP	City of Madison	Madison Director of Community Development	N/A	The Suwannee River Water Management District has provided a report, however, an update on the Lower Suwannee River Basin will be given to Madison identifying the flood risk areas within the City in 2014 to further assist with the stormwater master plan.				Within a one-year timeframe.	
11	Install backup generators at several lift station locations.	Hurricanes and Floods	4,5	CDBG	City of Madison	City of Public Works	TBD	The City of Madison has many different elevations in the topography which makes it essential to have several lift stations. There is a maintenance issue when a hazard event occurs and power is lost. There are generators at the sewer plant, at the master lift station, and 1 mobile 80 kw unit for the railroad. However, there are concerns with the other 10 stations with the main one at the College Inn. It is essential to install backup generators so that power could continue.				Within a five-year timeframe	
12	Install fire hydrants throughout the County.	Wildfires	1,2,3,4,5	PDM Grant Funds	All jurisdictions in Madison County	City of Public Works	TBD	The City of Madison has been asked to supply water to growing surrounding areas of the County, however existing wells have been found to be unsafe to supply potable water. DEP doesn't have the adequate funds available for the fire hydrant installations and the city doesn't have the budget.				Within a five-year timeframe	
13	Install emergency notification siren warning system.	All Hazards	2,4,5	PDM Grant Funds	All jurisdictions in Madison County	Madison County Emergency Management	\$150,000				x	Funding	Within a five-year timeframe

14	Clean and reconstruct the Greenville Drainage System.	Hurricanes, Tornadoes and Floods	4,5	PDM Grant Funds	Town of Greenville	Greenville Special Projects Consultant	\$400,000		x		Funding	Within a five-year timeframe
15	Install culvert pipes under River Park road.	Hurricanes and Floods	4,5	HMGP	Town of Lee	City of Public Works	\$50,000			x	Funding	Within a five-year timeframe
16	Install gravity sewer lines at the Madison County High School and increase capacity.	Hurricanes and Floods	4,5	HMGP	City of Madison	City of Public Works	TBD	This project would involve installing approximately 1550 feet of gravity sewer lines. This would eliminate two lift stations and increase capacity to the existing sewer system.				Within a five-year timeframe
17	Install gravity lines along Martin Luther King.	Hurricanes, Tornadoes and Floods	4,5	CDBG	City of Madison	City of Public Works	\$800,000	Installation of the gravity lines along Martin Luther King would enable the electric to continue and provide sewage service for the residents in the area which include the Middle School and Oak Estates.				Within a five-year timeframe

18	Harden two public Health Buildings.	Hurricanes, Tornadoes and Floods	4,5	PDM Grant Funds	City of Madison	Madison Director of Community Development	TBD		x		Funding	Within a five-year timeframe
19	Renovate and harden the 2nd floor of the existing firehouse.	All Hazards	4,5	PDM Grant Funds	Town of Lee	Lee Town Manager	\$20,000		x		Funding	Within a five-year timeframe
20	Install sufficient drainage system on the South East Farm Road.	Hurricanes and Floods	4,5	Rural Develop. Grant	Town of Lee	Lee Town Manager	\$1,000,000			x	Funding	Within a five-year timeframe
21	Extension of the Greenville Sewer System.	Hurricanes, Tornadoes and Floods	4,5	TBD	Town of Greenville	Greenville Special Projects Consultant	\$2,500,000			Approximately 1/3 of the residents and businesses still operate on septic tanks and are located in low lying areas. Severe storm events can cause a septic tank backup or failure which will lead to potential health hazards.		Within a five-year timeframe

22	Update and expand the existing wastewater treatment plant.	Hurricanes, Tornadoes and Floods	4,5	TBD	Town of Greenville	Greenville Special Projects Consultant	N/A			x	Funding	Within a five-year timeframe
23	Work with the Florida Forest Service on evaluating the defensible space on all the critical facilities throughout the county.	Wildfires	1,3	HMGP	All jurisdictions in Madison County	Madison County Emergency Management	N/A	x	The Madison County EM Director will coordinate specifics with the Florida Forest Service.			Within a one-year timeframe
24	Update and expand the existing wastewater treatment plant sprayfield.	Hurricanes and Floods	4,5	TBD	Town of Greenville	Greenville Special Projects Consultant	N/A			x	Funding	Within a five-year timeframe
25	Research GIS grant opportunities for the property appraiser's office.	All Hazards	1,2,3	TBD	City of Madison	Property Appraiser's Office	N/A	x			Funding	Within a one-year timeframe

26	Develop a map that identifies all public utilities throughout the County including GIS coordinates.	All Hazards	1,2	TBD	All jurisdictions in Madison County	Madison County Emergency Management	N/A	x			Funding	Within a five-year timeframe
	Trauma Debriefing	All Hazards	No	N/A	All jurisdictions in Madison County	Madison County Emergency Management	N/A	This project was deleted in 2012.				
	Build a new County Public Safety Building	All Hazards	No	N/A	All jurisdictions in Madison County	Madison County Emergency Management	NA	This project was deleted in 2012.				
	School Curriculum, hiring a Safety Director for the school district.	All Hazards	No	N/A	All jurisdictions in Madison County	Madison County Emergency Management	N/A	This project was deleted in November 2013.				
	Install a backup generator at the Senior Citizens Center.	All Hazards	No	HMGP	Town of Greenville	Greenville Special Projects Consultant	N/A	This project was deleted in January 2015				

