



# **Local Mitigation Strategy: Multi-Jurisdictional Plan**

**2020**

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**SUMMARY OF CHANGES**

The Summary of Changes will list the routine updates that will be made to the LMS Plan once it has been accepted. Changes made to the 2020 plan will be archived by Escambia County Development Services Department. This plan is a living document and can be changed at any time by the LMS Strategy Committee. Continual citizen participation and input by all interest parties is encouraged.

<b>Change</b>	<b>Comments/Purpose</b>	<b>Date</b>	<b>Pages</b>
Plan Update	Plan was updated and revised in entirety.	2020	All

## EXECUTIVE SUMMARY

Escambia County is vulnerable to a variety of natural, technological, and human-caused hazards which threaten the health and wellbeing of the community, affect economic health, and pose harm to the environment. Escambia County Development Services Department has convened a group of individuals representing the county, the municipalities, and other interested parties to comprise the members of the Escambia County Local Mitigation Strategy Committee (LMS Strategy Committee) to monitor and update this continual planning process.

This document is the result of a multi-jurisdictional approach to mitigation planning. Escambia County along with its municipalities formally adopted the existing Escambia County Local Mitigation Strategy (2015) and once this revision is approved, this updated document will be presented for adoption via a new resolution.

The LMS Strategy Committee conducted research to identify the hazards threatening Escambia County in order to estimate risk, impacts, and potential consequences relating to public, responder safety, continuity of operations, continuity of government, property, facilities, infrastructure, environment, economic issues, and public confidence in the county. The natural hazards in the LMS are mirrored in the Comprehensive Emergency Management Plan (CEMP) for continuity and to facilitate an all-hazards approach to planning.

Proposed projects and programs intended to reduce impacts of future natural disasters are called mitigation projects. Mitigation projects are included in the project list and continue to be developed and added to the list by the LMS Strategy Committee as new hazard research is available, risk increases, and as resources and opportunities become available. Implementing the LMS will help make Escambia County more resistant to the effects of major disasters.

The LMS will continue to be updated and expanded in the future to address changing hazards, reflect the experiences of future disasters, and changes in the participating jurisdictions. The update process and future versions of the LMS will be used to inform the public and encourage other interested parties to participate more in making Escambia County resilient.



## I. INTRODUCTION

Mitigation is any action taken to permanently reduce or eliminate the risk to people and their property from the effects of hazards. The Escambia County Local Mitigation Strategy attempts to reduce some of the risk associated with hazards by implementing mitigation projects within Escambia County and its municipalities. The LMS process is intended to be a framework for documenting the activities of the LMS Strategy Committee and the future mitigation activities within the County. This plan includes updated bylaws of the LMS Strategy Committee; and, the overall planning process is intended to make the LMS Strategy Committee more active in the coming years as well as find ways to further promote public participation. The LMS Strategy Committee has been established to prepare the community to be more resistant and resilient to the effects of future disasters.

### A. Purpose:

The purpose of the LMS is to provide an on-going process that will encourage hazard mitigation efforts as part of the ongoing planning efforts of Escambia County. The LMS encourages evaluation of all hazards to evaluate vulnerabilities and develop goals, objectives, plans, programs, and projects to lessen the effects of those hazards and prioritize implementation of projects to further these goals.

#### a) Planning Assumptions and Considerations

It is important to note the following information regarding this document:

- The LMS is a multi-jurisdictional effort.
- County Staff is the motivating force of the LMS, with full support from all of its local jurisdictions.
- The LMS is a voluntary organization created to meet the 44 CFR 201 & 206 requirements to remain eligible for specific grant programs that require projects be coordinated through an established LMS Committee.
- 44 CFR 201 & 206 requires adoption of the LMS Plan by the respective local jurisdictions either through resolution or ordinance.
- The LMS created this document to satisfy State Disaster Administrative requirements that enforce the Federal requirements found in 44 CFR 201 & 206
- Flood Insurance Rate Maps are based upon formal studies coordinated by FEMA.
- Storm Surge Maps are based upon formal studies by the National Hurricane Center.
- Other hazard zone maps are created using historical data, potential risks, and professional opinions and are not based upon scientific studies or evaluation.
- The LMS has no regulatory authority.
- The LMS is not a capital improvement committee or funding source.
- The LMS has not been commissioned by the Board of County Commissioners (BCC).

### B. Planning Process:

The LMS Strategy Committee is made up of representatives from Escambia County governmental agencies, incorporated municipalities, organizations and associations representing key business

industry, community interest groups, other governmental entities, and non-profit or faith-based groups. Interested citizens are always welcome and encouraged to become involved in the process. Prior planning processes and documentation related to this document can be found in Appendix I-S: Archived Documentation in the Prior Planning Processes folder.

The Escambia County LMS Strategy Committee by-laws are located in Appendix II of this document and were updated in this planning process.

The LMS Strategy Committee encourages involvement in the mitigation planning process by each jurisdiction in Escambia County. Jurisdictions are encouraged to identify others that should be participating on the LMS Strategy Committee. Annual meetings are held in October of each year for the purpose of preparing the annual update to be submitted.

Our current LMS Members, participants, and attendees utilized the FEMA Local Mitigation Planning Handbook (March 2013), to review this Plan to determine what updates are required to meet the Federal and State LMS Plan guidelines. Participation for each meeting including a list of attendees and meeting minutes are maintained and may be found in Appendix I-R.

a) Reviewing the Plan and Resources

To begin the updated process, the LMS Board, as established by the LMS Committee By-Laws in Appendix II, engaged the Planning/Plan Review Technical Support Group (TSG) to coordinate the plan review and updates. The Planning/Plan Review TSG identified the requirements and established task timelines. To expedite the plan review process, the Planning/Plan Review TSG reorganized the current plan. The Plan was sent to the Project Review and Ranking TSG, the Hazard Assessment TSG, and the Public Awareness TSG to conduct a comprehensive review and evaluation of their sections of the plan. The recommended updates resulting from the initial TSG reviews and evaluations were compiled and submitted to the LMS Members and Board for final review, evaluation, and update by the Planning Committee.

b) Establish the Planning Area

The LMS document is a multi-jurisdictional document and has always included all local jurisdictions. Escambia County continues with the multi-jurisdictional approach to meet the Federal requirements found in 44CFR 201 & 206 and the Community Rating System (CRS). All County and regional government agencies within Escambia County participated in the plan review and update process. The jurisdictions included for plan adoption and their LMS plan review representative are as follows:

- Timothy R. Day, Senior Manager, Natural Resources Management Department, Escambia County
- Bill Weeks, Inspections Services Administrator, City of Pensacola (City)
- Debbie Nickles, Town of Century (Town), Town Planner
- Paolo Ghio, Santa Rosa Island Authority (SRIA), Director of Developmental Services

c) Building the Planning Team

The LMS has continued to send out annual written invitations to everyone who may have a stake in the plan update process and continues to include any additional people or groups as

needed and identified, as required by Florida Administrative Rule 9G-22-004. In addition to notifying individuals, agencies, and governments listed on the current LMS Contact List, public notices were published prior to all plan update meetings, including all TSG plan review meetings, to encourage participation from all potential stakeholders, including other government agencies, public and private for profit and not-for profit organizations, neighboring communities, local and regional agencies involved with hazard mitigation, agencies that have the authority to regulate development, businesses, academia, and others.

d) Reviewing the Outreach Strategy

Public participation has always been a challenge addressed by the LMS Board on a continuous basis. The Planning/Plan Review TSG coordinated with the Public Awareness TSG to conduct an outreach project within the community to obtain input from all sections of the public before the plan was updated. During the initial development of the LMS, communication outreach via a survey was sent to over 650 public contacts that included business owners, property owners, tenants, civic groups, non-profit organizations, major employers, and contractors. The information gathered from the 420 survey responders was presented to the LMS Board, LMS Members, and the Planning Committee for consideration, analysis and implementation during the plan review process. The survey tool and responses can be found in Appendix I-I.

e) Review of Community Capabilities and Incorporation of Existing Plans

The LMS Boards' understanding of the varying needs and available resources between each jurisdiction, made sure that each of the four jurisdictions within the County was adequately represented on the Planning Committee. Planning Committee members from each jurisdiction reviewed their existing plans, studies, reports, and technical information, as well as the TSGs' plan update recommendations prior to each planning meeting to provide the foundation necessary to identify any additional planning and regulatory requirements. Escambia County communities currently have several existing programs and plans related to hazard mitigation and post-disaster redevelopment as listed in Appendix I-E of this Plan which includes but is not limited to:

- City of Pensacola Post-Disaster Redevelopment Plan (PDRP) – The PDRP was utilized to identify potential mitigation strategies for planning future development.
- Escambia County Comprehensive Emergency Management Plan (CEMP) - The CEMP was used to help identify the pertinent hazards for the LMS risk assessment.
- Escambia County PDRP – The PDRP was utilized to identify potential mitigation strategies for planning future development.
- Escambia County Flood Warning Plan – The Flood Warning Plan provided flood hazard information relevant to the identification and vulnerability of flooding within the County.
- Perdido Key Neighborhood Plan- This plan defines goals, objectives, and policies, which includes: land use, hurricane evacuation, transportation, and signage information related to the development and mitigation of Perdido Key.
- Escambia County School District Enhanced Hurricane Protection Plan – Defines the criteria for enhanced hurricane protection areas (EHPA).

- Town of Century Comprehensive Plan- The Comprehensive Plan was used to determine the direction of future growth, goals, and objectives of the Town of Century.

Appendix I-E is updated as policies and plans are revised and/or new policies and plans are added.

f) Review of Risk Assessment

The Hazard Assessment TSG, with input from all participating jurisdictions and Emergency Management, analyzed and updated the status on all known hazards within the County. The Planning Committee agreed to include maps for each jurisdiction addressing repetitive loss property areas in the Plan. The Planning Committee also agreed to incorporate language addressing flood levels, warnings, and emergency information in the plan update.

g) Updating the Mitigation Strategy

The LMS Planning Committee conducted a formal review of the LMS plan. Multiple advertised public meetings were held as part of the LMS Plan review and update. On a routine basis, after natural disaster events or when deemed appropriate by the LMS Board, the LMS Planning Committee will meet to update and revise the LMS Plan as needed. The criteria used to evaluate the LMS document and activities will include, but are not limited to the following:

- Federal and/or State Requirements
- Changes in development trends and land use that could affect infrastructure (water, sewer, storm water, roads, traffic, etcetera)
- Storms or other natural processes that have altered Escambia County's hazard areas (wind damage, flooding, erosion, etcetera)
- Completion of existing mitigation projects and introduction of new goals
- Changes in policy, procedure or code
- Changes in building codes and practices
- Review of legislative action that could affect funding of mitigation efforts
- Changes in Flood Insurance Rate Maps, National Flood Insurance Program, etc.

C. Participating Organizations:

Escambia County encourages participation from all of its jurisdictions and enables any entity within the jurisdictions or unincorporated county to be involved in the planning effort. Those involved in the process include: City of Pensacola, Escambia County, Santa Rosa Island Authority (SRIA), and the Town of Century.

This is the inclusive list of all jurisdictions that must approve the LMS as a multi-jurisdictional plan. Each jurisdiction is responsible for actual implementation of the plan within their boundaries and ensuring that their projects meets the needs of the communities. Participation will be identified by attendance at meetings, both in person and virtual, and active involvement in the process. These are the same jurisdictions that were involved in the 2015 plan. The desire of this plan is to foster further participation from all municipalities and to meet on a more consistent basis in the future.

The LMS Strategy Committee has had participation from all remaining jurisdictions due to contact with each entity by members of the Escambia County Development Services Department to

obtain updated information for the LMS Update. Email meeting notices are sent to any and all interested parties both within and outside of Escambia County to encourage participation.

In January of 2015, the LMS Board identified the areas of expertise that was required for the plan update process and established the Planning Committee of the following members:

- Harry T. Gibson, CFM, CRS Coordinator – (Escambia County)
- Johnathan Bilby, CRS Coordinator, (City of Pensacola)
- Trudy O’ Brien, County Media Relations (CMR) –(Private Not-for-Profit)
- Debbie Nickles, Planning-Code Officials –(Town of Century)
- Juan C. Lemos, CFM, Senior Planner, (Escambia County)
- Mary Lynn Williams, Private Participation –(Private Not-for-Profit)
- Timothy R. Day, Natural Resources –(Escambia County)
- Brad Hattaway, Emergency Management –(Escambia County)
- Paolo Ghio, Property Protection –(Santa Rosa Island Authority)
- Johnathan Bilby, Flood Control –(City of Pensacola)

The recommended updates resulting from the initial TSG reviews and evaluations were reviewed, evaluated and updated by the Planning Committee. Individual meetings were scheduled for each of the following steps:

- Reviewing and Assessing the Identified Hazards
- Reviewing and Assessing the Problems
- Reviewing Goals and Objects
- Reviewing Possible Activities/Projects
- Updating the Plan

#### **D. Public Participation:**

The LMS Strategy Committee has benefited from the assistance and support of its many members and support staff and intends to continue its efforts to engage more members of the community in the planning process, including more representatives of the private sector. The public will have additional opportunities to provide input on this updated LMS Plan, such as through the Escambia County website and municipal meetings where the plan will be formally adopted by resolution within each Escambia County community. A copy of the Local Mitigation Strategy for Escambia County is available on the county website at: <https://myescambia.com/our-services/development-services/planning-zoning/local-mitigation-strategy>.

This webpage also provides other mitigation information to the public along with a contact link back to the Escambia County Development Services Department.

The LMS Strategy Committee welcomes public input and encourages participation through legal notices of upcoming public meetings. Future meetings which may be conducted utilized web conferencing will also include a gathering at the Emergency Operations Center for interested parties to attend, listen, and participate in the planning process. Once the updated plan is posted on the website, opportunity for public comment and input will be available prior to adoption.

Public input during held meetings is captured within the meeting minutes (Appendix I-R). Comments are addressed by the Committee for incorporation into the document. As noted, public input options are available via the County website, however, no comments were received for the 2020 submission.

Once the plan is adopted, it will remain on the website, available for public comment and input in an ongoing process. In addition to this planning process, many of the jurisdictions maintain their own efforts to inform the public about potential hazards, hazard mitigation, and this planning process. Escambia County and the LMS Strategy Committee will continue efforts to develop a more robust planning process and encourage more participation and involvement from the jurisdictions, interested parties, and the public.

#### **E. Update Process:**

During the 2020 Escambia County LMS Update, the LMS Strategy Committee took the following actions:

- In 2016, 2017, 2018, 2019 and 2020 quarterly meetings of the LMS Strategy Committees were noticed to the public and held with attendance and meeting minutes provided to document the process.
- In May 2020, Escambia County hired a consultant to assist in the 5-year update process.
- The plan was reviewed and rewritten to be compliant with the most current Florida Local Mitigation Strategy Crosswalk and the Disaster Mitigation Act of 2000.
- The General Section include the Introduction, purpose, and planning process and was revised to reflect the current approach.
- The Hazard Identification and Vulnerability Assessment was reviewed for applicable hazards as well as consistency with the Escambia County Comprehensive Emergency Management Plan (CEMP) and also include societal and technological hazards.
- Mitigation Goals Section includes the goals, projects list, National Flood Insurance (NFIP) and Community Rating System (CRS) and was updated to reflect the current list, current NFIP and CRS information.
- Plan Maintenance Section include monitoring and evaluation; the update process; and process for project implementation and was updated to reflect the current approach.
- LMS Strategy Committee By-Laws Appendices contains the policies of the LMS Strategy Committee and was updated to include the current practices.

The Draft Plan was provided to the LMS Strategy Committee for their review and comment. Another meeting will be conducted to review the Final Draft and approve all changes. The LMS Strategy Committee will continue to solicit input from anyone who may have an interest in the process and include any additional parties as needed as required by Florida Administrative Code 27P-22.

As with the 2015 LMS update, the 2020 LMS goals, objectives, and priorities remain unchanged and continue to guide this document as is consistent with the County goals and priorities.

## II. HAZARD IDENTIFICATION AND VULNERABILITY ASSESSMENT

### A. Introduction:

The purpose of the hazard identification and vulnerability assessment is to use best available information and technology to identify and evaluate potential hazard risks facing Escambia County, as well as provide the factual basis for mitigation activities proposed in Escambia County's LMS that aim to reduce those risks. The vulnerability assessment provides for the identification and analysis of known hazards that may threaten life and property across the entire planning area. It also includes the results of a multi-jurisdictional vulnerability assessment conducted for each of Escambia County's municipal jurisdictions to determine where locally specific risks vary from those facing the rest of the county.

Escambia County is vulnerable to a wide range of hazards that threaten life and property. FEMA's current regulations and guidance under the Disaster Mitigation Act of 2000 (DMA 2000) require, at a minimum, an evaluation of a full range of natural hazards. The Hazards within the Escambia County LMS are broken up into two main hazard types:

- Natural Hazards - Are threats of a naturally occurring event will have a negative effect on life, property and the environment.
- Societal Hazards - are hazards that are created by humans or hazards that directly impact humans by means other than a natural or technological incident.
- Technological Hazards - Include those that are caused by man-made technological advancements, although some can be a result of natural hazards in specific circumstances.

#### a) Geographic Information

Escambia County is the western most county in the panhandle of Florida and is bordered on the west and north by the State of Alabama, on the east by Santa Rosa County, and on the south by the Gulf of Mexico. Escambia County contains 662 square miles of land area, with some 213 square miles of surface water jurisdiction, which totals 876 square miles overall. The physical topography of the land can be divided into two groups: coastal lowlands and western highlands. The coastal lowlands consist of a series of broad, nearly level, marine terraces extending several miles inland from the coast to a near elevation of 100 feet. The western highlands with elevations above 100 feet include gently sloping to strongly sloping series of hills and valleys beginning approximately 10 miles north of Pensacola. The County's elevation ranges from sea level to 200 feet above sea level in the northern part of the County with an average elevation of 69 feet above sea level.

Industrial and commercial land use is primarily located in the southern portion of Escambia County. Residential areas surround the commercial and industrial areas in the County. Agricultural land uses occur primarily in northern sections of the county. The tourist-related development is occurring in the south and southwest areas of the county primarily on the barrier islands. Development in areas subject to tides (i.e., storm flooding) is systematic and regulated. Most critical care and response facilities are located well above any flood-prone or coastal high-hazard area. A future land use map for Escambia County, the Town of Century,

City of Pensacola, and Santa Rosa Island Authority-Pensacola Beach can be found in Appendix I-H.

b) Socioeconomic Information

Escambia County is Florida's 19th most populous county, with approximately 318,316 residents or 1.5% of Florida's overall population. According to the 2018/2019 U.S. Census population estimates, the County contains two (2) municipalities; Century, a small town in the northeastern portion of the County with a population of 1,817; and the City of Pensacola located in the southeastern portion of the County with a population of 52,975. There are approximately 263,524 people residing in the unincorporated areas of the County.<sup>1</sup>

It is estimated that the tourist population in Escambia County would increase the daily population during the tourist season by 33,000 persons. The greatest concentration of tourists can be found on the barrier islands of Pensacola Beach and Perdido Key.

Population density is 453.4 persons per square mile and distribution tends to be concentrated toward the urbanized metropolitan area of Pensacola. The 2019 U.S. Census estimated the average household size to be 2.47 persons. U.S. Census estimates reveal a relatively normal distribution by age with the medium age being 37.3.

As of the 2019 estimates, there are 143,228 housing units in the County. Approximately 61.1% of the housing units are owner occupied with a median value of \$133,600. The per capita income of the county in 2018 was estimated at \$26,730.

Escambia County's migrant population is near zero according to the County's Agriculture Extension office. There are no commercial nurseries, commercial agriculture, or any other agriculture businesses that require migrant workers in relation to the rest of the State of Florida. The non-English speaking population is minimal in comparison to the County's population and experiences in most of Central and South Florida. The transient and homeless populations, as defined by the Department of Housing and Urban Development (HUD), were estimated at 513 persons in 2019.<sup>2</sup>

In 2018, the Census Bureau reported approximately 29,821 business operations with and without employees in Escambia County. According to the Florida Profile for Escambia County, the local unemployment rate averaged 3.7% in 2018, which is comparable to the state-wide rate of 3.7%.

According to the Census Bureau American Community Survey (ACS) 1-Year Estimates, the most common employment sectors for those who live in Escambia County, FL, are Retail Trade (16.7%), Health Care & Social Assistance (14.9%), and Accommodation & Food Services (11%).<sup>3</sup>

**B. Initial Hazard Identification**

The potential hazards that may affect the residents and visitors to Escambia County are reviewed on a regular basis. Each jurisdiction will be addressed individually however we begin with a

<sup>1</sup> US Census – Escambia County QuickFacts <https://www.census.gov/quickfacts/escambiacountyflorida>

<sup>2</sup> <https://www.myflfamilies.com/service-programs/homelessness/publications.shtml>

<sup>3</sup> <https://datausa.io/profile/geo/escambia-county-fl>



general overview at the county level of each of the hazards. This plan is in line with FEMA’s guidance by focusing on hazards that directly affect Escambia County.

Each of the initially identified hazards were studied for their potential impact on Escambia County as well as in terms of the availability of hazard mitigation strategies to reduce that impact. Best available data on historical occurrences, the geographic location, and extent, as well as the probability of future occurrences, were collected and reviewed as part of the hazard identification process in the following sections.

The table below lists the range of hazards identified in this risk assessment:

Type	Hazard	Hazard-Specific Effects
Natural	Drought	Extreme Temperatures
Natural	Flooding	
Natural	Storm Surge	Flooding; Erosion
Natural	Tsunami	Flooding
Natural	Hail	
Natural	Extreme Heat	Drought
Natural	Tropical Cyclone Events	Hurricanes; Tropical Storms; High Winds; Flood; Storm Surge; Tsunami; Tornadoes
Natural	Thunderstorms/Wind/Lightning	Wildfire; Structural Fire
Natural	Sinkholes/Subsidence	
Natural	Earthquakes	Tsunami
Natural	Tornadoes and Waterspouts	High Winds
Natural	Wildland Fire/Wildfire	Structural Fire
Natural	Erosion	
Natural	Winter Storm/Freeze	
Natural/Societal	Epidemic/Pandemic	Mass Casualty/Fatality
Natural/Tech/Soc.	Structural Fire	
Technological	Dam/Levee Failure	Flooding
Technological	Hazardous Materials	Fixed Facilities; Transportation; Radiological Release; Biological; Coastal Spill/Release
Technological	Coastal Oil Spill/Release	
Technological	Cyberterrorism	Critical Infrastructure Disruption
Technological	Terrorism	Mass Casualty/Fatality
Technological	Prolonged Utility/Communications Failure	Critical Infrastructure Disruption
Societal	Civil Disorder/Disturbance	
Societal	Mass Casualty	

**Table 1: Hazard Identification by Type**

Some hazards are not listed due to the geographic location and characteristics of the planning area, and are not relevant to Escambia County and the participating jurisdictions, i.e. volcanoes. There are no volcanoes in the Southeast United States that would impact Escambia County.

### C. **Probability Summary:**

Each hazard is described and ranked based on relative risk using probability and severity as the identified measures.

Probability based on historical information and takes into account the likelihood that Escambia County will see an impact by the hazard within a given period of time.

- **N = None:** No previous occurrence and considered no threat
- **L = Low:** Some potential every 16 years or more
- **M = Moderate:** Potential occurrence every 3 to 15 years
- **H = High:** Potential to exist every 1 to 2 years

Based on the history of the hazards occurring and all available information, a summary of probabilities table has been created to determine then likelihood of a hazard occurring within a certain number of years. It is important to note that a hazard with a low probability of occurring can be just as severe as one with a high probability of occurring.

**Table 2** on the following page indicates the hazards identified in this plan and their potential hazard risk based on the likelihood of an incident occurring within the probability summary listed above.

**Table 3** on the following page indicated the potential impact a hazard may have based on the following criteria:

- **N = None:** No impact expected
- **L = Low:** Special portions of the population affected; day to day operations not affected; minor cosmetic damage to structures possible
- **M = Moderate:** Approximately 50% of population affected; mobile homes and poorly built or maintained structures impacted
- **H = High:** Significant portions of the population impacted; major damage to old, poorly maintained mobile home structures; some damage to structures built to recently approved building code

**Table 2: Potential Hazard Risk to Locality**

	Drought	Flooding	Hail	Excessive Heat	Hurricane/Tropical Cyclone Events	Storm Surge	Thunderstorm Lightning/Wind	Sinkholes	Earthquakes	Tsunamis	Tornadoes/Waterspouts	Wildfire	Erosion	Winter Storm Freeze	Dam/Levee Failure	Structural Fire	Hazardous Materials	Coastal Oil Spill	Epidemic/Pandemic	Civil Disorder/Disturbance	Terrorism	Cyberattack/Cyberterrorism	Mass Casualty	Prolonged Utility/Comms. Failure
Escambia County	M	M	H	M	H	H	H	N	L	L	L	M	L	M	L	L	L	L	M	L	L	H	L	M
City of Pensacola	L	M	M	M	H	H	H	N	L	L	L	N	L	M	L	L	L	L	M	L	L	H	L	M
Santa Rosa Island Authority	L	M	M	M	H	H	H	N	L	L	L	N	H	M	L	L	L	L	M	L	L	H	L	M
Town of Century	L	M	M	M	H	L	H	N	L	N	L	L	L	M	L	L	L	N	M	L	L	H	L	M

**Table 3: Potential Hazard Impact to Locality**

	Drought	Flooding	Hail	Excessive Heat	Hurricane/Tropical Cyclone Events	Storm Surge	Thunderstorm Lightning/Wind	Sinkholes	Earthquakes	Tsunamis	Tornadoes/Waterspouts	Wildfire	Erosion	Winter Storm Freeze	Dam/Levee Failure	Structural Fire	Hazardous Materials	Coastal Oil Spill	Epidemic/Pandemic	Civil Disorder/Disturbance	Terrorism	Cyberattack/Cyberterrorism	Mass Casualty	Prolonged Utility/Comms. Failure
Escambia County	M	H	M	M	H	H	H	L	L	L	L	M	L	M	L	L	L	L	M	L	L	L	L	H
City of Pensacola	L	H	L	M	H	H	H	L	L	L	L	L	L	M	L	L	L	L	M	L	L	L	L	H
Santa Rosa Island Authority	L	H	L	M	H	H	H	L	L	L	L	L	M	M	L	L	L	L	M	L	L	L	L	H
Town of Century	L	H	L	M	H	L	H	L	L	L	L	L	L	M	L	L	L	L	M	L	L	L	L	H

## D. Hazard Profiles:

### a) Hurricane/Tropical Storm (Tropical Cyclone Events)

#### 1) *Description*

A hurricane is a tropical cyclone, which is a rapidly rotating storm system characterized by a low-pressure center, a closed low-level atmospheric circulation, strong winds, and a spiral arrangement of thunderstorms that produce heavy rain or squalls.

Tropical cyclones are classified as follows:

- Tropical Depression - An organized system of clouds and thunderstorms with a defined surface circulation and maximum sustained winds of 38 mph or less
- Tropical Storm - An organized system of strong thunderstorms with a defined surface circulation and maximum sustained winds of 39-73 mph
- Hurricane - An intense tropical weather system of strong thunderstorms with a well-defined surface circulation and maximum sustained winds of 74 mph or higher

Hurricanes, tropical depressions, and tropical storms have long affected Florida because of its location. As a narrow peninsula between two warm bodies of water, Florida is regularly affected by hurricanes. The greatest threats to Escambia County posed by a hurricane are storm surge, wind damage, and inland flooding. Wind damage from the storm itself is related to wind speed and the accompanying "pressure" that is exerted on structures. When the wind speed doubles, four times more force is exerted on structures. Wind damage can also be caused by hurricane-spawned tornadoes, which can be more destructive than the hurricane itself. Damage can also be caused by wind-borne debris and flood conditions.

#### 2) *Location and Extent*

Escambia County is susceptible to direct impacts from major hurricanes. A major hurricane is classified as a tropical cyclone with maximum sustained winds of 111 mph (96 knots) or higher, corresponding to a Category 3, 4, or 5 on the Saffir-Simpson Hurricane Wind Scale.

The intensity of hurricanes is measured by the Saffir-Simpson scale, with sustained wind speeds (measured in miles per hour) to measure the extent of a tropical storm or depression. Once a tropical storm reaches wind speeds of 74 miles per hour or greater, it is then classified as a Category 1 hurricane. It is important to note that in 2010, the National Weather Service and National Hurricane Center have changed its criteria by no longer correlating wind speed with storm surge height. No two storms are the same and less intense storms could in fact create a storm surge that is comparable to stronger storms.

Typical damage by hurricane category can be seen in the following table.

**Table 4: Saffir-Simpson Scale and Typical Damage<sup>4</sup>**

Scale	Wind Speed	Typical Damage
Category 1	74-95 mph	Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
Category 2	96-110 mph	Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
Category 3	111-129 mph	Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
Category 4	130-156 mph	Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
Category 5	≥157 mph	A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

**3) Previous Occurrences**

Between 1851 and 2019, Escambia County has been struck directly by 8 hurricanes, 3 of them being major. During the same time period, 16 tropical storms and 6 tropical depressions also directly impacted the County. In total, 49 tropical cyclone events have been recorded striking within 10 miles of Escambia County from 1851 and 2019 (Figure 1). Six of those events have been major hurricanes.

Between 1851 and 2018, in Florida, 112 hurricanes have directly impacted the state of Florida. The total number of major hurricanes, Category 3 or above, between 1851 and 2019, reached 55, resulting in incalculable damages and loss of life. Flooding that occurred from Tropical Storm Fay is discussed in the flooding hazard section and no other significant tropical cyclone hazards have occurred since. The following storms are a few of the more notable events that have impacted Escambia County, based on available information:

- Hurricane Frederic, 1979: This storm brushed by Pensacola and Escambia County making landfall in Pascagoula, Mississippi, but not without impacting Perdido Key, Escambia County with a 10 to 15-foot storm surge and heavy

<sup>4</sup> <https://www.nhc.noaa.gov/aboutsshws.php>

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winds. This storm resulted in the beginning of Escambia County's repetitive loss property list under the NFIP, with numerous properties sustaining flood damage.

- Hurricane Erin, 1995: The 15th costliest storm to date, which brought 85 mph winds. Erin came ashore east of Pensacola as a Category 2 storm. This storm caused damage to homes and businesses throughout the County and City of Pensacola, with the most significant damage on Pensacola Beach and Perdido Key with homes severely damaged and roads covered in sand. This storm produced a lot of debris with hundreds of downed trees all over the county. In addition, debris from damaged homes and business contributed to the debris collected after this storm. Over 600 structures in the City sustained some type of minor damage from Hurricane Erin. Major damage was sustained by 88 structures: 63 single-family dwellings; 11 commercial structures; 10 apartment units, and 4 government buildings. Toppled trees damaged single-family structures, while the damage to the commercial structures and governmental buildings was primarily caused by high winds. In total, approximately 593 single family dwelling structures sustained some type of damage from Hurricane Erin, or almost 2.9% of the City's approximately 20,000 single-family structures.
- Hurricane Opal, 1995: The 4th costliest storm to date, struck Pensacola in the aftermath of Erin. This storm came ashore as a Category 3 with 125-mph winds. Inland portions of the County saw anywhere between 6 and 15.45 inches of rain causing severe inland flooding and forcing the Escambia and Perdido rivers out of their banks. Structures located on barrier islands and along area bays and bayous generally receive the highest percentage of damage from high winds and tidal surges. Coming ashore east of the City of Pensacola, Hurricane Opal devastated the coastal barrier islands of Escambia, Santa Rosa, Okaloosa, Walton, and Bay counties. Damages from Hurricane Opal were mainly the result of tidal surges, ranging from six feet in Pensacola to twenty feet in shoreline communities east of Pensacola. Over 1,000 structures sustained damage on Pensacola Beach during Hurricane Opal. This storm was estimated to be a 12-year rainfall storm event.
- Hurricane Ivan, 2004: Made landfall just west of Gulf Shores, Alabama as a Category 3 hurricane, putting Escambia County in the worst part of the storm. In general, rainfall amounts were 3 to 7-inches, with one report of 15.75" at the WEAR TV station. Storm surge was estimated to be 10-15' with wave action on top of the surge in many areas. This storm caused significant damage to the community, most severely in the Category 3 storm surge area of the County with homes being completely stripped from their foundations. The I-10 Bridge over Escambia Bay between Santa Rosa and Escambia County had numerous sections of the bridge damaged or destroyed as a result of the storm surge. There were approximately 1,020 homes and businesses destroyed, another 1,346 with major damage, and 292 with minor damage.
- Hurricane Dennis, 2005: Made landfall on Santa Rosa Island, between Navarre Beach and Gulf Breeze as a Category 3 storm. Dennis brought 6 to 7-foot storm surge and produced approximately 3 to 5-inches of rainfall. The storm caused moderate damage to the community.

- Hurricane Gustav, 2008: Brushed by Escambia County on its way to Louisiana. Though no significant rainfall was produced, storm surge from 3-5' did impact our coastal areas and cause a few condominiums to flood on Pensacola Beach. Winds were slightly gusty, but no significant gusts reports. However, the beaches were severe impacted by heavy wave action on top of the surge causing approximately \$11.75 million in beach erosion damage. Otherwise, impacts were minimal.
  - Hurricane Ida, 2009: Became extra-tropical as it made landfall in east Baldwin County, Alabama and moved northeast through Escambia County. Impacts and damages were contained to significant beach erosion.
- The Figure below shows all the hurricane paths that have come within 50 miles of Escambia County from 1851 through 2017.

**Figure 1: Hurricane Paths in Escambia County and northern Florida, (1851 – 2018)<sup>5</sup>**



Between 2010 and 2018 there have been no tropical events that have caused any significant threat or impacts to Escambia County.

#### 4) Probability of Future Events

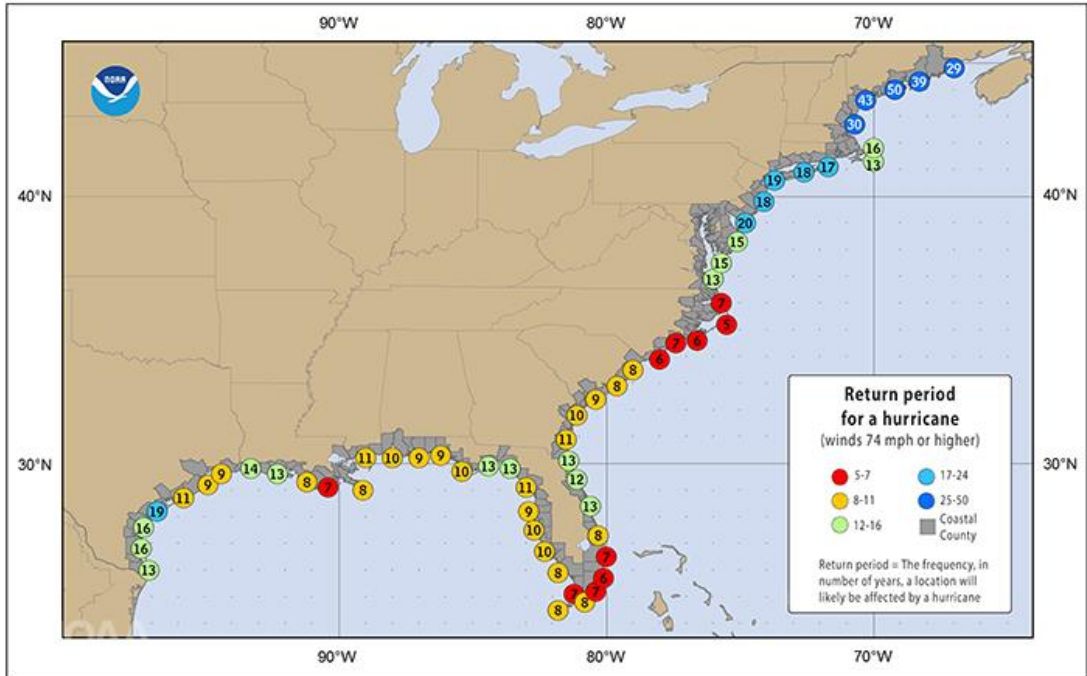
Escambia County has a long history of tropical storm and hurricane impacts dating as far back as 1559 when the Spanish attempted to first settle in Pensacola. As a result of the County's geographical location and historical events, the National Oceanic and Atmospheric Administration (NOAA) has probability (or return period) of being impacted by a hurricane as once in every 8 to 11 years. The return period for a major hurricane is approximately every 23 to 32 years.<sup>6</sup>

<sup>5</sup> [NOAA Coastal Services Center](#)

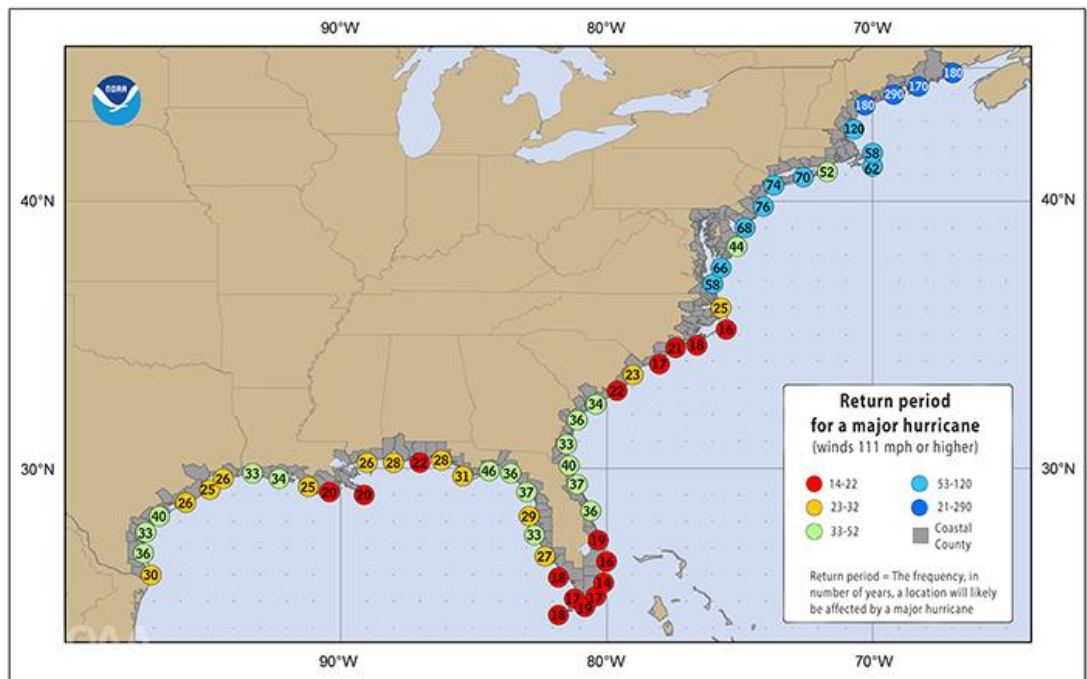
<sup>6</sup> <https://www.noaa.gov/stories/what-are-chances-hurricane-will-hit-my-home>

Statistically, the county is brushed or hit every 2.24 years by a hurricane or tropical storm.<sup>7</sup> The following figures illustrate the calculated NOAA hurricane return periods.

**Figure 2: Return Period for a Hurricane (Winds 74 mph or Higher)**



**Figure 3: Return Period for a Major Hurricane (Winds 111 mph or Higher)**



<sup>7</sup> <http://www.hurricanecity.com/city/pensacola.htm> (Accessed: June 1, 2020)



### 5) *Vulnerability and Risk Assessment*

Escambia County is considered highly vulnerable to hurricanes due to existing development patterns, coastal population, and its history of events. The number of people affected by hurricanes and tropical storms is significant, the economic costs are high, the likelihood of hurricanes and tropical storms is moderate to high, and vulnerability is high. All buildings and infrastructure in the County are vulnerable to hurricanes and tropical storms.

Hurricanes combine multiple natural hazards in the form of high sustained winds, tornados, heavy rains, and storm surge. Along the Gulf coast, including bays and bayous, significant property damage is expected from storm surge caused by these events. Storm surge is the rise of sea level coupled with wind driven waves. The more intense the hurricane, the more perpendicular its tract to the shoreline, and proximity of the eye of the hurricane (particularly to the west) will result in significantly higher destruction by the associated natural hazards.

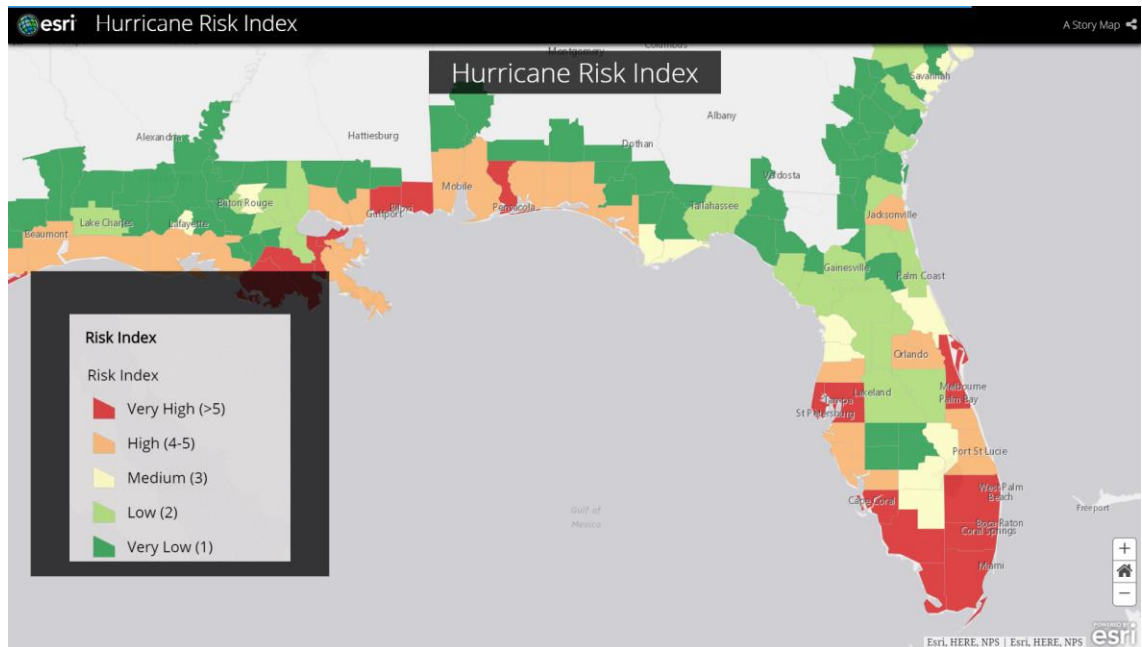
Heavy rains and flooding compound damages caused by storm surge and high winds. While rainfall does not normally require the emergency evacuation of large numbers of residents during the passage of a hurricane and flooding associated with storm surge, rainfall does have the potential to slow traffic, overtax stormwater drainage systems, and hamper evacuation routes which may lead to a reduction of the total hours available for overall evacuation efforts.

Flooding is a major threat to areas well inland of the hurricane impacts that require evacuation. The potential wind and flood damage from a Category 5 hurricane could result in millions of dollars in damages to homes, businesses, employers, and public service providers and displace tens of thousands of residents. The population living in evacuation zones 1-4 totals is approximately 12% of the County's population, excluding the mobile home population elsewhere in the County.

Structures located on barrier islands, low lying areas such as downtown Pensacola and the southwest portion of the County, taller structures, and mobile homes are at an increased risk of damage from these forces. Based on anticipated impacts from a tropical storm or hurricane, evacuation orders are issued for residents on barrier islands and low-lying areas within predicted storm surge areas.

There is in excess of 10,000 mobile homes in the County and all mobile home residents are included in any evacuation orders associated with a Tropical Storm or Hurricane.

It is difficult to determine risk levels at the local level for hurricanes. Regional and national risk can be estimated based on historical events and climate data. The following figure identifies the county in a very high-risk zone for hurricanes.

Figure 4: Hurricane Risk Index<sup>8</sup>

For a tropical cyclone event, coastal and the inland areas near the coast will be most vulnerable to wind. These areas include the City of Pensacola, Santa Rosa Island Authority, and the coastal areas of Unincorporated Escambia County, which includes Perdido Key. The Town of Century, being an hour inland, would experience much less of a wind impact from a small event as the storm moves inland and loses strength. However, with a very large Category 3, 4, or 5 storm, Century would be susceptible to the impacts from wind.

It is difficult to predict the risk to a specific area from a tropical cyclone event due to varying conditions of a storm. However, to achieve consistency in the information provided to the community and to minimize confusion, the County has mapped the wind hazards by utilizing the Florida Building Code Wind Zones.

Escambia County building code identifies wind zones within the County based on the distance from the coastline<sup>9</sup>. Escambia has designed a wind load building code map that identifies various wind zones for building wind-load requirements from 140 mph zones on the coast to 120 mph zones where the Town of Century is located. The City of Pensacola and barrier islands all fall within the 140 mph zones, and all areas fall within the impact protection requirements.

This Building Code map tries to incorporate the concept that a storm will weaken as it moves inland, as well as indirectly, and maybe inadvertently characterizing the wind risk for the County. And as such, the LMS decided to minimize potential confusion by

<sup>8</sup> <https://arcg.is/C4TnL> ESRI Hurricane Risk Index

<sup>9</sup> [https://library.municode.com/fl/escambia\\_county/codes/code\\_of\\_ordinances](https://library.municode.com/fl/escambia_county/codes/code_of_ordinances)

incorporating this map for our wind zone hazard map. This map can be found in Appendix I-F, Map 10.

b) Storm Surge

1) *Description*

Storm surge is an abnormal rise of water generated by a storm, over and above the predicted astronomical tide. Storm surge has the potential to impact the coastal and riverine areas of the county as a result of the storm surge being pushed into the bays, bayous, and riverine areas from conditions of a significant tropical event.

2) *Location and Extent*

Coastal storm surge can be expected with any tropical event, including low category storms. All coastal locations are susceptible to storm surge damage including: The City of Pensacola to the East, and coastal areas to the south such as Pensacola Beach, and Perdido Key to the south-west of the County, including bayous and other low-lying areas of south side of the County. Major riverine plains throughout the County receive water from tributaries to the north; any heavy rain event could potentially affect structures, activities, and individuals within the floodplain boundaries, including the Town of Century and other smaller rural communities located along the rivers and streams. As storm surge events are intricately related to tropical storms and hurricanes, the list of occurrences is the same as for those hazards.

3) *Previous Occurrences*

More recent occurrences of storm surge events include:

- Hurricane Ivan, 2004: Made landfall just west of Gulf Shores, Alabama as a Category 3 hurricane, putting Escambia County in the worst part of the storm. Storm surge was estimated at between 10 to 15 feet plus wave action in many areas. This storm caused significant damage to the community, most severely in the Category 3 storm surge area with homes being completely removed from their foundations. The I-10 Bridge over Escambia Bay between Santa Rosa and Escambia County had numerous sections removed as a result of the storm surge. There were approximately 1,020 homes and businesses destroyed; another 1,346 with major damage, and 292 with minor damage.
- Tropical Storm Arlene, 2005: Made landfall just west of Pensacola dropping approximately 3 to 4 inches of rain with approximately 60 mph winds, causing little damage and approximately 2 feet of storm surge.
- Hurricane Dennis, 2005: Made landfall on Santa Rosa Island, between Navarre Beach and Gulf Breeze as a Category 3 storm. Dennis brought 6 to 7 feet of storm surge and produced approximately 3 to 5 inches of rainfall. The storm caused moderate damage to the community.
- Hurricane Gustav, 2008: Brushed by Escambia County on its way to Louisiana. Though no significant rainfall was produced, storm surge from 3 to 5 feet did impact our coastal areas causing condominiums to flood on Pensacola Beach. Beaches were severely impacted by heavy wave action on top of the surge causing approximately \$11.75 million in beach erosion damage.

- Hurricane Ike, 2008: A category 2 storm at landfall, Ike passed by Escambia County with less impact than Gustav, producing little to no rainfall, less gusty winds, but still approximately 3 to 5 feet of storm surge, causing the same homes to be flooded that were flooded during Hurricane Gustav, and creating an additional \$9.375 million in damages due to beach erosion.
- Hurricane Ida, 2009: Became extra-tropical storm as it made landfall in east Baldwin County, Alabama and moved northeast through Escambia County. Impacts and damages were contained to significant beach erosion with little other impacts to the county.
- Hurricane Isaac, 2012: A category 1 storm at landfall near Houma, Louisiana Isaac passed by Escambia County, producing little to no rainfall, but still about 4 to 5 feet of storm surge. Impacts and damages from this event were contained to significant beach erosion with little other impacts to the county.
- Hurricane Nate, 2017: The main impacts to the western Florida Panhandle were from storm surge. In Escambia County, tide gauge information from Pensacola Bay indicate peak inundation of 3 feet above normally dry ground occurred along immediate coastal areas of the Pensacola Bay System. USGS data indicates a peak of 3 to 5 feet of inundation likely occurred at the immediate shore of the barrier islands. The greatest impact was to the Fort Pickens areas where part of the roadway was damaged. The road also had 3 feet of sand covering it with 4 feet of sand deposited on some of the parking lots. In addition, a portion of Highway 399 between Pensacola Beach and Navarre Beach was damaged.
- Tropical Storm Gordon, 2018: Storm surge inundation peaked between 2 to 3 feet across coastal Escambia County. The Fort Pickens area experienced significant coastal flooding and beach erosion.

#### *4) Probability of Future Events*

The possibility of a storm surge event is directly tied to the proximity of tropical storms or hurricanes to Escambia County. Significant storm surge would be tied to the hurricane strike probability. In reference to the previous occurrences section, a storm surge event has occurred recently every 1-2 years thus the probability of a future storm surge event impacting Escambia County is high.

#### *5) Vulnerability and Risk Assessment*

Both the County and the City of Pensacola are at risk from storm surge, with the potential impacts varying depending upon the conditions of the storm. County storm surge maps are available to identify areas at risk<sup>10</sup>.

Hurricanes combine multiple natural hazards in the form of high sustained winds, tornados, heavy rains, and storm surge. Along the Gulf coast, including bays and bayous, significant property damage is expected from storm surge caused by these events. Storm surge is the rise of sea level coupled with wind driven waves. The more intense the hurricane, the more perpendicular its tract to the shoreline, and proximity of the eye of

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<sup>10</sup> Appendix I-F: Hurricane Storm Surge

the hurricane (particularly to the west) will result in significantly higher destruction by the associated natural hazards.

Structures located on barrier islands, low lying areas such as downtown Pensacola and the southwest portion of the County, taller structures, and mobile homes are at an increased risk of damage from these forces. Based on anticipated impacts from a tropical storm or hurricane, evacuation orders are issued for residents on barrier islands and low-lying areas within predicted storm surge areas.

Escambia County is susceptible to storm surge greater than those indicated on the Saffir/Simpson Hurricane Scale due to the relatively shallow water and gradual slope of the Gulf of Mexico bottom. In association with a major hurricane, it is anticipated that a storm surge is possible in the range of 25 to 28 feet above normal tide levels. Based on the area anticipated to be impacted by a category 5 hurricane, approximately 43,500 acres of coastal lands would be expected to be inundated. There is in excess of 10,000 mobile homes in the County and all mobile home residents are included in any evacuation orders associated with a tropical storm or hurricane.

The population effected in this zone is approximately 51,500 persons that may need to be evacuated. Communities along the coastline of Escambia County are subject to surge from one or more of the following sources: Gulf of Mexico, Pensacola Bay, Santa Rosa Sound, Escambia Bay, Perdido Bay, Big Lagoon, and associated bayous, rivers, and streams.

c) Thunderstorms/Wind/Lightning

1) *Description*

Thunderstorms consist of rain-bearing clouds that also produces lightning. Any person who has been a resident of Florida during the summer is well aware of the typical weather patterns during this season. Warm mornings give way to afternoon thunderstorms that are typically localized and can be very intense. Compared to many other places in the nation, Florida receives an exorbitant amount of lightning strikes that are responsible for numerous deaths and property damage every year. Northwest Florida averages between 70 and 80 thunderstorms each year.

2) *Location and Extent*

All areas of Escambia County are susceptible to the effects of thunderstorms. These events are common throughout Florida, occur throughout the year and typically are widespread events. Although thunderstorms generally affect a small area, they are very dangerous given their ability to produce accompanying hazards including high winds, hail, and lightning which all may cause serious injury or death, in addition to property damage. They are most common in Florida because atmospheric conditions are favorable for generating powerful storms.

All areas of Escambia County are susceptible to the effects of high winds related to a thunderstorm. A severe thunderstorm includes damaging winds greater than 58 mph (50 knots) or greater and hail 1 inch or larger in diameter. High winds have been further broken down into three categories by the NWS Storm Events database:

- High Wind: Sustained non-convective winds of 35 knots (40 mph) or greater lasting for 1 hour or longer or winds (sustained or gusts) of 50 knots (58 mph) for any duration (or otherwise locally/regionally defined), on a widespread or localized basis. In some mountainous areas, the above numerical values are 43 knots (50 mph) and 65 knots (75 mph), respectively.
- Strong Wind: Non-convective winds gusting less than 50 knots (58 mph), or sustained winds less than 35 knots (40 mph) resulting in a fatality, injury, or damage.
- Thunderstorm Wind: Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage. Events with maximum sustained winds or wind gusts less than 50 knots (58 mph) should be entered as a Storm Data event only if they result in fatalities, injuries, or serious property damage.

All areas of Escambia County are susceptible to lightning strikes and their potential effects. Any lightning bolt can kill. Lightning plays a crucial role in the fire-based ecologies of the forests; unfortunately, it also plays a role in fires that might threaten human life and property. Many of the fires in 1998<sup>11</sup> that impacted the State of Florida were ignited by lightning strikes. Damage to buildings can also be prevented by lightning rod systems and surge protectors to reduce the risk of fires. With regard to a scale for lightning, there is no scale for strength (such as weak vs. strong).

### 3) *Previous Occurrences*

Within Escambia County, lightning accounted for 6 deaths and 15 injuries between 1950 through 2019, with a total of 449 deaths statewide in the same period. Since 2010, forty-three<sup>12</sup> (43) people have died in Florida from lightning strikes, an average of 3+ people per year, while some 25+ people are injured on average in the United States. Escambia County could expect 4-12 lightning flashes per square kilometer per year.

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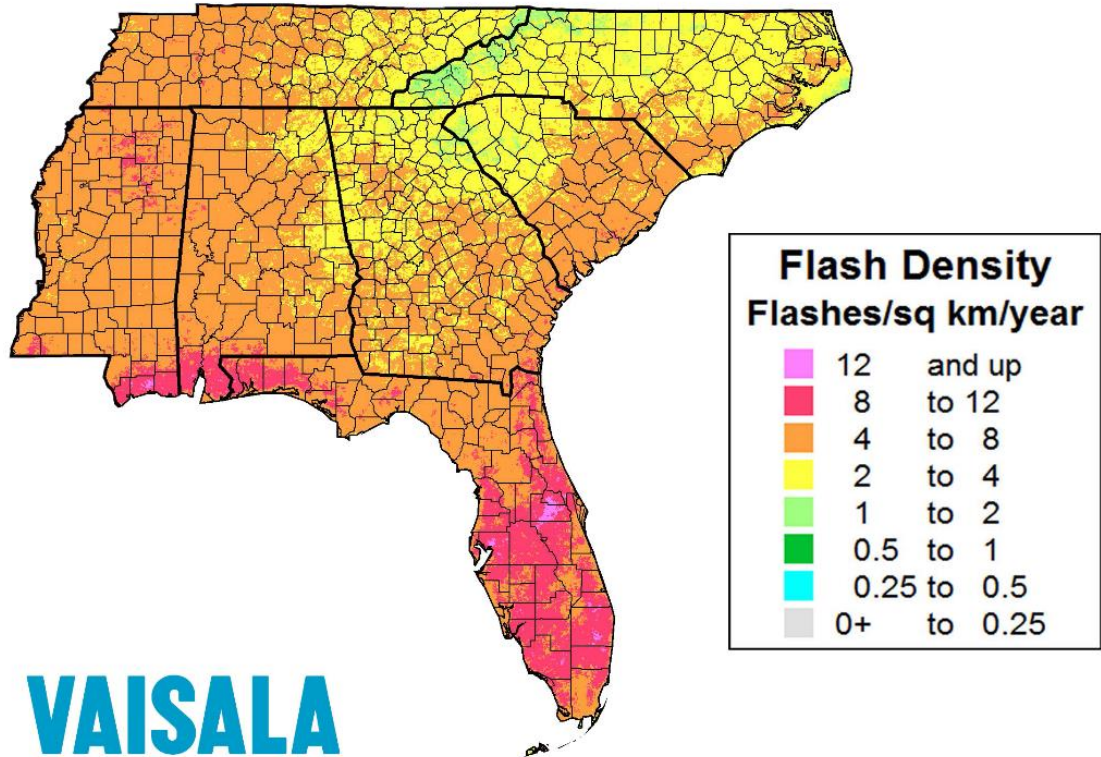
<sup>11</sup> U.S. Fire Administration, 2004

<sup>12</sup> <http://www.lightningsafety.noaa.gov/victims.html>

The Figure below indicates lightning flash density from 2007 through 2016.

Figure 5: Vaisala National Lightning Detection Network (2007 - 2016)<sup>13</sup>

## National Lightning Detection Network 2007 - 2016



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Since 2010, there have been 52 thunderstorm/wind events in the county, 13 of which caused damage in Escambia County. Details of these impacts, including the magnitude and amount of property damage cost can be found at [www.ncdc.noaa.gov/stormevents](http://www.ncdc.noaa.gov/stormevents).

**Table 5: Summary of Thunderstorm/Wind Events in Escambia County (2010 – February 2019)<sup>14</sup>**

Number of County/Zone areas affected:	1
Number of Days with Event:	31
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	25
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

<sup>13</sup> Lightning data from Vaisala.com provided in a media release dated 2017

<sup>14</sup> <http://ncdc.noaa.gov/stormevents>

#### 4) *Probability of Future Events*

The probability of future occurrences of thunderstorms/winds/lightning within Escambia County is high as these events occur frequently especially during summer months. Generally speaking, all of Escambia County is subject to the effects of Thunderstorms, Wind, or Lightning. It is anticipated since Escambia County has experienced lightning storms before, it will likely occur again. Wind events in recent history have averaged from 40 to 70 knots and it is likely that those will occur again as well. The county has certainly experienced high winds and gusts that have impacted the residents and businesses of Escambia County.

#### 5) *Vulnerability and Risk Assessment*

Escambia County is very susceptible to thunderstorms, high winds, and lightning. With the population of Escambia County continuing to grow, the effects of thunderstorms and wind events will be felt even more than in the past and substantial damage can be experienced by residents. With severe thunderstorms and lightning, segments of the population could be negatively affected. Agriculture concerns could suffer damage and economic losses. Individuals in open areas such as golf courses and parks are at risk, as well as those that may be participating in boating or other water activities on the numerous lakes and streams in Escambia County. Critical facilities and infrastructure would be possibly impacted in a devastating storm.

While historically thunderstorms have not caused any significant damage to structures, or caused any deaths in Escambia County, the threat continues to remain based on each storm's potential. Additionally, Escambia County considers thunderstorms a serious threat based on the following facts:

- On average, the County will experience 14 severe thunderstorms a year that cause moderate damage. During the summer months, the County can experience daily thunderstorms that include high winds and lightning. Structures such as mobile homes are highly susceptible to winds associated with the thunderstorms.
- Escambia County has a large commercial and private boating population. Pensacola Beach, Perdido Key, Santa Rosa sound, Navy Base and the surrounding bayous and internal water bodies have public and private marinas and boat launches that provide access to the Gulf of Mexico and the internal freshwater rivers. This means the presence of many boaters on open water at any given time where they may be vulnerable to thunderstorms, and the associated winds and lightning produced.
- 45% of all residents in Escambia County live in close proximity to forested lands; thunderstorm winds will often cause tree damage to improved property, structures, and people.
- Approximately 27% of the County is in the 100-year flood plain and vulnerable to flooding. Thunderstorms can cause excessive rainfall over short periods of time, causing localized flooding. Flooding can result in temporarily displacing County residents and result in damage to structures and agriculture.



Although Escambia County has a high incidence of lightning strikes and thunderstorms, there are not a significant number of people impacted by these events. The economic costs are low, but response costs tend to be high, therefore the level of vulnerability is moderate. All areas of the County are considered vulnerable to lightning strikes and thunder storms. Commercial and private boating populations could be affected by lightning. In severe cases, wildfires as a result of lightning strikes in our forested areas could potentially impact residential, commercial and agricultural activities alike.

d) Tornadoes and Waterspouts

1) *Description*

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes and other tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. Tornado speeds can reach in excess of 300 miles per hour. Damage paths can vary as wide as one mile and as long as 50 miles.

Some tornadoes are clearly visible, while rain or nearby low-hanging clouds may 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 cloud is not visible. Tornadoes generally occur near the trailing edge of a thunderstorm.

Waterspouts fall into two categories: fair weather waterspouts and tornadic waterspouts.

Tornadic waterspouts are tornadoes that form over water, or move from land to water. These have the same characteristics as a land tornado and are associated with severe thunderstorms. Tornadic waterspouts are often accompanied by high winds and seas, large hail, and frequent, dangerous lightning.

Fair weather waterspouts usually form along the dark flat base of a line of developing cumulus clouds. This type of waterspout is generally not associated with thunderstorms. While tornadic waterspouts develop downward in a thunderstorm, a fair-weather waterspout develops on the surface of the water and works its way upward. By the time the funnel is visible, a fair-weather waterspout is near maturity. Fair weather waterspouts form in light wind conditions so they normally move very little.

2) *Location and Extent*

Similar to hurricane data, there is only reliable recorded data for tornadoes since 1950. Although the Midwest has the reputation for the worst tornadoes, Florida experiences the greatest number of tornadoes per square mile of all the states. Florida has averaged 52 tornadoes reported per year since 1961, with an average of two fatalities per year. Florida's tornadoes are generally of shorter duration (3 miles) and have narrower paths (125 yards wide). All areas of Escambia County are susceptible to tornadoes and their potential effects.

The Fujita Scale (now the Enhanced Fujita Scale) is used to determine the intensity of tornadoes. Most of the tornadoes that have hit Escambia County have been on the lower

spectrum, in the F0 or F1 range. On February 1, 2007, the National Weather Service switched from the Fujita Scale to the Enhanced Fujita Scale to better reflect examinations of tornado damage surveys, aligning wind speeds more closely with associated storm damage. The Enhanced Fujita Scale levels are listed in the table below.

**Table 6: Measuring the Intensity of Tornadoes (Extent)<sup>15</sup>**

Scale	Wind Speed (mph)
EF0	65-85
EF1	86-110
EF2	111-135
EF3	136-165
EF4	166-200
EF5	>200

Because of the unpredictable patterns of tornadoes, and because the entire state of Florida has a relatively high risk, the entire County is vulnerable to tornado-induced damage. The damage potential for a tornado increases as a function of population density. As the number of structures and people increase, the potential damage/injury rate increases. Mobile homes, poorly constructed and/or substandard housing, apartment complexes and low-rent housing projects are especially susceptible because of their lack of resistance to high winds, and apartment complexes and low-rent projects because of their size and densities.

### 3) *Previous Occurrences*

There have been 91 recorded tornadoes in Escambia County since 1950 that have caused nearly \$35,000,000 in total damage. These same tornadoes have also been responsible for 191 injuries and no deaths.

There have been several; significant tornado events in Escambia County in the last twenty years.

- October 2001: The Central and Southern portions of the county had several tornados touchdown during a severe thunderstorm. One of the tornados nearly pulled the roof off of a home, a shed was pushed into a homeowners' swimming pool, in addition to debris scattered throughout the area.
- October 18, 2007: An EF1 tornado that went through the downtown Pensacola area causing minor damage to a few structures.
- February 17, 2008: An EF1 tornado touched down in the Molino area causing damage to numerous homes and businesses.
- February 15, 2016: Severe thunderstorms developed across the Florida Panhandle during the afternoon and evening as a strong upper level disturbance moved from the southern Plains to the Tennessee Valley. The severe storms

<sup>15</sup> <http://www.srh.noaa.gov/oun/?n=efscale>

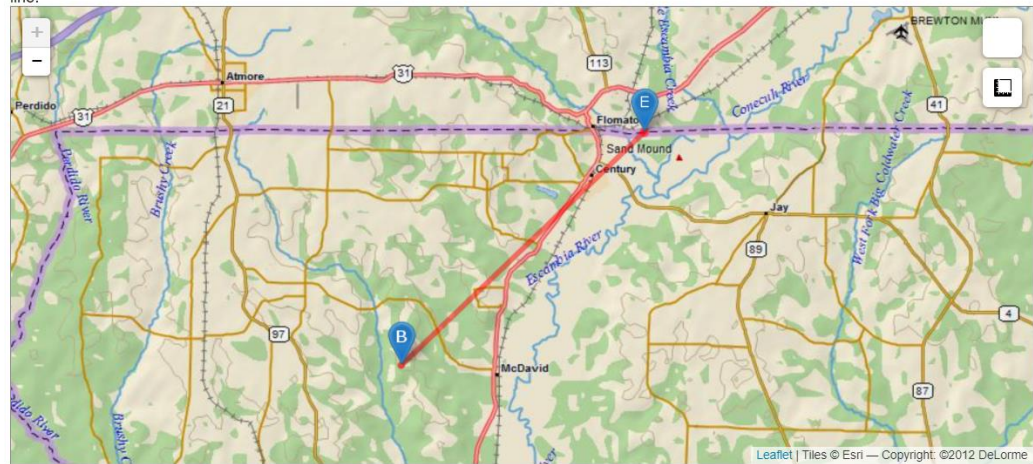
The EF scale still is a set of wind estimates (not measurements) based on damage.

developed along and ahead of the trailing cold front, producing both tornadoes and straight-line wind damage. This tornado developed from an isolated supercell thunderstorm. The tornado first touched down southwest of Lambert-Ridge Road southeast of McDavid. The tornado gradually increased in strength and width as it continued northeast toward the Town of Century. The first EF-2 intensity damage noted was on Holland Drive where a workshop was completely destroyed. The tornado reached its peak intensity (widespread EF-2 damage with isolated EF-3 damage) as it moved into Century. The tornado destroyed 40 residential structures; a majority of buildings located within the Alger-Sullivan Lumber Company property; and minor/major damage to several other residential/commercial/public facilities/buildings. A couple of homes experienced complete loss of the roof with only the walls of small interior rooms remaining. Extensive tree damage was noted with numerous softwood and hardwood trees either uprooted or snapped. Numerous power poles were also snapped. The tornado continued to track northeast out of Century and moved across the Florida Alabama state line into Escambia County Alabama.<sup>16</sup> See Figure 6 below for a detailed view of the recorded tornado path.

**Figure 6: February 15, 2016, EF3 Tornado Path, Town of Century, Florida**

**Event Map:**

Note: The tornado track is approximate based on the beginning (B) and ending (E) locations. The actual tornado path may differ from a straight line.



- February 23, 2016: Eight days after one of the most damaging tornadoes in County history, a second strong storm system produced a highly favorable setup for severe thunderstorms and tornadoes. The highest impact across the Florida Panhandle was from a strong tornado that impacted the Pensacola metro. An EF2 tornado first touched down in Pensacola, just north of the airport and moved southwest. The roof was blown off of two homes, one on La Borde Lane and one on Gladstone Drive. Additional EF-2 damage to homes was observed further to the northeast on Tradewinds Drive. Two vehicles were overturned in this location. It was at this point that further intensification began. The tornado reached peak intensity as it moved over the Mooring Apartments on Old

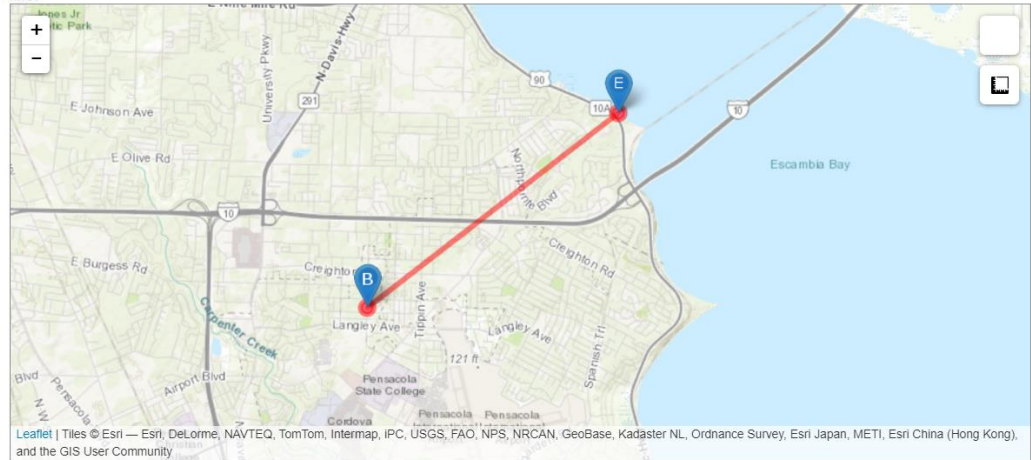
<sup>16</sup> <https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=620077>

Spanish Trail and the General Electric plant. EF-3 damage was observed at two of the apartment buildings with major damage to the second story. EF-3 damage occurred at the GE plant where a warehouse was destroyed. Additional EF-3 damage was noted at the Grand Baroque townhomes on Scenic Highway where two units were destroyed. The tornado then moved into Escambia Bay and produced additional damage once it moved into Santa Rosa County.<sup>17</sup> See Figure 7 on the following page for a detailed view of the recorded tornado path.

**Figure 7: February 23, 2016, EF3 Tornado Path, Pensacola, Florida**

**Event Map:**

Note: The tornado track is approximate based on the beginning (B) and ending (E) locations. The actual tornado path may differ from a straight line.



The table below lists the incidences of tornadoes in Escambia County since 2010.

**Figure 8: Tornado/Funnel Cloud Events in Escambia County (2010 – 2020)<sup>18</sup>**

Location	Date	Magnitude	Property Damage
<i>McDavid</i>	3/9/2011	EF0	-0-
<i>Gulf Beach</i>	9/4/2011	EF1	\$250K
<i>Pensacola</i>	5/12/2012	EF0	\$1K
<i>Pensacola Beach</i>	7/22/2013	EF0	\$4.5K
<i>McDavid</i>	2/15/2016	EF3	\$5M
<i>Ferry Pass</i>	2/23/2016	EF3	\$22M
<i>Barrineau Park</i>	4/22/2018	EF0	50K

An up-to-date list of reported tornado and waterspout events for Escambia County can be found at <https://www.ncdc.noaa.gov/stormevents/>.

<sup>17</sup> <https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=621845>

<sup>18</sup> <http://ncdc.noaa.gov/stormevents>

#### 4) *Probability of Future Events*

According to previous occurrences the probability of a future tornado affecting Escambia County is low to moderate. While the majority of these events are small in terms of size, intensity and duration, a greater number of stronger storms (i.e., F2 and F3 tornadoes) have been reported in the past. Further, even a minor tornado can cause substantial damage. According to the National Oceanic and Atmospheric Association, as of 2004, Florida was ranked number one in the number of tornados per square mile, most of which are weak, and referred to as spawn tornados. While tornados can occur at any time during the day or night, they tend to form during the late afternoon and into the evening.

Based on historical trend, from 1950 through 2020, there have been ninety-one (91) reported tornados throughout the County. The expected tornado size would be approximately 20-yards wide, with a 175-yard path. Most tornados are expected to touchdown for relatively short periods of time in a bounce type pattern. The occurrence of a tornado touchdown on an annual basis is considered high. Severe storms occur regularly throughout the year, but do not always cause damage.

#### 5) *Vulnerability and Risk Assessment*

Due to the unpredictable nature of tornadoes, all of Escambia County is vulnerable to their impacts. High wind speeds can cause damage to structures with the most significant threat to mobile homes and other older substandard or unreinforced properties. The total mobile home population in Escambia County is estimated at 20,183<sup>19</sup> accounting for nearly 7% of the total county population. This population has to have a safe place to go during possible tornadic activity. While everyone can be impacted, the elderly, those with lower income, and the homeless would be most affected. Tornadoes can cause other cascading events like utility outages, economic loss, and transportation issues along with the hardships that result from the disruption of normal life.

Waterspouts have a direct effect on coastal areas of the county and have the potential to affect electrical infrastructure, residential and commercial boating, and private structures; commonly affecting coastal areas such as Perdido Key, Pensacola Beach and the City of Pensacola, which are vulnerable because of their coastal geography.

There are no local geographical differentiations that create a lower or higher risk within the County, as a result of the randomness and unpredictability of tornadoes, the entire population of Escambia County and all of its jurisdictions are vulnerable to their impacts and potential damages.

#### e) Hail

##### 1) *Description*

Hail is frozen precipitation that can occur during a thunderstorm. Hail forms when raindrops freeze into balls of ice. Up until January 2010, severe hail in Escambia County was defined as three-fourths of an inch (penny size) or larger. However, in January 2010,

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<sup>19</sup> [data.census.gov](https://data.census.gov); 2018 ACS 1-Year Estimates: Total Pop. in Occupied Housing by Tenure by Units in Structure

the National Weather Service raised the hail size criteria for Severe Thunderstorm Warnings from 0.75-inch (penny size) to 1.00 inch (quarter size).

According to the National Weather Service, within Florida, many storms which have the potential for 0.75-inch hail also have the potential to produce 50-knot + (58 mph +) winds. Many storms capable of producing 0.75-inch to just below 1-inch size hail will still require Severe Thunderstorm Warnings for 50-knot + (58 mph +) damaging winds. Special Weather Statements will continue to be issued for "strong storms", generally those with 45-57 mph winds and small hail, below 1.00-inch.

### 2) *Location and Extent*

Severe thunderstorms can happen anytime of the year in the State of Florida and produce hail at any time. Although, hail storm events occur most often during the late winter and early spring severe weather season and as previously mentioned, often accompany thunderstorms or tornadoes. A hail event has no geographic limitations to the area it affects. Therefore, it is presumed that all of Escambia County is uniformly at risk to a hail event.

On average, Escambia County has seen hail from .75 to 2.00 inches in diameter. Escambia County would expect to receive the same size diameter hail and possibly even greater sizes, which may occur from extremely high cloud tops that develop.

Damage from hail increases with the size of the hail and can cause damage to vehicles, aircraft, and homes, and can be fatal to people and livestock. However, Florida thunderstorms do not often include hail because the hailstones usually melt before they reach the ground because of the generally warm temperatures in Escambia County.

### 3) *Previous Occurrences*

From 1950 to 2020 there have been 66 severe hailstorms that have struck Escambia County. More recent occurrences that produced substantial damage include:

- Spring Storm in 2003: A storm that hit Escambia County produced hail the size of golf balls in and around the Walnut Hill area of Escambia County. Property damage was estimated at around \$15,000 as some roofs and vehicles sustained damage.
- Spring Storm 1n 2006: Large hail from a thunderstorm damaged several vehicles near Belleview. This storm caused wind and hail damage for a couple of hours as it moved through Baldwin and Escambia counties.

Since 2010 there have been 12 documented hail storm events in Escambia County (Table 4) with hail ranging in size from 1.00 to 2.00 inches in diameter. None of these hail storms resulted in property damage or crop damage or any significance. Locations and dates of hail storms are listed in the table that follows. Should hail occur, it could cause damage to car dealerships and the agricultural enterprises which include greenhouses, horticulture, foliage, and citrus crops. Damage to car dealerships has occurred in the past and could happen again in the future. This could result in an economic effect to the County. Tourism, critical facilities, and infrastructure would likely not be impacted. Other than injuries to individuals that may get caught out in the hail storm, populations would not be affected.

**Table 7: Hail Storm Damage in Escambia County Florida (2010 – Present)<sup>20</sup>**

Location	Date	Size	Damages
Pensacola	11/2/2010	1.75 in.	-0-
Pensacola	3/9/2011	1.00 in.	-0-
Belleview	6/6/2011	1.75 in.	-0-
Molino	6/8/2011	1.00 in.	-0-
Belleview	7/13/2013	1.00 in.	-0-
Pensacola Regional	4/5/2014	1.00 in.	-0-
Brent	3/24/2016	1.00 in.	-0-
Belleview	3/26/2016	1.00 in.	-0-
Brent	3/26/2016	1.00 in.	-0-
Gonzalez	3/26/2016	1.00 in.	-0-
Walnut Hill	1/21/2017	2.00 in.	-0-
Cantonment	1/22/2017	1.00 in.	-0-

*4) Probability of Future Events*

Based on the frequency of hail events in the past, the probability of future hail occurrences in Escambia County is moderate to high. Over the past 10 years, Escambia County has been impacted by one or more hail events per year. It can be expected that future hail events will continue to cause minor to severe damage to property throughout Escambia County.

*5) Vulnerability and Risk Assessment*

As it cannot be predicted where hail may fall, all existing and future buildings, facilities, and populations in Escambia County are considered to be equally exposed to this hazard and could potentially be impacted. Hail can become as big as baseballs or golf balls; however, Florida typically experiences hail the size of pennies (0.75-inches) or quarters (1.00-inches). An average hail storm can last for a few minutes to hours. While all of Escambia County’s assets are equally exposed to hail, anticipated future damages or losses are expected to be minimal.

f) Tsunami

*1) Description*

A tsunami is a wave or series of waves most commonly caused by an earthquake or by a large undersea landslide, volcanic eruption or other undersea disturbance. From the area of disturbance, tsunami waves will travel outward in all directions and can originate hundreds or even thousands of miles away from affected coastal areas.

*2) Location and Extent*

The County is located in the Gulf of Mexico, which, has a shallow shelf, therefore, the potential for any impulse disturbance in the Gulf of Mexico is remote. In the unlikely event of a tsunami, the extent of such an event would be limited to the coastline.

<sup>20</sup> <http://www.ncdc.noaa.gov/stormevents>

### 3) *Previous Occurrences*

The National Geophysical Data Center (NGDC) reinforces the common understanding that the U.S. Atlantic coast and the Gulf Coast States have experienced very few tsunami incidents in the last 200 years. Louisiana, Mississippi, Alabama, the Florida Gulf coast, Georgia, Virginia, North Carolina, Pennsylvania, and Delaware have no known historic tsunami records in the NGDC database.

Historically, tsunami waves recorded along the Gulf Coast have all been less than 1 meter. There are reports in the early 20<sup>th</sup> century of tsunami waves from Caribbean earthquakes along the Gulf Coast. While the incident is difficult to evaluate, wave heights created all appear to be less than 1 meter.

### 4) *Probability of Future Events*

According to the regional Mobile Weather Office, the worst-case scenario for a tsunami hitting Escambia County is somewhat less than a Category 1 storm surge (Appendix I-F) and should produce a wave between 3 to 5 feet.

### 5) *Vulnerability and Risk Assessment*

A Tsunami forming in the Gulf of Mexico or the Atlantic that would impact Escambia County is remote, translating into a low risk of Tsunami for Escambia County. Escambia County is not considered to be in an area subject to tsunamis, according to the U.S. Geological Survey. Santa Rosa County addressed potential tsunami threats to the coast, including the SRIA, identifying that the barrier islands within the gulf may be inundated with flood waters in the event of a Tsunami.<sup>21</sup> Since there is no history of this hazard in the County, no further analysis or risk assessment will be conducted for this plan.

## g) Flooding

### 1) *Description*

Flooding is a general and temporary condition of partial or complete inundation of normally dry land areas from:

- The overflow of inland or tidal waters;
- The unusual and rapid accumulation or runoff of surface waters from any source

Floods can be slow, or fast rising but generally develop over a period of days. Floods are one of the most commonly occurring hazards in the United States<sup>22</sup>. Storm surge, riverine, and closed basin inland flooding are the three types of flood hazards that are a threat and can have significant impacts in the County.

Riverine flooding and inland flooding risks are identified by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), which identify the risk of flooding on these maps and for those areas within the county and its jurisdictions.

### 2) *Location and Extent*

Flood zones are delineated on the FIRM and indicate the severity or type of flooding expected. The adopted baseline flood probability, or base flood, for the zones is a flood

<sup>21</sup> Santa Rosa County Tsunami/Rogue Wave Evacuation Plan

<sup>22</sup> [www.ready.gov/floods](http://www.ready.gov/floods)



having a one-percent chance of being equaled or exceeded in any given year. This base flood is commonly referred to as the “100-year flood” or the “one-percent annual chance flood.” The base flood elevation (relative to actual ground elevation) published in the Flood Insurance Study establishes the base floodplain and sets limits for regulatory purposes.

The extent of flooding depicted on the FIRM is based on the 1% and 0.2% annual chance to be inundated with flood waters. Each jurisdiction has flood zones as identified on the FEMA FIRMs, but the unincorporated areas of the County have the larger areas and the larger potential threat and impact potential.<sup>23</sup>

The various flood zones from the FIRMs are listed in the following table along with the associated flood risks. It is important that the message be clear about flooding to our community; EVERYBODY lives in a flood zone, and that it is merely a difference in the amount of risk between those zones and where people live. Just because a property is not in an identified flood zone on the FIRM does not mean the property escapes flood risk. The risk is merely lower than those identified and describe on the FIRM.

**Table 8: FEMA Flood Zone Definitions<sup>24</sup>**

Zone	Description
A	Areas subject to inundation by the 1-percent-annual-chance flood event. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown.
AE, A1-A30	Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown within these zones. (Zone AE is used on new and revised maps in place of Zones A1–A30.)
AH	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are 1–3 feet. BFEs derived from detailed hydraulic analyses are shown in this zone.
AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are 1–3 feet. Average flood depths derived from detailed hydraulic analyses are shown within this zone.
AR	Areas that result from the decertification of a previously accredited flood protection system that is determined to be in the process of being restored to provide base flood protection.
A99	Areas subject to inundation by the 1-percent-annual-chance flood event, but which will ultimately be protected upon completion of an under-construction

<sup>23</sup> Appendix I-F – 100 Year Floodplain Map

<sup>24</sup> <https://www.fema.gov/flood-zones>

Flood maps that identify the flood zones in all of the county jurisdictions are maintained by the County's Geographic Information Systems (GIS) department and can also be found at the following websites:

- [www.myescambia.com](http://www.myescambia.com)
- [www.bereadyescambia.com](http://www.bereadyescambia.com)
- [www.cityofpensacola.com](http://www.cityofpensacola.com)
- [www.fema.gov](http://www.fema.gov)

### 3) *Previous Occurrences*

There have been several significant flooding events in Escambia County over the years, including:

- Hurricane Frederic, 1979: The recorded storm surge was 5 to 10 feet and was ultimately the very event that initiated the County's repetitive loss property database.
- Spring of 1998: The El Niño event caused a several month period with severe rainfall events causing heavy inland flooding damages. The damaged caused by this event was enough to receive a Presidential Declaration for Escambia County, its jurisdictions, and numerous other Florida Counties.
- Hurricane George, 1998: Dropped approximately 24 inches of rain in the inland portions of the county causing severe damage from the resulting flooding, leaving hundreds of people isolated and stranded in and from their homes.
- Tropical Storm Isadore, 2002: The impacts and effects of the surge were greater than that of a typical tropical storm. Storm surge and wave action from this incident rose high enough to impact all the bayous and many homes along those waterways. Several homes became isolated. Ft. Pickens Road was closed due to damage. The dunes on Pensacola Beach were significantly eroded due to the event.
- June/July 2003: Tropical Storm Bill began what eventually became a wet month of rain with many "close calls" related to damaging flood impacts. Tropical Storm Bill began with 8 inches of rain that was consistent throughout the County. However, with drainage systems full and standing water everywhere from Bill, severe weather continued throughout the month bringing heavy rain and, with instances of rain falling at the rate of over three inches an hour. With the drainage system, culverts, and holding pods at capacity, each day of heavy rain brought rising water into people's yards, with water threatening to flood homes.
- Hurricane Ivan, 2004: Brought significant storm surge and wave action with some areas seeing upwards of 15 feet of storm surge with wave action adding to that height. Ivan impacted many areas of the county, but a few neighborhoods took a major impact and received significant damage. Grand Lagoon and Navy Point neighborhoods were areas where foundations were the only identifiable marks left on private and commercial property. Within the City of Pensacola, many business and industrial districts were destroyed, in addition to City Hall being shut down for nearly two years. Inland areas of the County, including the Town of Century escaped flooding issues.

- Hurricane Gustav, 2008: Storm surge in the range of 3 to 5 feet impacted the coastal beaches, causing condominiums to be flooded on Pensacola Beach.
- June 9, 2012: A low pressure system stalled over the area and produced 15 to 27 inches of rain over a three-day period, with a significant portion coming over a 24-hour period. One report identified West Pensacola receiving 21.7 inches of rain in a 24-hour period. There were 78 residential properties with major damage, 150 with minor damage, and an additional 55 that were impacted. Total public infrastructure damage was estimated at just over \$23 million.
- April 29, 2014: A historic rainfall event developed ahead of a slow-moving cold front during the evening over portions of coastal Alabama and the western Florida Panhandle. The cold front was associated with a very powerful low-pressure system in the Plains. The widespread flooding produced sinkholes (some very large and deep), cut roads in half and necessitated human water rescues (one confirmed fatality). Parts of I-10 were closed. The Fish River at Silver Hill (Baldwin County Alabama) peaked at a record high level of 23.18 feet (previous historical record was 22.78 feet on 20 July 1997).
- Tropical Storm Gordon, 2018: Storm surge inundation peaked between 2 to 3 feet across coastal Escambia County. The Fort Pickens area experienced significant coastal flooding and beach erosion. Rainfall totals of 6-12 inches were recorded to the east of the center of the storm, impacting the County.

An up-to-date list of reported flooding events for Escambia County can be found at <https://www.ncdc.noaa.gov/stormevents/>.

#### 4) *Probability of Future Events*

The probability of future occurrence is moderate to high as heavy rains associated with low lying areas, poor drainage areas and riverine overflow can result in flooding. Intense rainfall in a short period of time can cause flash flooding. The location and distribution of the rainfall, the land use and topography, vegetation types and growth/density, soil type, and soil water-content are all contributing factors.

As a coastal county, projected sea-level rise impacts threaten to increase the vulnerability of Escambia's coastline. Future events create the potential to increase the likelihood of flooding as sea-levels rise.

#### 5) *Vulnerability and Risk Assessment*

Based on an evaluation of existing FIRM maps, there is approximately 95,000 acres of land within a special hazard area for flooding. This constitutes about 29% of lands within Escambia County. Approximately 109,719 (35%) residents live in one of the special flood hazard zones. These areas include lands adjacent to flowing water, areas of shallow flooding not associated with flowing water and storm surge areas.

Flooding in Escambia County results primarily from tidal surge and overflow of streams and swamps associated with rainfall runoff. Major rainfall events occur as a result of hurricanes, tropical storms, and thundershowers associated with frontal systems. Total precipitation of 12 inches recorded at a single station during a hurricane is not

uncommon, and in Escambia County, rainfall has been recorded as high as 24 inches for the duration of the storm.

The Escambia River is the largest river in the county and accounts for much of the flooding in the area. The river is characterized by wide, flat floodplains varying from several thousand feet to several miles wide. The flat slopes and wide, heavily vegetated floodplains enhance the flood problem by preventing the rapid drainage of floodwaters.

The County's two main rivers can be heavily impacted not only by rains that fall in our county, but from rainfall in the state and counties to the north of us that share our watershed. Potential flooding conditions could occur days or even weeks after an event occurs to the north in adjacent Alabama.

In the southwest portion of the County, most of the flood prone areas feature relatively impermeable soil, an elevated water table, and flat terrain. These characteristics contribute significantly to flooding problems. Flooding is further aggravated by dense vegetation in natural and excavated stream channels and on overbanks within the floodplains.

Overall, the City of Pensacola has only a small threat from inland flooding as indicated by the FIRM's, but the impact of storm surge would be much more devastating. Category 5 storm surge would impact most of the downtown area to include Federal, State, and Local Government operations and offices, many small and large businesses that are located downtown, and a small population of residential homes and apartments.

The Town of Century also has very little flood zones as identified by the FIRM's, and being located so far inland, storm surge would have almost no impact on the town. The Santa Rosa Island Authority would be significantly impacted by both rainfall flooding and storm surge. The entire island is in the 100-year flood zone and the entire island is in a Category 5 storm surge zone.

Perdido Key is very similar to Pensacola Beach with almost the entire island in the flood zone, and just about the entire island being in a Category 4 storm surge zone

#### h) Drought

##### 1) *Description*

A drought is a period of time when an area or region experiences below-normal precipitation. The lack of adequate precipitation, can cause reduced soil moisture or groundwater, diminished stream flow, crop damage, and a general water shortage.

##### 2) *Location and Extent*

All areas of Escambia County are subject to the effects of drought conditions. Escambia County has significant amount of acreage designated for conservation, public, and agricultural land uses. Resident populations may be affected due to water supply system strain and/or failure. Agricultural concerns such as horticulture, animal services, citrus, and vegetable crops may be affected by long and short-term drought conditions which could have a negative economic effect.

Additionally, each jurisdiction within the county has the potential to feel the impacts of drought, though with different consequences since the community is diverse with population and development centers in the southern portions of the county, and agriculture and farming industries found in the central and northern parts of the county.

The extent of drought in Florida is generally measured through one of two indices, the Keetch-Byram Drought Index (KBDI) or the U.S. Drought Monitor Index. While Escambia County historically has not been immune to regional or statewide droughts, recent population growth has accelerated the depletion of water supplies. The KBDI has a range from 0 for no drought to 800 being the most severe drought. Table 3 summarizes the mean KBDI for Escambia County since January 1, 2017.

**Table 9: Keetch-Byram Drought Index (KBDI) for Escambia County, Florida (2017 – 2020)<sup>25</sup>**

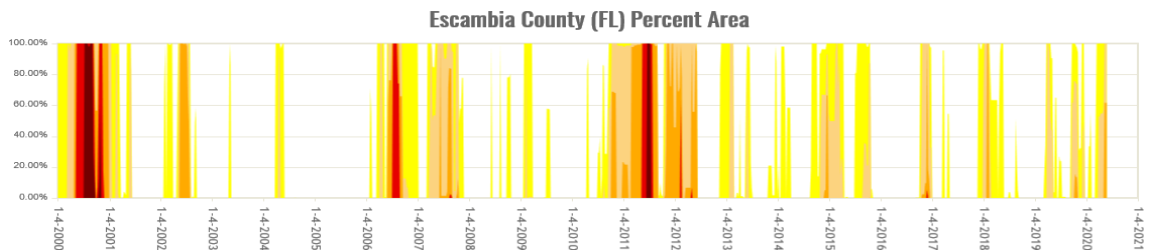
Date	KBDI
January 1, 2017	1
July 1, 2017	19
January 1, 2018	150
July 1, 2018	276
January 1, 2019	1
July 1, 2019	388
January 1, 2020	51
June 1, 2020	407

3) *Previous Occurrences*

During 1977, a two-month dry emergency caused an estimated \$30,000,000 in damages to Florida, and the Governor declared a three-month drought during 1979, the worst since 1971.

Since 2000, the longest duration of drought (D1-D4) in Florida lasted 124 weeks beginning on April 11, 2006 and ending on August 19, 2008. The most intense period of drought occurred the week of February 27, 2001 where D4 (Exceptional Drought) affected 39.08% of Florida land.<sup>26</sup> The figure below shows a 20-year comparison of drought by condition for Escambia County. D4 drought conditions are defined as conditions where exceptional and widespread crop/pasture losses occur as well as shortages of water which create water emergencies.

**Figure 9: 20-Year Drought Comparison for Escambia County, FL (2000 – 2020)**



<sup>25</sup> <http://currentweather.freshfromflorida.com/current-report.html>

<sup>26</sup> <https://www.drought.gov/drought/states/florida>

4) *Probability of Future Events*

As of January 2020, the Palmer Drought Severity Index (PDSI) categorized the region in a “moderate (D1) to severe (D2) drought.” Using historical records, it can be estimated that Escambia County will experience at least one drought every 4 years.

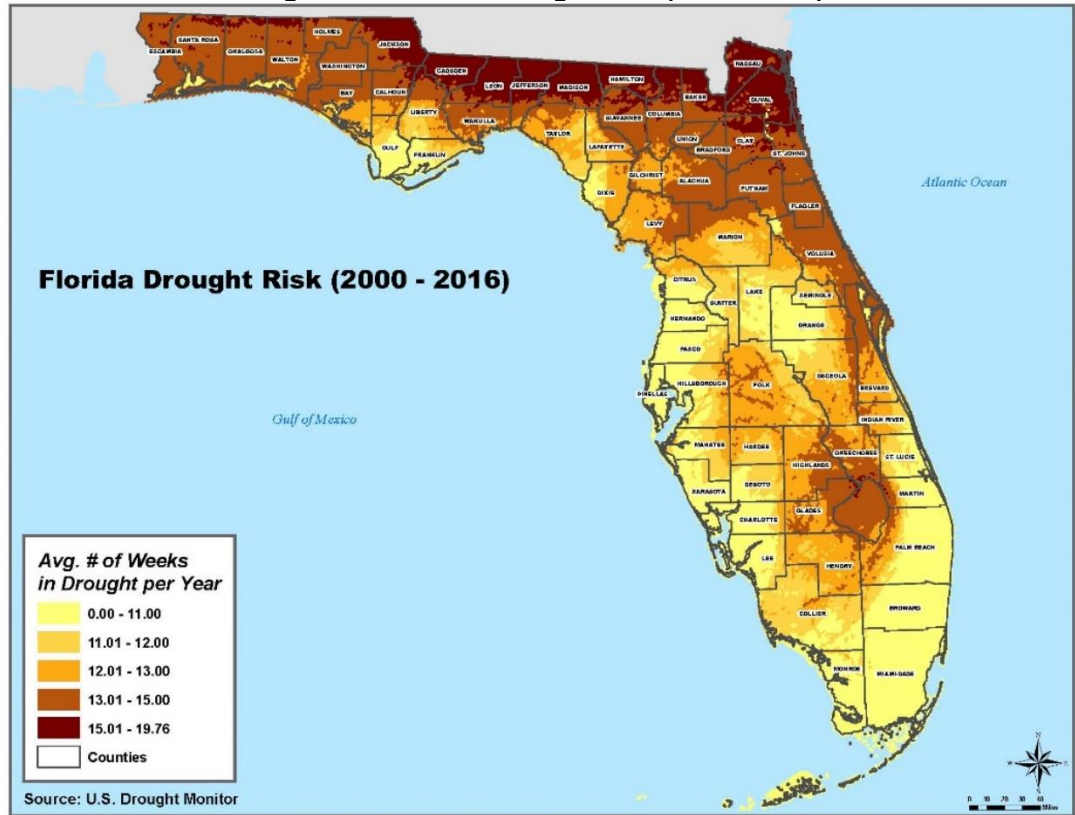
There is no way to predict when a drought will occur or how long it may last. Drought conditions existed in Florida from 1965 through 1982, from 1997 to 2002, 2006 to present with some relief the rainy months in 2013 and 2014. The conditions of various areas of the state have are affected to different degrees. The probability of a drought remains moderate to high for the County.

5) *Vulnerability and Risk Assessment*

It is increasingly likely that Escambia County could have another drought or extreme heat event. Extreme heat events can occur simultaneously with drought, but either can occur without the other. While extreme heat events can cause death to any person of any age, the elderly, very young, and mobility restricted are considered the most at risk.

It is expected that the county could see an average of up to 15 weeks or more of drought each year (Figure 2) based on the average number of weeks of drought that occurred from the year 2000 through 2016 according to the data acquired from U.S. Drought Monitor (<https://droughtmonitor.unl.edu/>).

Figure 10: Florida Drought Risk (2000 - 2016)

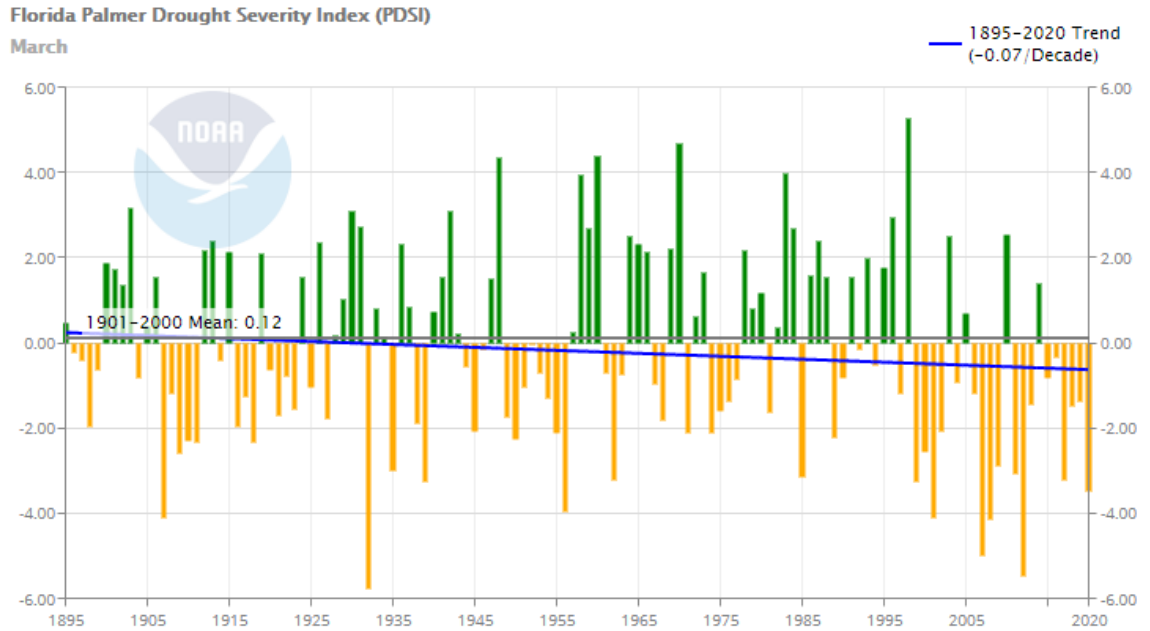


Escambia County is uniformly vulnerable to drought. Drought is typically associated with crop damage, and not necessarily the built environment (i.e., improved property).

In a worst-case scenario, drought within Escambia County could reach moderate to severe levels (400 to 800) out of a potential score of 800 on the KBDI Index.

The Palmer Drought Severity Index data for the State of Florida from 1895 to 2020 has shown a trend of more frequent severe drought conditions as seen in the Figure below.

**Figure 11: Florida PDSI Trend (1895 - 2020)**



Escambia County has experienced moderate to severe drought conditions over the last five years. Heavy rains during the rainy season can reduce the drought index substantially, however dry spells can increase the number in a relatively short time period. It is important to note that during prolonged cold spells when conditions are often windy, it will make conditions dry very quickly. Fires can be triggered from careless activities during extremely dry periods and water consumption may have to be curtailed if consumptions exceed rainfall and replenishment of the water table.

During a drought water levels in rivers, swamps, and lakes would become lower, as would the water table. Local governments and water management districts within the County would find it necessary to impose water usage restrictions. Farmers would be particularly affected by the drought conditions, as the water table fell and deeper wells had to be drilled for irrigation purposes.

i) Extreme Heat

1) *Description*

Extreme heat is defined as extended period where the temperature and relative humidity combine for a dangerous heat index. During the summer months heat can be very dangerous, as it can induce hyperthermia (heat stroke), heat exhaustion, or dehydration.

2) *Location and Extent*

All of Escambia County is equally at-risk from extreme heat. It is also especially hazardous to certain segments of the population such as the elderly and young children. Additionally, heat increases the demand for electricity to operate air conditioners, increasing the likelihood of brownouts and blackouts within the electrical grid.

While there are various definitions for extreme heat (or heat waves), the National Weather Service issues a heat advisory when the daytime temperatures will exceed a certain temperature depending on the time of the year. It is during these times that those vulnerable populations will be especially prone to extreme heat-related illnesses and conditions. Florida is quite accustomed to daytime temperatures in the 90's in the summertime. Also, with Florida being a peninsula, the breezes from both coastlines assists in keeping the temperatures generally below 100° F. The table below shows the heat threat levels from the National Weather Service.

**Table 10: Excessive Heat Threat Chart<sup>27</sup>**

<b>Excessive Heat Threat Level</b>	<b>Threat Level Descriptions</b>
Extreme	<i>"An Extreme Threat to Life and Property from Excessive Heat"</i> Highest heat index 118 degrees (F) or greater
High	<i>"A High Threat to Life and Property from Excessive Heat"</i> Highest heat index 113-117 degrees (F) or greater
Moderate	<i>"A Moderate Threat to Life and Property from Excessive Heat"</i> Highest heat index 108-112 degrees (F) or greater
Low	<i>"A Low Threat to Life and Property from Excessive Heat"</i> Highest heat index 105-107 degrees (F) or greater.
Very Low	<i>"A Very Low Threat to Life and Property from Excessive Heat"</i> Highest heat index around 105 degrees (F) for July and August or...between 102-104 degrees (F) for June through September or...between 99-103 degrees (F) for May through October
Non-Threatening	<i>"No Discernable Threat to Life and Property from Excessive Heat"</i> Warm season weather conditions are non-threatening

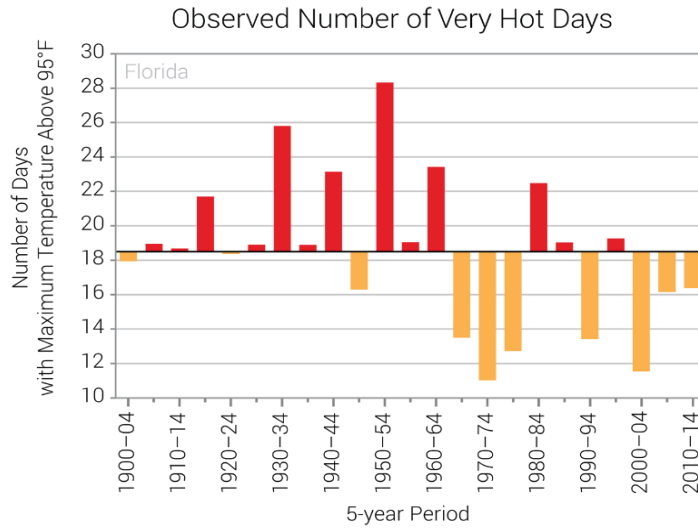
Florida typically experiences far fewer days with temperatures exceeding 100°F than most other southern states, it is the most humid state in the nation leading to uncomfortable summers for visitors and local residents. As mentioned, extended periods of extreme heat, especially when combined with high humidity, can result in heat-related illness among vulnerable populations, as well as place excess stress on agricultural production, water supplies, and energy generation.<sup>28</sup>

<sup>27</sup> [https://www.weather.gov/mlb/heat\\_threat](https://www.weather.gov/mlb/heat_threat)

<sup>28</sup> <https://statesummaries.ncics.org/chapter/fl/>



**Figure 12: Observed Number with Maximum Temperature Above 95 Degrees, State of Florida**



**3) Previous Occurrences**

Research from past years did not produce data that revealed extraordinary hot spells within Florida. However, a noteworthy period in the State of Florida, including all of Escambia County, was the heat wave of June – July 1998, when coastal breezes were impeded – allowing temperatures across the State to range between the upper 90’s and 101 degrees. Wildfires became extreme in certain parts of the State (National Weather Service, Melbourne). This time was known as the '98 Florida Firestorm.

**4) Probability of Future Events**

Extreme heat has a moderate probability of having a significant impact to Escambia County. As noted, each year Florida typically has several days over 95 degrees in which increases the likelihood of an extreme heat event.

**5) Vulnerability and Risk Assessment**

All areas of Escambia County are susceptible to extreme heat. A significant heat wave coinciding with a drought could damage crops creating an economic effect. Additionally, the homeless and elderly populations would have an increased risk of potential hyperthermia (heat stroke), heat exhaustion, or dehydration. Escambia County would have to consider opening shelters to accommodate these populations. Tourism would not necessarily be impacted as hot weather is expected in Florida. Critical facilities and infrastructure may be impacted due to drought conditions.

According to the U.S. Census Bureau, in 2018 it was estimated that the median age in Escambia County was 38.1 years of age. Additionally, as of 2018, 16.8% of the population in Escambia County was aged 65 years or older, representing a rather sizable portion of the county that is more vulnerable to extended periods of extreme heat (or heat waves). The County, much like the rest of the State, continues to be a destination for retirees and has seen, and will continue to see, its elderly population increase. Additionally, urbanization will lead to an increase in the “heat island” effect from an

increase in impervious surfaces, which only exacerbates extreme heat as a hazard in the future.

j) Brush fires, Wildfires and Forest Fires

1) *Description*

According to the Federal Emergency Management Agency (FEMA), a wildland fire or wildfire is an unplanned, unwanted fire burning in a natural area, such as a forest, grassland, or prairie. As building development expands into these areas, homes and business may be situated in or near areas susceptible to wildfires. This is called the wildland urban interface. Wildfires can damage natural resources, destroy homes, and threaten the safety of the public and the firefighters who protect forests and communities.

With the exception of fires triggered by lightning strikes, which can be mitigated in their impact by the precipitation of an accompanying thunderstorm, wildfires tend to be the culmination of hot, dry weather patterns that merely create the conditions for their occurrence. Once those conditions along with the buildup of dry fuel to feed a fire are in place, the occurrence of a brushfire depends simply on the right spark in the right place.

The three factors contributing directly to the behavior of wildfires are topography, fuel, and weather. Wildfires spread quickly igniting brush, trees, and homes. Every year, thousands of acres of wildland and many homes are destroyed by fires that can erupt at any time of the year from a variety of causes including arson, lightning, and debris burning. Like other natural processes, such as flooding, fire serves a purpose in the ecosystem regardless of its inconvenience for humans. In the wildland, fires have always served to clear underbrush from the forest and allow the regeneration of certain species at the expense of others. With or without the human presence, fire is a part of nature.

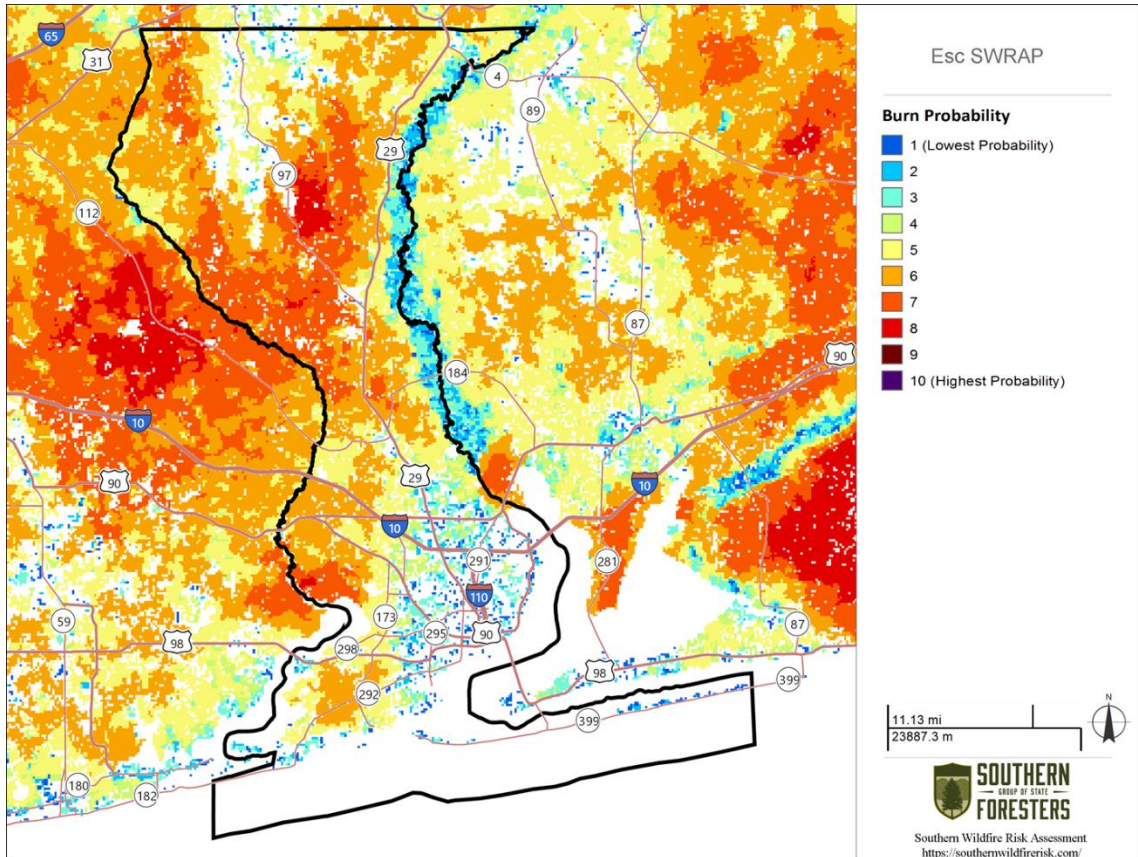
Efforts to eliminate wildfires from the natural environment, rather than helping matters, have served to make such fires more severe when they occur. Vegetative fuels accumulate in the forest understory, and when fires occur, they are more severe and disastrous than might otherwise have been the case. It is important to integrate the role of wildfires in understanding wildland ecosystems, and to incorporate these findings in planning for development that occurs at the interface between growing urban areas and this wildland.

A Community Wildfire Protection Plan becomes the focus of hazard identification efforts as part of the process of planning for mitigation and post-disaster recovery and reconstruction. Adding to the fire hazard is the growing number of people living in new communities built in areas that were once wildland.

2) *Location and Extent*

Areas most at risk for a wildfire within the County generally lie on the western edge and throughout the north half of the County. A view of the Southern Wildfire Risk Assessment Portal (SouthWRAP) burn probability model is identified in the figure below.

**Figure 13: Escambia County Burn Probability Projection<sup>29</sup>**



The Burn Probability layer depicts the tendency of any given pixel to burn, given the static landscape conditions depicted by the LANDFIRE Refresh 2008 dataset (as resampled by FPA), contemporary weather and ignition patterns, as well as contemporary fire management policies (entailing considerable fire prevention and suppression efforts).

Wildland fires can adversely impact homes, businesses, and vegetation, specifically those that are in higher risk areas. And, wildland fires affect visibility as well as air quality, which, can severely affect populations with compromised respiratory systems (such as the elderly). Impacts of wildfires are measured by acres burned each year.

3) *Previous Occurrences*

All of Escambia County may be directly or indirectly impacted by wildfires during the especially months with minimal rainfall. Carelessness can lead to wildfires during dry or windy conditions and when burning restrictions are not followed. Even with prescribed

<sup>29</sup> Source: <https://www.southernwildfirerisk.com/> (Accessed: June 2020)

burns, Escambia County remains at risk for brush fires in unincorporated areas and at the wildland/urban interface areas. For Fiscal year 2018-19, the Florida Forest Service responded to 13 wildfires in Escambia County. As a result, 233 acres were burned. A total of 501 burn authorizations were issued, covering 6,158 acres and 753 piles. In May of 2020, the Hurst Hammock fire caused 1,191 acres of land to burn.

**Table 11: Fire by Cause  
Escambia County, FL (2015 – 2019)<sup>30</sup>**

<b>Cause</b>	<b>Fires</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>
<i>Campfire</i>	5	5.38	82.5	9.30
<i>Children</i>	3	3.23	1.9	0.21
<b>Debris Burn</b>				
<i>Debris Burn – Authorized -- Broadcast/Acreage</i>	7	7.53	229.1	25.83
<i>Debris Burn -- Authorized -- Piles</i>	1	1.08	2.0	0.23
<i>Debris Burn -- Authorized -- Yard Trash</i>	8	8.60	22.2	2.50
<i>Debris Burn – Non-Authorized --Broadcast/Acreage</i>	3	3.23	11.5	1.30
<i>Debris Burn -- Non-Authorized -- Piles</i>	5	5.38	8.2	0.92
<i>Debris Burn -- Non-Authorized --Yard Trash</i>	7	7.53	12.5	1.41
<b>Equipment use</b>				
<i>Equipment -- Agriculture</i>	1	1.08	1.5	0.17
<i>Equipment -- Logging</i>	1	1.08	5.0	0.56
<i>Equipment -- Recreation</i>	1	1.08	3.0	0.34
<i>Equipment -- Transportation</i>	2	2.15	23.0	2.59
<i>Incendiary</i>	5	5.38	16.0	1.80
<i>Lightning</i>	3	3.23	352.6	39.76
<i>Miscellaneous --Breakout</i>	0	0	0.0	0
<i>Miscellaneous -- Electric Fence</i>	0	0	0.0	0
<i>Miscellaneous -- Fireworks</i>	2	2.15	3.0	0.34
<i>Miscellaneous -- Power Lines</i>	4	4.30	2.0	0.23
<i>Miscellaneous -- Structure</i>	0	0	0.0	0
<i>Miscellaneous -- Other</i>	2	2.15	1.4	0.16
<i>Railroad</i>	3	3.23	0.9	0.10
<i>Smoking</i>	0	0	0.0	0
<i>Unknown</i>	30	32.26	108.6	12.24
<b>Total</b>	<b>93</b>		<b>886.9</b>	

<sup>30</sup> Source: Blackwater Forestry Center (01/01/2015 through 12/31/2019)

#### 4) *Probability of Future Events*

The predominance of forested acreage, current patterns of development and historical weather conditions indicate the probability of occurrence is high. The threat of fires cannot be eliminated, but public education and the use of prescribed burns can be used to better manage this hazard. Based on recent history, the probability exists for up to twenty-five (25) or more wildland fires in Escambia County per year, an estimated acreage cannot be determined as the amount of acres burned can vary wildly from year to year. The State of Florida has a 12-month wildfire season that typically peaks between late April through mid-June.

#### 5) *Vulnerability and Risk Assessment*

The major causes of brush and forest fires are due to lightning, human negligence, or cases of criminal mischief, and occurs during the months with higher thunderstorm activities. Late winter and spring also are prime periods for wildfires, fueled by strong winds and a lack of rainfall during that same time frame. Escambia County has a considerable amount of undeveloped area with prime fuel source for fires and experienced major fire events in the past.

As more development occurs adjacent to these areas, the County becomes susceptible to wildfire damages in the Wildland Urban Interface areas. The level of vulnerability is high throughout the County because of the patterns and location of new development, probability of occurrence based on fuel types, and costs associated with these events. Florida Forest Service reported 93 wildfires in Escambia County from 2015 through 2019 involving 886 acres.

The southwest section of the County is most prone to wildfires. Of particular concern is the areas surrounding Jones Swamp and Garcon Swamp. These are areas that historically burned through natural means on an average of 5 to 7 years. Due to a historic policy of fire suppression fires in these regions may be catastrophic due to abnormally high fuel load. The level of vulnerability is high due to development patterns and location of new development, and there is a high probability of occurrence and costs association with these events.

The Florida Wild Land Fire Risk Assessment System (FRAS)<sup>31</sup> and the Southern Wildfire Risk Assessment Portal (SouthWRAP)<sup>32</sup> are tools available that will depict wildfire risk to the community.

The Wildland Urban Interface is the largest issue facing wildland firefighters in Escambia County. People build homes in the WUI for a number of reasons: to enjoy the beauty and solitude of natural surroundings, to escape the stress of city life and to live "close to nature". This creates unique challenges because interface residents frequently expect local government to provide the same level of service they received when they lived in the city (law enforcement, ambulance, fire protection, etc.). In addition, land managers

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<sup>31</sup> <https://www.fdacs.gov/Divisions-Offices/Florida-Forest-Service/Wildland-Fire/Resources>

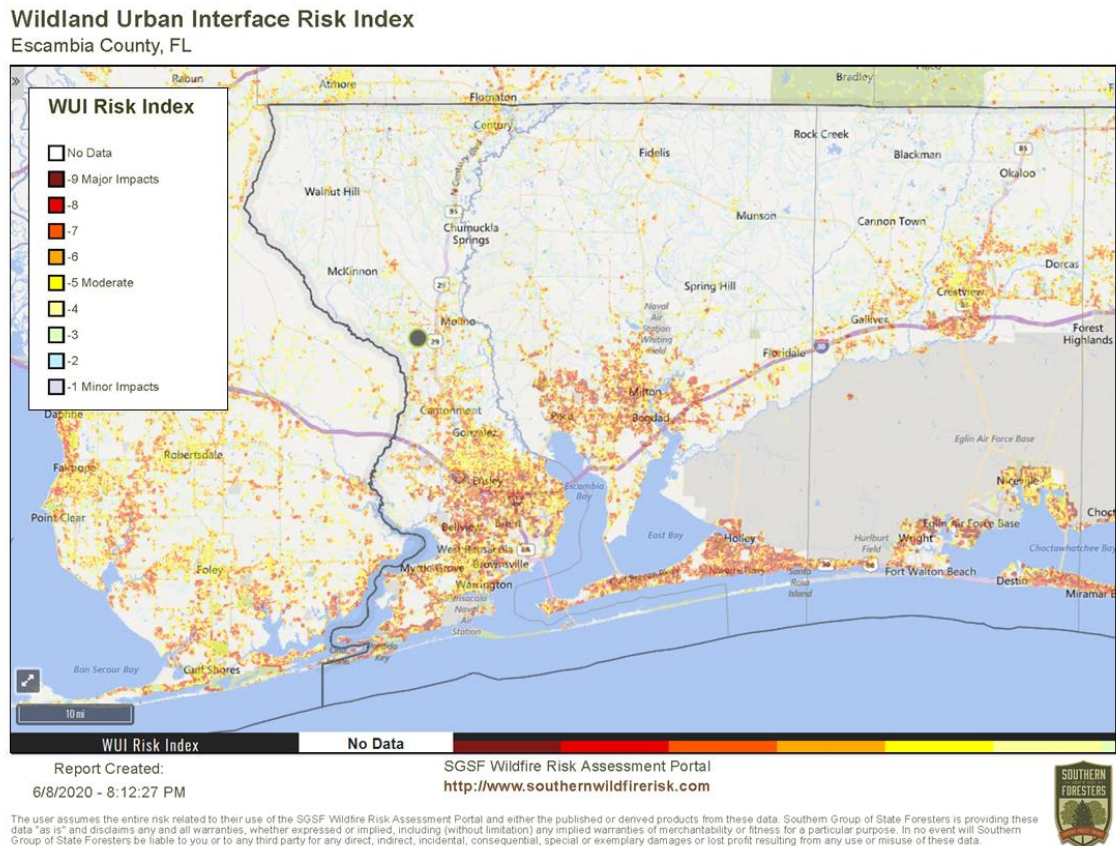
<sup>32</sup> <https://www.southernwildfirerisk.com/>

find it increasingly difficult to manage forests for timber, wildlife and watershed when these areas are interspersed with subdivisions and individual homes.

Interface homes are frequently vulnerable to wildland fires because fire departments are no longer just minutes away, and are, for the most part, unable to protect homes in outlying areas from wildland fire disasters.

The Florida Forest Service Wildland Urban Interface (WUI) Risk Index (Figure below) identifies areas where the potential impact of wildfire on people and their homes and assess a risk based on housing density and fire intensity (Flame Length) to determine areas that may be majorly impacted by a wildfire incident. The susceptibility map designating those higher risk areas in the County can be found in the Wildfire section of Appendix I-G containing the report titled “Southern Wildfire Risk Assessment Summary Report.”

Figure 14: Wildland Urban Interface (WUI) Risk Index



Wildfires in Escambia County primarily affect wooded areas with low population density and do not typically pose a danger to highly populated areas. However, wildfires can still impact all jurisdictions in Escambia County. Structures, critical facilities, infrastructure, and housing for vulnerable populations have some exposure to impact by wildfires. An exact dollar loss cannot be determined due to the fact impact is undefined. There have been no significant wildfires other than those reflected in this section.

Additional areas susceptible to wildland fires in the County can be found Appendix I-F, maps 16, 17, 18.

Other impacts resulting from wildfires include:

- Smoke - To mitigate the amount of smoke resulting from prescribed burning, Florida Forest Service officials ensure strict adherence to prescribed burn standards. This is imperative for many reasons, including but not limited to the region's military flight operations, which are some of the busiest in the world. Smoke resulting from wildfire can not only hinder such operations but also pose significant danger when impacting local roadways.
- Continued Growth - Compounding the wildfire problem in Florida has been the growing number of people relocating to the state. Estimates are that more than 900 people move to Florida each day and many of them decide to build their homes in areas called the wild land/urban interface – areas where natural vegetation meets homes and communities. As development expands to accommodate this continued growth, more wild land/urban interface problems will arise. Also, residents new to the interface areas are not aware that wildland fires usually pose more danger than fires in other places because they are fast moving fires which often require the interaction of many pieces of fire-fighting equipment, and such operations utilize more resources and time. Also, the cost of these operations grows proportionally with their complexity.

k) Structural Fires

1) *Description*

A structure fire is a fire involving the structural components of various types of residential, commercial, or industrial buildings, such as barn fires. A structure fire may be caused due to an internal source such as an electrical failure, or an external source, such as lightning or a wildfire. Structure fires typically have a similar response from the fire department which may include engines, ladder trucks, rescue squads, chief officers, and an EMS unit. The actual response and assignments will vary between fire departments.

It is not unusual for some fire departments to have a pre-determined mobilization plan for when a fire incident is reported in certain structures in their area. This plan may include mobilizing the nearest aerial firefighting vehicle to a tower block, or a foam-carrying vehicle to structures known to contain certain hazardous chemicals.

2) *Location and Extent*

Just like any community, structure fires are part of the daily response activities for first responders. The County and its jurisdictions have a diverse structure population that includes high rise condominiums and hotels on the barrier islands, dense residential and commercial areas within the city and unincorporated Escambia County, rural populations make up the central and northern part of the County.

3) *Previous Occurrences*

From 2015 through 2019, the County experienced 1,118 structure fires, this includes 86 mobile home residences. The estimated cost of these structure fires was over \$42 million in damage. Below are some recent notable years of fire responses within the County.

- In 2006 and 2007, Escambia County responded to 819 commercial structure fires and 2,107 residential structure fires, serving a community of approximately 242,000 residents in Escambia County, Pensacola Beach, and the Town of Century.<sup>33</sup>
- In 2007, the Pensacola Fire Department responded to 71 residential and 13 “other” structure fires.
- In 2013, Escambia County responded to 43 commercial structure fires, 183 residential structure fires, and 73 brush fires, while serving a community of approximately 250,000 residents in Escambia County, Pensacola Beach, and the Town of Century.
- In 2013, the City of Pensacola responded to 10 commercial structure fires and 32 residential structure fires, while serving a community of approximately 52,000 residents.

#### 4) *Probability of Future Events*

Based on history, the probability of structure fires in Escambia County remains high. The nature of structure fires is unpredictable; therefore, it is not possible to approximate with any accuracy where or how many structure fires will occur in any given year.

#### 5) *Vulnerability and Risk Assessment*

Unincorporated Escambia County has a diverse distribution of densities throughout the County creating a diverse risk for structural fires. Along the beaches of Perdido Key and the southwestern areas of the County, many high-rise condominiums, single-family neighborhoods, and apartments have structures built close together. This increases the risk that one structure fire may spread or impact other structures or apartment and condominium units. In the central and northern areas of the County, housing density is lower with more single-family homes on larger areas of land. This reduces the risks of one structure fire impacting a neighboring property.

The City of Pensacola has approximately 53,000 people and is considered a densely populated area. Structures include all densities, such as: single-family homes, apartment complexes, small commercial structures, and large multi-story structures located within the City limits. The potential for damage is moderate with the potential risk of a fire to occur being low.

Santa Rosa Island Authority (SRIA) fire response is considered within the County response as SRIA is dependent on the County for fire services rendered. SRIA has large multi-story condominiums beachside; new condominium units continue to be built. There are several apartment complexes and other condominiums on the beach along with hundreds of single-family homes, including multimillion-dollar residences. Based on the density of condominiums, and single-family homes, the risk of damage would be moderate, however the risk of a structure fire is considered low.

Mainland Escambia County has few high-rise structures with the exception of Perdido Key, with numerous high-rise condominiums, apartments, and single-family homes. The

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<sup>33</sup> Source: Escambia County Fire-Rescue



potential of damage is moderate, with the risk of structure fire considered low. The unincorporated County becomes more rural as you move toward the north, and there are no real heavily populated or developed areas as found in downtown Pensacola. The risks for potential damages would be considered low and the risk of fire would also be low.

The Town of Century is rural and is not considered to any less or more risk of fire than any other portion of the County, therefore, the risk for potential damage would be low, and the risk for fire would be low.

No structural fire risk map was created for this plan, as structural fires are unpredictable, and dependent upon human responsibility, the age of homes, etc. No jurisdiction is considered at a greater risk for structural fire than any other.

l) Winter Storm/Freeze

1) *Description*

The National Weather Service (NWS) defines a Winter Storm as a weather event with accumulating frozen precipitation such as snow, sleet, and/or freezing rain. This event affects every state in the continental United States, although such weather is typically uncommon in Florida, especially southern parts.

2) *Location and Extent*

For Escambia County, episodes of extreme freezing temperatures would be widespread to all locations and not just specific locales. Escambia County typically has severe freezing temperatures in short duration every year with long term hard freezing weather occurring every few years. As a result of freezing temperatures, Escambia County can expect to experience crop damage, icing on roadways, ruptured pipes, as well as the increased threat to the lives of the homeless and elderly. The threat and risk from freezing temperatures increases the further north you travel in the County and the further you move from the coastal areas. The Town of Century is located at the northern border of the County and is the most vulnerable jurisdiction to freezing temperatures. Along the coast, the Gulf of Mexico winds tend to keep temperatures milder.

3) *Previous Occurrences*

Several significant winter storm events have taken place recently, in 2001, the president declared a major disaster declaration for Florida to allow funds to reach those individuals impacted by the event. The agricultural industry was severely impacted and resulted in many individuals being out of work. In January of 2014, winter storm essentially shut down the County for three days with an ice storm that produced a blanket of sleet over the entire County. Every bridge in the County was closed and frozen over.

Since 2010, three events have occurred in Escambia County. These are outlined in the table below.

**Table 12: Freeze and Wind Chill Events Escambia County (2010 – 2020)**

Location	Date	Type	Damage
<i>Escambia</i>	01/28/2014	Ice/Sleet Storm	-0-
<i>Escambia (Inland)</i>	12/08/2017	Winter Weather	-0-
<i>Escambia (Coastal)</i>	12/08/2017	Winter Weather	-0-
<i>Escambia (Inland)</i>	12/09/2017	Winter Weather	-0-
<i>Escambia (Coastal)</i>	01/17/2018	Winter Weather	-0-

**4) Probability of Future Events**

Given historical patterns, the probability of the occurrence of a freeze (below 36 degrees Fahrenheit) is at least one day per year. All portions of Escambia County have been impacted by episodes of winter storms/freezing temperatures in the past, therefore confirming that the entire county is susceptible and according to previous occurrences the future probability is moderate.

**5) Vulnerability and Risk Assessment**

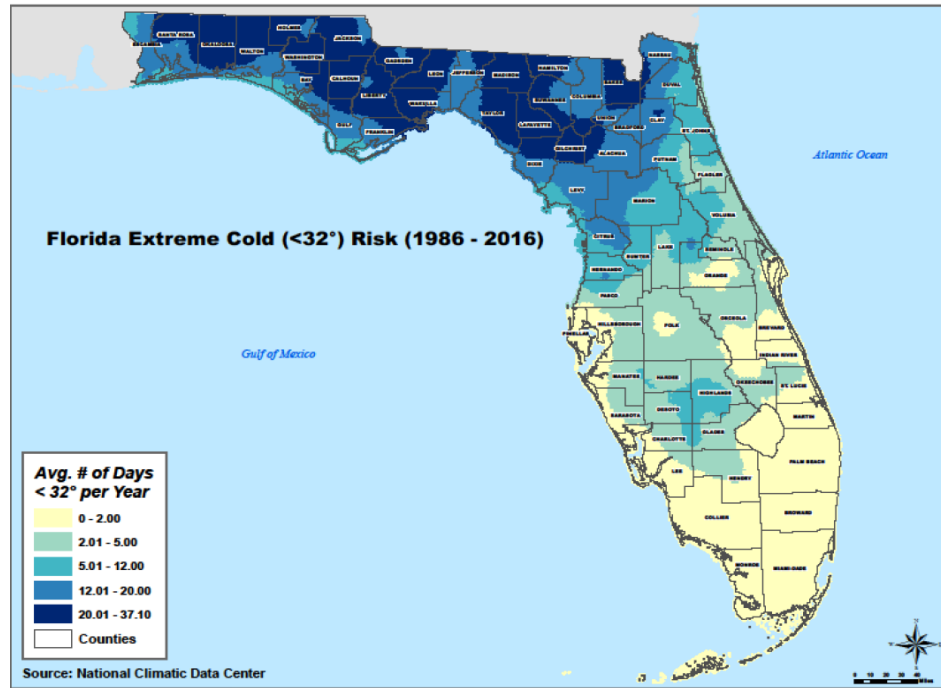
The vulnerability for the County due to a winter storm or freeze event is considered low. The number of people impacted by a freeze is not overly significant and, compared to other events, the economic costs are considered low. Escambia County’s agricultural areas to the north of Interstate 10 are most vulnerable to winter storms and freezes as a result of the associated economic impact. However, a winter storm could cause major economic impact to the whole County, the County does not have support infrastructure required for a sustained period of time.

Temperatures in Escambia County can be as low as single digits, but rarely below zero. Additionally, light, freezing rain has been reported on occasion. Frozen precipitation in small amounts, although not commonplace, is possible within Escambia County. The probability of another significant freeze event continues to be moderate.

With regard to a scale to measure the magnitude or severity, the National Weather Service issues a threat awareness chart regarding one’s vulnerability to the hazard of excessive cold temperatures, especially wind chill. Escambia County may occasionally be subject to the types of winter storms experienced in the panhandle that can include snow precipitation and accumulation.

According to the National Climactic Data Center, it is expected that the county could see an average of 12 to 20 extreme cold (<32 degrees) days each year (see figure on the following page) is based on the average number of extreme cold days that occurred from the year 1986 through 2016.

Figure 15: Florida Extreme Cold Risk (2000 – 2016)



m) Sinkholes/Subsidence

1) *Description*

According to United States Geological Survey (USGS), a sinkhole is a depression in the ground that has no natural external surface drainage. Basically, this means that when it rains, all of the water stays inside the sinkhole and typically drains into the subsurface. Sinkholes are dramatic because the land usually stays intact for a period of time 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.

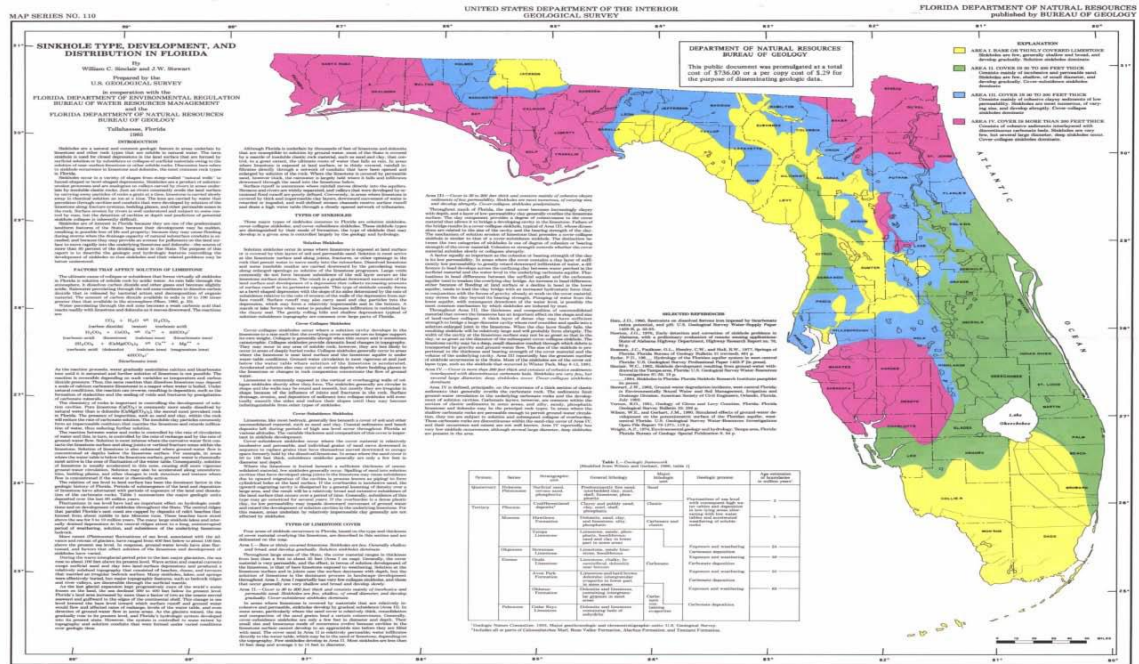
Topographically, Florida is part of a large Karst formation that comprises a section of the southeastern portion of the United States. Karst refers to the rock “foundation” that is slowly eaten through by chemical weathering eventually leading to subsidence or sinkholes. In Florida, the rock is generally limestone or gypsum, but it can be other types as well. The Karst terrain is also marked by the numerous caves and underground drainages.

2) *Location and Extent*

The following figure shows the potential for sinkholes in the State of Florida. Escambia County is located in Area IV (highlighted in pink), which illustrates where cover is more than 200 feet thick and consists of cohesive sediments interlaid with discontinuous carbonate beds.

Sinkhole events in these areas are very few in occurrence, however, several large in diameter, deep sinkholes can occur.

Figure 16: Sinkhole Type, Development, and Distribution in Florida<sup>34</sup>



3) *Previous Occurrences*

There are no verified cases of sinkholes in Escambia County.

4) *Probability of Future Events*

The Florida Geological Survey of the Department of Environmental Protection (DEP) identifies the entirety of Escambia County is located in an area where sinkholes seldom, if ever occur.

5) *Vulnerability and Risk Assessment*

There are no verified cases of sinkholes in Escambia County. No further analysis or risk assessment will be conducted for this plan.

n) Earthquake

1) *Description*

An earthquake is ground shaking caused by a sudden movement of rock in the earth's crust. Such movements occur along zones known as faults, which are thin areas of crushed rock separating blocks of crust within the earth. When one block suddenly slips and moves relative to the other along a fault, the energy released creates vibrations called seismic waves that radiate up through the crust to the earth's surface, causing the ground to shake.

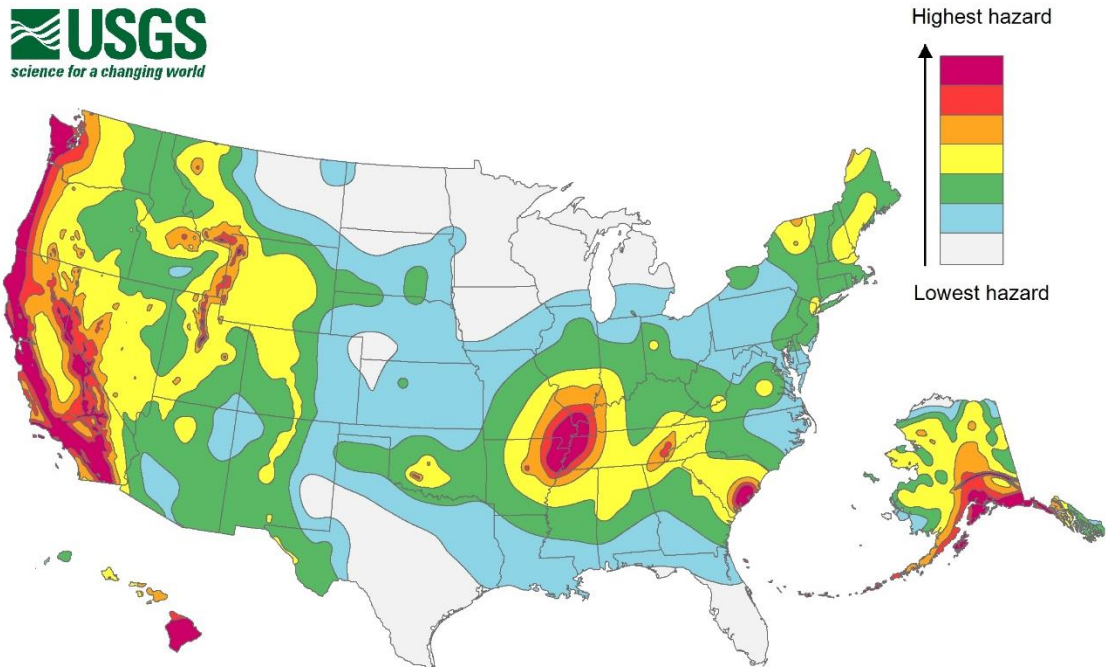
According to David Kopsaka-Marvel of the Geological Survey of Alabama, "there is a former plate boundary in Florida, because most of Florida was once part of Africa. The suture is buried quite deep, and is not a zone of active plate movement now, but there

<sup>34</sup> SOURCE: U.S. Department of the Interior, Geologic Survey. <https://floridadep.gov/fgs>

are many ancient faults associated with it. Other (newer) faults in Florida are associated with the thick sedimentary successions deposited on the western Florida continental shelf. These faults form when thick masses of sediment start to slide slowly downward because of their great and unevenly distributed weight. Earthquakes are commonly associated with movement on growth faults, as these are called. Other earthquakes may be caused by ground settling from water or hydrocarbon extraction. Major earthquakes are unknown in Florida, and minor earthquakes are not common, but they do occur. The two largest earthquakes recorded in Florida, according to the US Geological Survey database, occurred in 1780 and 1879.”

The figure below shows the most recently developed earthquake hazard risk based on USGS models for the conterminous U.S. (2018), Hawaii (1998), and Alaska (2007).

**Figure 17: 2018 Long-term National Seismic Hazard Map<sup>35</sup>**



### 2) Location and Extent

There is no history of damaging earthquakes in the County, the peak acceleration rate is determined to be low by the U.S. Geological Survey, and recent events near Escambia County provide a reference that building damage most likely will not occur from the area’s seismic activity.

### 3) Previous Occurrences

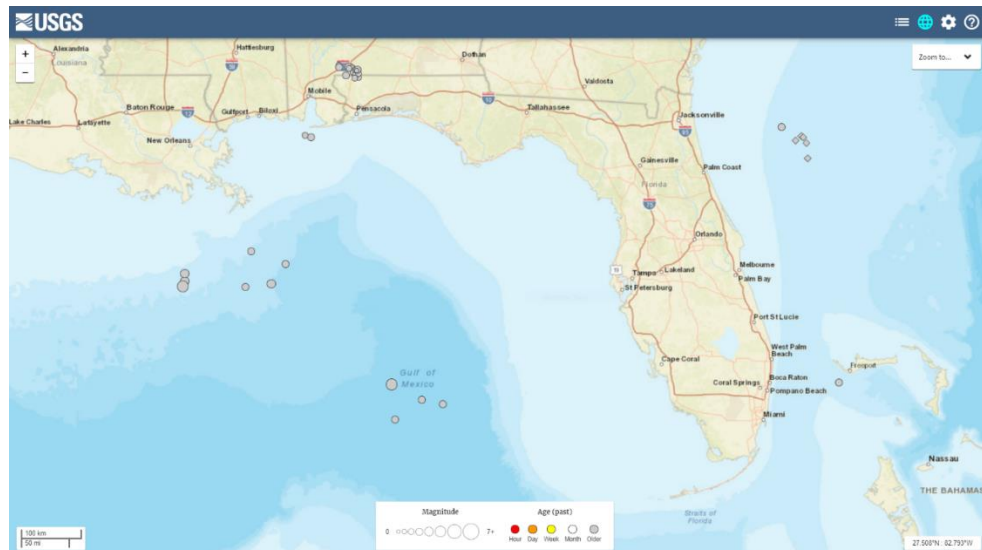
The following are earthquake occurrences that have been reported in or near the State of Florida:

<sup>35</sup> <https://www.usgs.gov/natural-hazards/earthquake-hazards/hazards>

- October of 1997, a 4.9 magnitude earthquake was recorded near Littleville, Alabama that was felt through McDavid, Pensacola, Walnut Hill, down to Perdido and as far east as Milton and Elgin AFB, with Century feeling the most of the tremors actually causing some homes built off grade to slide off their foundations.
- September of 2003, a 3.3 magnitude earthquake was recorded 35 miles southeast of Jackson, Alabama that was felt in northern Escambia County, with no reports of any damage.
- February 10, 2006, a 5.2 hit 250 miles south-southwest of Apalachicola, Florida. No damages were reported.
- September 10, 2006, a 6.0 earthquake impacted the Gulf of Mexico approximately 250 miles south-southwest of Apalachicola, Florida. No damages were reported.
- February 18, 2011, a 3.5 magnitude earthquake was recorded approximately 10 miles off the coast of Baldwin County, Alabama. No damages were reported.
- November 11, 2012, a 2.6 magnitude earthquake was recorded approximately 10 miles off the coast of Baldwin County Alabama. No damages were reported.
- In March and April of 2019, a series of nine earthquakes ranging from a magnitude of 1.9 to 3.1 were recorded on the northern border of Escambia County and Flomation, Alabama. The effects of the earthquake could be felt in the Town of Century. No damages were reported.

The following figure identifies the seismic activity near the State of Florida.<sup>36</sup>

**Figure 18: Seismic Activity Near the State of Florida from 1957 to 2020**



<sup>36</sup> <https://www.usgs.gov/natural-hazards/earthquake-hazards/earthquakes>

#### 4) *Probability of Future Events*

According to the US Geological Survey, Escambia County is part of a stable continental region. Earthquakes are unlikely to occur. The probability of a magnitude 5.0 to 10.0 earthquake within the next 50 years is 0.45%.

#### 5) *Vulnerability and Risk Assessment*

In the unlikely event of a major earthquake, a significant number of residents is likely to be affected as well as a high anticipated economic cost. Based on physical location, topography and historical data, the northern part of the county would be more likely to experience impacts. However, the probability of such an occurrence is considered extremely low. Structural and utility issues would be the more vulnerable to earthquakes. The vulnerability to earthquakes is considered low.

Based on the current information and the historical occurrences, the risk of major earthquake activity is equally low for all jurisdictions of Escambia County. Recently recorded tremors felt in and around the Town of Century indicate that the northern portion of the county is at a slightly higher risk of earthquake activity.

Continued or more frequent seismic activity, or an increase in intensity in the County may warrant possible examination of mitigation activities that would need to be addressed, specifically near the Town of Century and in northern Escambia County.

### o) Erosion

#### 1) *Description*

Erosion occurs when land is worn away by the action of natural forces in waves, currents and wind. Even though erosion is a natural process, it can be either mitigated or enhanced by human activity.

#### 2) *Location and Extent*

In the central and northern parts of the County, there is gradually farmland slope erosion that may cause sections of soil to slide down gradual slopes that become saturated with water or erode with heavy rainfall as the water works its way into the natural grade winding to local streams and rivers.

Coastal erosion is well documented along the barrier islands. Generally, there is a net movement of sand from east to west. Annual erosion, not associated with a tropical storm event, is approximately 20,000 cubic yards per year. During major hurricanes, sand losses are expected to be on the order of 3 to 5 million cubic yards of sand. This erosion costs an estimated \$40 million to restore. Shoreline retreat is expected to be approximately 100-120 feet to the north. Without restoration, private development and public infrastructure would be extremely vulnerable to future flood and wave events.

Escambia County with the Santa Rosa Island Authority has an active program to maintain the engineered beach on Pensacola Beach to assure a minimum standard of protection is in place year after year.

### 3) *Previous Occurrences*

Several notable erosion events have happened in the County, including:

- Hurricane Erin and Hurricane Opal, 1995: Hurricane Opal took a major toll on Pensacola Beach, particularly with the beaches ability to rejuvenate itself through natural means moving into the future.
- Hurricane George, 1998: This storm wiped out what was left of Pensacola Beach.
- Beach Nourishment, 2001: The first beach nourishment on Pensacola Beach, this included placement of approximately 3.8 million cubic yards of sand within the 8.1 miles of jurisdictional area of Pensacola Beach.
- Tropical Storm Isadore, 2001: The storm broke through the beach dune/berm and removed what was left of the dune/berm system protecting property along the beach on Pensacola Beach.
- Hurricane Ivan, 2004 and Hurricane Dennis, 2005: These storms significantly impacted Pensacola Beach with the removal of almost the entire beach and the dune/berm system along the beach protecting homes and businesses.
- Beach Nourishment, 2005: The second beach nourishment on Pensacola Beach, included the replacement of approximately 3.6 million cubic yards of sand within the 8.1 miles of jurisdictional area of Pensacola Beach.
- Hurricane Ike and Hurricane Gustav, 2008: Significantly eroded Pensacola Beach, eroding approximately 800,000 cubic yards of sand.
- In 2014, record rainfall was experienced in Pensacola, significant erosion occurred in several areas of the County and City, eroding away roads, earthen dams, and along the Scenic Highway Bluffs.
- Tropical Storm Gordon, 2018: Beach erosion was reported on the barrier islands south of Pensacola as a direct result of the tropical storm.

### 4) *Probability of Future Events*

Significant erosion events are tied to tropical activity; therefore, the probability of occurrence is moderate.

### 5) *Vulnerability and Risk Assessment*

With over 28 miles of barrier islands subject to chronic and acute erosional activity, the vulnerability of Escambia County and Pensacola Beach is considered high.

Riverine erosion is a concern for Escambia County as the east and west borders are made up of the Escambia and Perdido Rivers, respectively. While these rivers pose a threat from flooding, the erosion issues are considered minimal, even during flood conditions.

The City of Pensacola has steep “cliffs” on the eastern side of the City going down into the Escambia Bay, however, the soils are considered stable and not a threat to nearby property or homes; the risk is low for erosion in the City.

The Town of Century has a low risk of erosion due to its geographical location.



The County has identified a variety of risk levels from low to moderate risk of erosion dependent upon the geographical location, such as along a river or creek or inland away from potential of water impacts.

p) Dam or Levee Failure

1) *Description*

A dam is an artificial barrier that has the ability to impound water, wastewater, or any liquid- borne material, for the purpose of storage or control of water. It helps contain or control the flow of water during a flood. It is important to understand that levees reduce the risk of flooding, but do not eliminate the risk.

A dam/levee failure is a collapse or breach in a dam or levee. While most dams have storage volumes small enough that failures have little or no repercussions, dams with large storage amounts can cause significant downstream flooding.

According to FEMA, more than a third of the country's dams are 50 or more years old. Approximately 14,000 of those dams pose a significant hazard to life and property if failure occurs. There are also about 2,000 unsafe dams in the United States, located in almost every state. Dam failures can result from one or a combination of the following reasons<sup>37</sup>:

- Overtopping caused by floods that exceed the capacity of the dam
- Deliberate acts of sabotage
- Structural failure of materials used in dam construction
- Movement and/or failure of the foundation supporting the dam
- Settlement and cracking of concrete or embankment dams
- Piping and internal erosion of soil in embankment dams
- Inadequate maintenance and upkeep

2) *Location and Extent*

Escambia County has approximately 86 permitted and 9 unpermitted dams. Most of the dams are located in the mid to northern portions of the County and associated with agriculture use (i.e. cattle watering pond). According to the Florida Water Management District (NFWMD), the dams are earthen berm type, with a primary spillway constructed of a durable material such as metal, concrete, or PVC and an auxiliary or emergency spillway which was most frequently constructed as an earthen spillway. All permitted facilities required the installation of a low-level dewatering device.

A majority of the dams are considered low risk dams, with just two rated as high risk<sup>38</sup> due to the potential impacts if the dam was to breach and/or have complete failure. The largest of the impoundments is associated with the Crescent Lake subdivision. This dam forms a lake that is approximately 67 acres in area and is projected to impound a volume of approximately 201 acre-feet or 65.5 million gallons of water.

<sup>37</sup> FEMA (2019b). Why Dams Fail, <https://fema.gov/why-dams-fail>

<sup>38</sup> National Inventory of Dams (<https://nid.sec.usace.army.mil/>)

### 3) *Previous Occurrences*

The Crescent Lake area received extensive damage during the April 29-30, 2014 storm event. Flooding caused extreme erosion and sedimentation along Blue Springs Avenue and East Shore Drive. Crescent Lake overtopped and caused a breach in the dam. The floodplain for Marcus Creek downstream of the dam was sufficient to carry waters to Perdido Bay. Although, there were several homes that flooded along the path, these homes have had a history of flooding without the dam breach.

Since 2010, the only significant dam failures occurred at Crescent Lake (referenced above) and a smaller (approximately 3.5 acre) impoundment located just north of Orby Street at Chemstrand Road associated with the April 2014 storm event.

### 4) *Probability of Future Events*

Earthen dams are vulnerable during heavy rains and hurricanes due to spillway capacity being exceeded or debris restricting flow in spillways resulting in overtopping and dam failure. The probability of potential dam or levee failure is low.

### 5) *Vulnerability and Risk Assessment*

In the northern part of the County, agricultural lands and farming community associated infrastructure could be vulnerable. In the more populated areas of the County there is the potential for human and infrastructure damage due to the proximity of those dams. Historical events have identified issues with transportation, roads, and bridges have been affected by these vulnerabilities. Based on these instances, it can be concluded that there are direct socio-economic impacts to the community overall.

The NFWMD maintains a listing of the dams and the risk assessment for each dam located within the County.

## q) Epidemic/Pandemic

### 1) *Description*

An epidemic is a disease that affects a greater number of people than is usual within a region. A pandemic is the same as an epidemic except it has spread to more than one region of the world. Infectious diseases are caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi; the diseases can be spread, directly or indirectly, from one person to another. Zoonotic diseases are infectious diseases of animals that can cause disease when transmitted to humans.

For the purpose of this Plan, infectious disease has been categorized as (1) pandemic and (2) localized infectious disease outbreaks.

A pandemic is an epidemic that occurs over a wide geographic area, often global. Pandemics results when a microorganism (or disease condition) emerges that is pathogenic for humans but to which humans have no immunity or prior protection. Thus, an epidemic occurs and the number of cases substantially exceeds the number of expected cases over a given period of time. Pandemics generally refer to infectious diseases that spread efficiently from person to person across the globe, although the term may be used to describe medical conditions with other risk factors, such as chronic illnesses like cardiovascular diseases.

## 2) *Location and Extent*

Populated areas throughout Escambia County its jurisdictions are the most at risk from human disease. Disease is not a risk, in itself, to the physical or operational integrity of any type of structure. However, high absenteeism could threaten the operating capabilities of businesses, industries, institutions and government agencies.

In 2020, Escambia County planned the implementation of a comprehensive Pandemic Plan in order to facilitate the continuity of governmental operations so as to provide necessary services to the citizens of the County in the event that a pandemic strikes the Gulf Coast of Florida.<sup>39</sup>

In the event of a pandemic, medical and health care facilities may be overwhelmed, with local care not readily accessible to those in need. Fatalities would significantly increase. Public safety would be compromised due to illness among public safety and security agencies. Quarantine and isolation techniques would be imposed, requiring a significant enforcement challenge. Temporary health care facilities and field hospitals would have to be activated and staffed by professionals from outside the county.

Overall, the human and economic consequences of the event would be very substantial.

## 3) *Previous Occurrences*

Below are the epidemics/pandemics that may have had notable impacts:

- The “Spanish Flu,” 1918/1919: The Spanish Flu began in August 1918, in three disparate locations: Brest, Boston and Freetown. An unusually severe and deadly strain of influenza spread worldwide. The disease spread across the world, killing 25 million in the course of six months; some estimates put the total of those killed worldwide at well over twice that number. An estimated 17 million died in India, 500,000 in the USA and 200,000 in the UK. It vanished within 18 months and the actual strain was never determined, though some recent attempts at reconstructing genes from the virus have been successful.
- H5N1 “Bird Flu,” 1997/2003: Asian highly pathogenic avian influenza (HPAI) A(H5N1) virus occurs mainly in birds and is highly contagious among them. HPAI Asian H5N1 is especially deadly for poultry. The virus was first detected in 1996 in geese in China. Asian H5N1 was first detected in humans in 1997 during a poultry outbreak in Hong Kong and has since been detected in poultry and wild birds in more than 50 countries in Africa, Asia, Europe, and the Middle East. Six countries are considered to be endemic for Asian HPAI H5N1 virus in poultry (Bangladesh, China, Egypt, India, Indonesia, and Vietnam).  
Since its widespread re-emergence in 2003, rare, sporadic human infections with this virus have been reported in Asia, and later in Africa, Europe, and the Middle East. Human infections with Asian H5N1 viruses have been associated with severe disease and death. Most human infections with avian influenza viruses, including HPAI Asian H5N1 viruses, have occurred after prolonged and close contact with infected birds. Rare human-to-human spread with this virus has

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<sup>39</sup> Escambia County Pandemic Plan 2020

occurred, but it has not been sustained and no community spread of this virus has ever been identified.<sup>40</sup>

- SARS, 2002/2003: Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus called SARS-associated coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. The illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained. Since 2004, there have not been any known cases of SARS reported anywhere in the world. The content in this website was developed for the 2003 SARS epidemic. But some guidelines are still being used.<sup>41</sup>
- H1N1, 2009: In the spring of 2009, a novel influenza A (H1N1) virus emerged. It was detected first in the United States and spread quickly across the United States and the world. This new H1N1 virus contained a unique combination of influenza genes not previously identified in animals or people. This virus was designated as influenza A (H1N1)pdm09 virus. From April 12, 2009 to April 10, 2010, CDC estimated there were 60.8 million cases (range: 43.3-89.3 million), 274,304 hospitalizations (range: 195,086-402,719), and 12,469 deaths (range: 8868-18,306) in the United States due to the (H1N1)pdm09 virus.<sup>42</sup>
- Ebola, 2014-2016: On March 23, 2014, the World Health Organization (WHO) reported cases of Ebola Virus Disease (EVD) in the forested rural region of southeastern Guinea. The identification of these early cases marked the beginning of the West Africa Ebola epidemic, the largest in history. On March 23, 2014, with 49 confirmed cases and 29 deaths, the WHO officially declared an outbreak of EVD.

Overall, eleven people were treated for Ebola in the United States during the 2014-2016 epidemic. On September 30, 2014, CDC confirmed the first travel-associated case of EVD diagnosed in the United States in a man who traveled from West Africa to Dallas, Texas. The patient (the index case) died on October 8, 2014. Two healthcare workers who cared for him in Dallas tested positive for EVD. Both recovered.

On October 23, 2014, a medical aid worker who had volunteered in Guinea was hospitalized in New York City with suspected EVD. The diagnosis was confirmed by the CDC the next day. The patient recovered. Seven other people were cared for in the United States after they were exposed to the virus and became ill while in West Africa, the majority of whom were medical workers. They were transported by chartered aircraft from West Africa to hospitals in the United States. Six of these patients recovered, one died.

- MERS, 2014: In May 2014, CDC confirmed two unlinked imported cases of MERS in the United States—one to Indiana, the other to Florida. Both cases

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<sup>40</sup> <https://www.cdc.gov/flu/avianflu/h5n1-virus.htm>

<sup>41</sup> <https://www.cdc.gov/sars/index.html>

<sup>42</sup> <https://www.cdc.gov/flu/pandemic-resources/2009-h1n1-pandemic.html>

were among healthcare providers who lived and worked in Saudi Arabia. Both traveled to the U.S. from Saudi Arabia, where scientists believe they were infected. Both were hospitalized in the U.S. and later discharged after fully recovering.<sup>43</sup>

- Zika Virus, 2015 and 2016: In early 2015, a widespread epidemic of Zika fever, caused by the Zika virus in Brazil, spread to other parts of South and North America. It also affected several islands in the Pacific, and Southeast Asia. In 2016, a reported 5,168 cases of Zika virus were reported in the U.S. In the State of Florida, this included 1,107 cases of the virus.<sup>44</sup>
- COVID-19, 2020: On January 11, 2020, Chinese health authorities preliminarily identified more than 40 human infections with novel coronavirus in an outbreak of pneumonia under investigation in Wuhan City, Hubei Province, China. Chinese health authorities subsequently posted the full genome of the so-called “novel coronavirus 2019”, or “2019-nCoV”, in GenBank®, the National Institutes of Health genetic sequence database. On February 11, 2020 the World Health Organization announced an official name for the disease that is causing the 2019 novel coronavirus outbreak, COVID-19 and declared it a pandemic outbreak on March 11, 2020.<sup>45</sup>

#### 4) *Probability of Future Events*

According to previous history and the CDC, pandemic type events rarely happen (4 times in the 20<sup>th</sup> century), therefore indicating a low/moderate probability.

Based on the occurrences and future probability, the County has made some assumptions about how to plan for a pandemic/epidemic which is outlined below.

- Susceptibility to the pandemic influenza virus will be universal.
- Efficient and sustained person-to-person transmission signals an imminent pandemic.
- The clinical disease attack rate will likely be 30% or higher in the overall population during the pandemic. Illness rates will be highest among school-aged children (about 40%) and decline with age. Among working adults, an average of 20% will become ill during a community outbreak.
- Some people will become infected but not develop clinically significant symptoms. Asymptomatic or minimally symptomatic individuals can transmit infection and develop immunity to subsequent infection.
- Of those who become ill with influenza, 50% will seek outpatient medical care.
- With the availability of effective antiviral drugs for treatment, this proportion may be higher in the next pandemic.
- The number of hospitalizations and deaths will depend on the virulence of the pandemic virus. Estimates differ about 10-fold between more and less severe

<sup>43</sup> <https://www.cdc.gov/coronavirus/mers/us.html>

<sup>44</sup> <https://www.cdc.gov/zika/index.html>

<sup>45</sup> Florida Department of Health – [Novel Coronavirus \(2019nCoV\)](#)

scenarios. Two scenarios are presented based on extrapolation of past pandemic experience. Planning should include the more severe scenario.

- Risk groups for severe and fatal infection cannot be predicted with certainty but are likely to include infants, the elderly, pregnant women, and persons with chronic medical conditions.
- Rates of absenteeism will depend on the severity of the pandemic.
- In a severe pandemic, absenteeism attributable to illness, the need to care for ill family members and fear of infection may reach 40% during the peak weeks of a community outbreak, with lower rates of absenteeism during the weeks before and after the peak.
- Certain public health measures (closing schools, quarantining household contacts of infected individuals, “snow days”) are likely to increase rates of absenteeism.
- The typical incubation period (interval between infection and onset of symptoms) for influenza is approximately 2 days.
- Persons who become ill may shed virus and can transmit infection for up to one day before the onset of illness. Viral shedding and the risk of transmission will be greatest during the first 2 days of illness. Children usually shed the greatest amount of virus and, therefore, are likely to pose the greatest risk for transmission.
- On average, infected persons will transmit infection to approximately two other people.
- An affected community, a pandemic outbreak will last about 6 to 8 weeks.
- Multiple waves (periods during which community outbreaks occur across the country) of illness could occur with each wave lasting 2 to 3 months. Historically, the largest waves have occurred in the fall and winter, however, the seasonality of a pandemic cannot be predicted with certainty.

##### *5) Vulnerability and Risk Assessment*

Certain people are at high-risk for serious complications (infants, elderly, pregnant women, extreme obesity and persons with certain chronic medical conditions). Further impacting risk, most people have little or no immunity because they have no previous exposure to the virus or similar viruses.

Seasonal flu rates of medical visits, complications, hospitalizations and death can vary from low to high. The CDC estimates that flu-related hospitalizations since 2010 ranged from 140,000 to 710,000, while flu-related deaths are estimated to have ranged from 12,000 to 56,000. Now in comparison, pandemic flu rates of medical visits, complications, hospitalizations and death can range from moderate to high. The number of deaths could be much higher than the seasonal flu (e.g. The estimated U.S. death toll during the 1918 pandemic was approximately 675,000). With the recent spread of COVID19, additional pandemic numbers will continually change until a time in which the virus is contained.

Considering the spread and infection rate, a pandemic event may cause major impacts on the general public, such as travel restrictions and school or business closings. Additionally, there is the potential for severe impact on domestic and world economies.<sup>46</sup>

Most efforts in analyzing the impacts and effects of disease and pandemic have been done at the national level. Because of the dynamics involved with the spread of disease and pandemic, a local level assessment has not been conducted specifically, but the local understanding that if a pandemic does impact our community, it will quickly overwhelm our local healthcare system.

r) Hazardous Materials

1) *Description*

A hazardous material is any item or agent which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. Emergencies can happen during production, storage, transportation, use or disposal. Populations are at risk when chemicals are used unsafely or released in harmful amounts where you live, work or play.

Hazardous materials include:

- Explosives;
- Flammable, non-flammable, and poison gas;
- Flammable liquids;
- Flammable, spontaneously combustible, and dangerous when wet solids;
- Oxidizers and organic peroxides;
- Poisons and infectious substances;
- Radioactive materials; and
- Corrosive materials.<sup>47</sup>

The Code of Federal Regulations (CFR), 40 CFR 302, establishes the list of extremely hazardous substances, threshold planning quantities, and facility notification responsibilities necessary for the development and implementation of State and local emergency response plans.

Facilities storing, using, or transporting hazardous materials with certain characteristics, and specific quantities as listed in 40 CFR 302, that may be of critical risk to safety, health and life of a community must report that information to the local, state, and Federal government to assist in identifying those materials and where they are located, so the risk can be assessed and planned for by the community.

2) *Location and Extent*

The release of a hazardous materials to the environment could cause a multitude of problems. Although these incidents can happen almost anywhere, certain areas of the County are at higher risk, such as near roadways that are frequently used for transporting hazardous materials and locations with industrial facilities that use, store, or dispose of

<sup>46</sup> <https://www.cdc.gov/flu/pandemic-resources/basics/about.html>

<sup>47</sup> National Archives and Records Administration, "[Code of Federal Regulations Title 49: Transportation](#)"

such materials. Areas crossed by railways, waterways, airways, and pipelines also have increased potential for mishaps. Incidences can occur during production, storage, transportation, use, or disposal of hazardous materials. Communities can be at risk if a chemical is used unsafely or released in harmful amounts into the environment. Hazardous materials can cause death, serious injury, long-lasting health effects, and damage to buildings, the environment, homes, and other property.

The term “release” includes spilling, leaking, pumping, pouring, emitting, emptying, discharging, escaping, leaching, dumping, or disposing into the environment of any hazardous material. Hazardous materials releases (HMRs) may be intentional or accidental, and may occur at fixed facilities or on vehicles.

HMRs are harmful in three ways:

- 1) Life safety concerns. Chemical, biological, and radiological agents can cause significant health risks to those exposed to them; biological agents can be additionally dangerous if they are infectious. Flammable and explosive materials also present life safety concerns if they are exposed to heat.
- 2) Costly and delicate nature of cleanup. Any release of a hazardous material requires a thorough and careful clean-up of the site and decontamination of those exposed.
- 3) Operational delays. Delays caused by any HMR and the ensuing evacuation and cleanup processes could lead to significant economic losses due to traffic delays (mobile releases) or operational shut-down (fixed facilities).

Most incidents occur with little or no warning, and can be difficult to detect until symptoms present themselves in those affected. Although major chemical incidents seem most threatening, it is the smaller, more routine accidents and spills that have a greater impact on humans, wildlife, economy, and environment. Some of the most common spills involve tanker trucks and railroad tankers containing gasoline, chlorine, or other industrial chemicals.

Accidental hazardous waste/materials spills can be reported immediately following the spill, thus reducing the amount of time the spill is left uncontained. Most hazardous waste/materials spills occur with little or no warning, and can be difficult, if not impossible, to detect until symptoms present themselves to those affected. External releases may create airborne plumes of chemical, biological, or radiological elements that can affect a wide area and last for hours or days. Internal releases would most likely require evacuation of a facility for hours to days. Both external and internal releases would require extensive clean-up efforts, which could last days to months depending on the type and magnitude of the spill.

### 3) *Previous Occurrences*

There have been several notable hazardous materials release incidents near and in Escambia County.

- 1979: A railway tanker derailed and leaked Anhydrous Ammonia which caused a few fatalities.



- 1979: “Donna” a National Airline 727 crashed in the Pensacola Bay right off the shore from Pensacola and Escambia County spilling aviation fuel and causing several deaths.
- 1993: The only known radiation incident in the County involved an automobile running into a typical neighborhood storage facility, exposing a small amount of radioactive material being stored in the facility. There was no risk to the local population or property as no radioactive material was released.
- 2014: During a rare ice storm, a train derailment occurred in Molino, that derailed 24 cars from which one tanker released upwards of 30,000 gallons of phosphoric acid into Fletcher Creek that feeds into Escambia River.
- 2016: A large nitrous oxide tank exploded at the Airgas facility at the Ascend Performance chemical plant killing one person. There was no immediate threat to the neighboring community.
- 2017: International Paper’s Cantonment mill explosion occurred because of a mixture of off-gases and air combined to make an explosive environment around a digester on-site, when an ignition source initiated the blast. Wood fiber, water, and pulping liquor was released and fell to the ground starting from the plant, across highway 29, and onto homes and private property primarily in the Woodbury Circle neighborhood.
- 2019: A break in an underground oil line resulted in the release of 16,600 gallons of oil. The spill was contained to a hole near the break.

#### 4) *Probability of Future Events*

The threat of future incidents involving hazardous materials is ever increasing, not only from our own County’s growth and increasing demand for hazardous products, but also from homeland security threats. The County also is a major transportation route where by hazardous materials are constantly traveling through the community in the immediate proximity of citizens, homes, and local businesses. Transportation of hazardous materials via highways, airport, railways, waterways, or pipelines requires citizens to live within vulnerable areas of hazardous materials. Although, the probability and risk of a hazardous material event happening in the future certainly exists, the overall risk remains low due to stringent industry regulation and scrutiny of such facilities and transports.

To assist in planning for potential hazardous materials incidents, the County uses CAMEO FM, a system of software applications used widely to plan for and respond to chemical emergencies. The CAMEO program identifies each facility and creates a worst-case scenario vulnerable zone (VZ) around that facility to help in the planning process to understand all the areas that could potentially be impacted by a chemical release or accident. In an effort to define the hazard areas for our extremely hazardous materials (classified as “302” hazards), we use the output of “worst-case scenarios” from the CAMEO FM Program. When identifying the worst-case vulnerability zones for all the “302” facilities in the County, all of the heavily populated areas are at risk from at least one of the “302” facilities. Only the very rural areas in the northern portions of the County, along with Pensacola and Perdido beaches stand to be minimally impacted.

### 5) *Vulnerability and Risk Assessment*

Escambia County is at risk from a variety of hazardous materials incidents. These incidents can occur at either fixed facilities in the County, from the transportation of hazardous material through the County, or from coastal spills, and can be as simple as a vehicle accident leaking fuel and oils, to large tanker trucks running over the edge of an overpass, to a train derailment and release. As a result of the risk of moving hazardous materials, there are more transportation accidents involving hazardous materials in Escambia County than those that occur at fixed facilities. These transportation accidents can occur on roadways, railways, waterways, air and pipelines

Areas with multiple chemical facilities experience a greater risk of a chemical incident than other locations. Nearly every community in Escambia County has at least one facility in each that stores, produces, or utilizes a hazardous material. Propane installations are located across the state and their presence increases the risk of an incident. Hazardous material shipments move through the county annually; these shipments can occur at any time, day or night, and by means of road, rail, air and water, and often through areas with urbanized, high traffic volume routes.

Hazardous waste/materials spills may be accidental or intentional, and may occur at fixed facilities or during transportation. Hazardous materials are widely used in public and private facilities and farms. Numerous facilities in Escambia County store, use, dispose, or have the capacity and infrastructure to handle hazardous materials on a regular basis; under Title III of the Emergency Planning and Community Right to Know Act, facilities that meet certain requirements must report to federal, state, and local authorities. These facilities are commonly referred to as "Tier I" or "Tier II" facilities.

There are approximately 106 Tier II facilities located in Escambia County. The Santa Rosa Island Authority has one (1), the Town of Century has four (4), the City of Pensacola has approximately forty (40), and the unincorporated county has an approximate sixty-one (61) "302" facilities. Ascend Performance Materials, the world's largest manufacturer of Nylon, and Cerex Advance Fabrics, are the County's largest "302" facilities.

Transportation risks associated with hazardous materials will be discussed individually below:

#### **Roadways**

There are four major roadways in Escambia County that transport significant quantities of hazardous materials:

- U.S. 98: Located near the coastline and travels through extensive urban areas in Escambia County, and is used heavily by tourists in the summer. U.S. 98 crosses extensive wetland areas, as well as bays and bayous.
- Interstate 10: I-10 is a divided four/six lane highway that travels East to West through Escambia County and the Panhandle of Florida. The highway passes through significant urban areas in Escambia County, as well as numerous wetlands, river, and bay crossings.
- U.S. 90: U.S. 90 and U.S. ALT 90 carry high volumes of traffic in Escambia County, and also serve as the main access routes for chemical plants in

northern Escambia County. There are also large numbers of businesses and residences located along these roadways.

- U.S. 29: U.S. 29 travels the entire north-south length of Escambia County. Hwy 29 travels from the south in highly populated areas, through to the rural central and northern parts of the County.

### **Railways**

Two major railways are located in Escambia County serving industries and ports: Alabama & Gulf Coast Railway (AGCR) and CSX Transportation. The AGCR runs from Atmore, Alabama to the Port of Pensacola. The railway runs parallel to roadways in Escambia County and through highly populated areas in Pensacola, Ensley, and Cantonment.

CSX Transportation railway runs from the Town of Century due south to Escambia Bay and then turns east all the way to Tallahassee. The rail parallels Highway 90 and passes through communities in and around Highway 90. Gasoline and molten sulfur are the main hazardous materials transported on these railways.

### **Waterways**

Escambia County contains eleven port facilities that handle hazardous materials, as well as the Intercoastal Waterway, which leads to various other port facilities along the Gulf Coast. Both the City of Pensacola and the County have a geographical risk to waterway accidents as they are located along the coast of the Gulf of Mexico.

Even though Escambia County and the City of Pensacola have had no waterway hazardous material accidents occur in their jurisdictions, barge accidents have occurred in collisions with bridges and other boat traffic in neighboring jurisdictions. Packing, loading/unloading also presents a hazardous materials risk at the Port in Pensacola.

### **Pipelines**

Escambia County contains numerous high-pressure natural gas lines owned by Koch Gateway Pipeline Co., Florida Gas Transmission, Five Flags Pipeline Co., and Okaloosa Gas. Substantial fire and explosions could occur due to accidental damage to lines by unauthorized excavation. Exxon Pipeline Co. has a 16" crude oil pipeline in the northern portion of the County; the line is used for pumping crude and processed oil from Escambia and Santa Rosa Counties oil fields.

In 2001, a high-volume natural gas line ruptured and exploded near a local car dealership with flames engulfing a large truck, damaging several cars at the dealership, and closing a major road in Escambia temporarily.

The City of Pensacola has no major pipeline running through the City or along the beaches of Perdido Key and Pensacola Beach. The pipelines run mainly along highway 29 in the central and northern parts of the County, and in and around Century.

Though accidents can and do happen, most of the pipelines are underground and away from potential environmental and human impacts. The risk of such accidents remains relatively low for all of our jurisdictions.

### **Airports/Aircraft**

Escambia County is home to the Pensacola International Airport, Pensacola Naval Air Station (NAS), and 6 other public/private minor airports. With strict guidelines and regulations, airport and aircraft accidents have been kept to minimum. However, with all of these airfields, flight paths do take aircraft over populated areas daily and includes flight paths that impact each of the jurisdictions. Pensacola International Airport and Pensacola NAS are the primary airfields that have larger aircraft and larger passenger aircraft. Most of the other airfields have smaller private planes.

The Pensacola International Airport is located in the northeast part of the City. The naval airbase is in the southwest portion of the County, with a couple of smaller military airfields and private in other county locations.

With flight paths taking planes directly over the populated centers of the City and County, the amount of air traffic and limited number of large airliners coming into the Pensacola International Airport keep the risk of an accident to the moderate level.

Pensacola Naval Air Station also has a significant amount of air traffic, flying in and out of the base every day. As the home of the Blue Angels, the naval base brings in many high-powered military jets and support planes. Most of the flight paths are over the unincorporated County areas, the City of Pensacola, Santa Rosa Island Authority, and the Town of Century do experience some military vehicles flying in their air space overhead. Due to the minimal margin for error in flying the military's technologically advanced aircraft, and the more dangerous portion of any flight in taking off and landing, the risk from a military aircraft accident is considered moderate.

*While smaller spills may be more frequent in Escambia County, larger, more dangerous spills are infrequent.*

Additional risks associated with hazardous materials is shown below:

### **Radiation Hazard**

There are no nuclear plants within 50 miles of the County and its jurisdiction, and there are no facilities that regularly handle radiation in amounts that are considered dangerous to the community. Hospitals typically are the few facilities that manage radioactive material for medical procedures on a regular basis.

However, with major transportation routes through the community, there are radiation hazards that travel through our community on a regular basis. As an example, there is radioactive waste material from some of the Florida nuclear power plants that travel through our community on its way to proper disposal sites. As a result, there are radiation hazards to the community, but the risks are minimal through heavy government regulation over the transportation of such materials.

As previously mentioned, the only radiation occurrence in Escambia County was the 1993 automobile running into a neighborhood storage facility that exposed a small amount of radioactive material being stored.

s) Coastal Oil Spills/Release

1) *Description*

An oil spill is the release of crude oil, or liquid petroleum, into the environment. This is usually associated with marine spills but can also happen on land. Oil spills are caused by the release of oil from offshore platforms, drilling rigs, tankers, ships that have sunk, and any vehicle used to transport crude oil, over the water or land.

2) *Location and Extent*

Escambia County has witnessed several oil spills along the Gulf of Mexico over the years, but with no specific impact to our community until 2010. However, with over 27,000 abandoned wells in the Gulf of Mexico, there remains a constant risk of small leakage and potential landfall impacts and damages. These spills can have far reaching effects including continued damage to the environment and a financial loss to communities affected.

3) *Previous Occurrences*

There have been several notable hazardous materials release incidents near and in Escambia County.

- 1979: On June 3, 1979, an exploratory well blew out and released approximately 140 million gallons of crude oil.
- August 10, 1993-Three ships collided releasing approximately 336,000 gallons of No. 6 fuel oil into Tampa Bay.
- 2000: On November 28, 2000, an oil tanker released 567,000 gallons of crude oil into the lower Mississippi River.
- 2004: In September of 2004 Hurricane Ivan caused numerous releases into the Gulf of Mexico from damaged pipelines and platforms in the Gulf.
- 2005: In September 2005, as a result of Hurricane Katrina, there were 44 oil spills found in southeast Louisiana, with millions of gallons spilled.
- 2010: On April 20, 2010 a fire and explosion occurred at approximately 11:00 PM CDT, on the Deepwater Horizon, a semisubmersible drilling platform, with more than 120 workers aboard. The Deepwater Horizon is located some 50 miles SE of the Mississippi Delta. It was estimate that 4.9 million barrels of oil had been released by the well. Approximately 2.9 million pounds of oil was recovered in Escambia County.

4) *Probability of Future Events*

Based off of previous history, significant coastal oil incidents occur infrequently; therefore, the probability of occurrence is low.

5) *Vulnerability and Risk Assessment*

As of 2017, there are 23 operating rigs in the Gulf of Mexico, 19 drilling for crude oil and 4 drilling for natural gas. Given Florida's dependence on tourism and the related sales

tax revenue, an oil spill, which is classified as a type of HazMat event, could affect any of Florida's many natural resources, which could be catastrophic. In 2015, Florida had over 105 million tourists visit the state, with 14.5% coming from international communities. Tourism generates roughly 23% of the state's sales tax revenue and as of 2014 employs over 1.5 million people.<sup>278</sup> The Florida impacts of the 2010 Deepwater Horizon incident were mostly limited and contained, but the predictions at the time of potential impacts were severe. Moody's Analytics released a report which stated, should a significant amount of oil wash onto Florida's shores, the economic impact from tourism-related tax revenue and job losses could rival that of the ongoing recession and simulate a double dip recession. Following the lawsuits, Florida received over 200 million dollars in a settlement for lost tourism income.

In addition to economic impacts, an oil spill in Florida or off its shores could have severe consequences for wildlife, ecosystems, and the ecology. The Deepwater Horizon spill affected the wildlife populations of numerous species of turtles, birds, bottlenose dolphins, whales, and fish. Gulf states saw a decrease in bottlenose reproduction and a rise in deaths, the Kemp's Ridley sea turtle, already endangered, saw a massive drop in numbers, and scientists estimate the habitats on the bottom of the Gulf could take anywhere from multiple decades to hundreds of years to fully recover

t) Civil Disorder/Disturbance

1) *Description*

Civil disorder is typically the result of groups or individuals within the population feeling, rightly or wrongly, that their needs or rights are not being met, either by the society at large, a segment thereof, or the current overriding political system. When this results in community disruption where intervention is required to maintain public safety it becomes a civil disturbance. Civil disturbances can also occur in reaction to political movements or special events that attract large crowds, or as a result of an unemployment or economic crisis. When groups or individuals disrupt the community to the point where intervention is required to maintain public safety, the event has become a civil disturbance.

2) *Location and Extent*

Civil disturbance can occur anywhere and spans a wide variety of actions which includes, but is not limited to: labor unrest, strikes, civil disobedience, demonstrations, riots, prison riots, or rebellion leading to revolution. Triggers could include racial tension, religious conflict, unemployment, a decrease in normally accepted services or goods, such as extreme water, food, or gasoline rationing, or unpopular political actions. The most common type of civil disturbance is riots. Riots can cause extensive social disruption, loss of jobs, death, and property damage. The loss and damages may result from those involved in the action or initiated by authorities in response to the perception of a potential threat.

3) *Previous Occurrences*

Historically, Escambia and its jurisdictions have been fortunate not to have experienced any notable civil disturbances in the past.

#### 4) *Probability of Future Events*

The probability of civil disturbances occurring in Escambia County is considered low.

#### 5) *Vulnerability and Risk Assessment*

It is impossible to conduct a vulnerability analysis and loss estimation by jurisdiction for Civil Disturbances. While peaceful protests or demonstrations occur frequently, it is difficult to determine when a protest will become a civil disturbance or riot, by disrupting daily operations or by becoming violent. Based on the historical occurrences, the large, urban areas of the state are more likely to be affected by Civil Disturbances than the small rural areas.

The overall risks of future events remain low, however, the City of Pensacola, being the population center and County seat, may have a bit higher risk for consideration than the rest of the County and the Town of Century.

#### u) Cyberattack/Cyberterrorism

##### 1) *Description*

For the purposes of this report, a cyberattack is defined as a malicious computer-to-computer attack through cyberspace that undermines the confidentiality, integrity, or availability of a computer (or network), data on that computer, or processes and systems controlled by that computer. National Security Presidential Directive 54/Homeland Security Presidential Directive 23 (NSPD-54/HSPD-23) defines cyberspace as the interdependent network of information technology infrastructures, and includes the Internet, telecommunications networks, computer systems, and embedded processors and controllers in critical industries.

Threats to cyber space are regarded as one of the most serious economic and national security challenges in this day in age for the United States. As the Director of National Intelligence (DNI) recently testified before Congress, “the growing connectivity between information systems, the Internet, and other infrastructures creates opportunities for attackers to disrupt telecommunications, electrical power, energy pipelines, refineries, financial networks, and other critical infrastructures.”<sup>48</sup>

The duration of a cyberattack is dependent on the complexity of the attack, how widespread it is, how quickly the attack is detected, and the resources available to aid in restoring the system. One of the difficulties of malicious cyber activity is that it could come from virtually anyone, virtually anywhere. The following tables summarize the common types and sources of cyberthreats.<sup>49</sup>

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<sup>48</sup> Director of National Intelligence, Annual Threat Assessment of the Intelligence Community for the Senate Armed Services Committee, Statement for the Record, March 10, 2009, at 39.

<sup>49</sup> United States Government Accountability Office, “Critical Infrastructure Protection: Department of Homeland Security Faces Challenges in Fulfilling Cybersecurity Responsibilities”, Report #GAO-05-434 (May 2005), [www.gao.gov/new.items/d05434.pdf](http://www.gao.gov/new.items/d05434.pdf)

**Table 13: Common Types of Cyber Attacks**

<b>Type of Attack</b>	<b>Description</b>
<i>Botnet</i>	A collection of compromised machines (bots) under (unified) control of an attacker (botmaster).
<i>Denial of service</i>	A method of attack from a single source that denies system access to legitimate users by overwhelming the target computer with messages and blocking legitimate traffic. It can prevent a system from being able to exchange data with other systems or use the Internet.
<i>Distributed denial of service</i>	A variant of the denial of service attack that uses a coordinated attack from a distributed system of computers rather than from a single source. It often makes use of worms to spread to multiple computers that can then attack the target.
<i>Exploit tools</i>	Publicly available and sophisticated tools that intruders of various skill levels can use to determine vulnerabilities and gain entry into targeted systems.
<i>Logic bombs</i>	A form of sabotage in which a programmer inserts code that causes the program to perform a destructive action when some triggering event occurs, such as terminating the programmer's employment.
<i>Phishing</i>	The creation and use of emails and websites designed to look like those of well-known legitimate businesses, financial institutions, and government agencies in order to deceive Internet users into disclosing their personal data, such as bank and financial account information and passwords. Phishers use or sell this information for criminal purposes, such as identity theft and fraud.
<i>Sniffer</i>	Also known as packet sniffer. A program that intercepts routed data and examines each packet in search of specified information, such as passwords transmitted in clear text.
<i>Trojan horse</i>	A computer program that conceals harmful code. A Trojan horse usually masquerades as a useful program that a user would wish to execute.
<i>Virus</i>	A program that infects computer files, usually executable programs, by inserting a copy of itself into the file. These copies are usually executed when the infected file is loaded into memory, allowing the virus to infect other files. Unlike the computer worm, a virus requires human involvement (usually unwitting) to propagate.
<i>War dialing</i>	Simple programs that dial consecutive telephone numbers looking for modems.
<i>War driving</i>	A method of gaining entry into wireless computer networks using a laptop, antennas, and a wireless network adaptor that involves patrolling locations to gain unauthorized access.
<i>Worm</i>	An independent computer program that reproduces by copying itself from one system to another across a network. Unlike computer viruses, worms do not require human involvement to propagate.



**Table 14: Common Sources of Cybersecurity Threats**

Threat	Description
<i>Bot-network operators</i>	Bot-network operators are hackers; however, instead of breaking into systems for the challenge or bragging rights, they take over multiple systems in order to coordinate attacks and to distribute phishing schemes, spam, and malware attacks. The services of these networks are sometimes made available on underground markets (e.g., purchasing a denial-of-service attack, servers to relay spam or phishing attacks, etc.).
<i>Criminal groups</i>	Criminal groups seek to attack systems for monetary gain; specifically, organized crime groups use spam, phishing, and spyware/malware to commit identity theft and online fraud. International corporate spies and organized crime organizations also pose a threat to the United States through their ability to conduct industrial espionage and large-scale monetary theft, and to hire or develop hacker talent.
<i>Foreign intelligence services</i>	Foreign intelligence services use cyber tools as part of their information-gathering and espionage activities; in addition, several nations are aggressively working to develop information warfare doctrine, programs, and capabilities. Such capabilities enable a single entity to have a significant and serious impact by disrupting the supply, communications, and economic infrastructures that support military power—impacts that could affect the daily lives of U.S. citizens across the country.
<i>Hackers</i>	Hackers break into networks for the thrill of the challenge or for bragging rights in the hacker community. While remote hacking once required a fair amount of skill or computer knowledge, hackers can now download attack scripts and protocols from the Internet and launch them against victim sites. Thus, while attack tools have become more sophisticated, they have also become easier to use. According to the Central Intelligence Agency, the large majority of hackers do not have the requisite expertise to threaten difficult targets such as critical U.S. networks; nevertheless, the worldwide population of hackers poses a relatively high threat of an isolated or brief disruption causing serious damage.
<i>Insiders</i>	The disgruntled organization insider is a principal source of computer crime. Insiders may not need a great deal of knowledge about computer intrusions because their knowledge of a target system often allows them to gain unrestricted access to cause damage to the system or to steal system data. The insider threat also includes outsourcing vendors as well as employees who accidentally introduce malware into systems.
<i>Phishers</i>	Individuals or small groups that execute phishing schemes in an attempt to steal identities or information for monetary gain. Phishers may also use spam and spyware/malware to accomplish their objectives.
<i>Spammers</i>	Individuals or organizations that distribute unsolicited email with hidden or false information in order to sell products, conduct phishing schemes, distribute spyware/malware, or attack organizations (e.g., denial of service).
<i>Spyware/ Malware authors</i>	Individuals or organizations with malicious intent carry out attacks against users by producing and distributing spyware and malware. Several destructive computer viruses and worms have harmed files and hard drives, including the Melissa Macro Virus, the Explore.Zip worm, the CIH (Chernobyl) Virus, Nimda, Code Red, Slammer, and Blaster.
<i>Cyberterrorists</i>	Cyberterrorists seek to destroy, incapacitate, or exploit critical infrastructures in order to threaten national security; cause mass casualties, weaken economies, or target businesses; and/or damage public morale and confidence. Cyberterrorists may use phishing schemes or spyware/malware in order to generate funds or gather sensitive information.

## 2) *Location and Extent*

As most day-to-day activities rely on the Internet in one aspect or another, any person or infrastructure is susceptible to cybersecurity threats. Energy pipelines, specifically U.S. natural gas pipelines, have been cited by DHS as targets of cyberattack. While information on these attacks is not publicly available knowledge, cyber security officials warn that, with sufficient access, a hacker could “manipulate pressure and other control system settings, potentially reaping explosions and other dangerous conditions.”<sup>50</sup> While cyber risks and threats are mainly thought of as not having specific locations, there are physical sites that would be impacted. Locations at risk could include government agencies, institutions of higher education, medical facilities, and various private sector entities.

## 3) *Previous Occurrences*

Low-level cyber-attacks occur daily and sometimes hourly on governmental systems. Most of these attacks do not breach the County systems, however, there have been cases of minor breaches, including a very recent attack that crippled the City of Pensacola’s network.

- December 7, 2019: The City of Pensacola’s computer network suffered a cyberattack during the early morning hours. The ransomware attack demanded a sum of \$1 million after encrypting the City’s network and stealing over 32 gigabytes worth of files which included personal information and passwords. The ransomware attack resulted in several days of Pensacola’s system being shut down, including email service, phones, and computer systems.<sup>51</sup>

## 4) *Probability of Future Events*

Based on the growing sophistication and political climate, there is a high probability of future cyberattack events to occur within Escambia County.

## 5) *Vulnerability and Risk Assessment*

The public is heavily reliant on technology for daily life, including cell phones, handheld devices such as tablets, and computers. Any disruption to this technology caused by a cyberattack would impair the ability for the public to conduct basic activities, such as communications, mobile banking, and work. Property and facilities may become either uninhabitable or unusable as a result of a cyberattack, particularly if their infrastructure is reliant on technology for sustainability.

A significant majority of critical infrastructure systems are in some way tied to technology, oftentimes through virtual operations and supervisory control and data acquisition (SCADA) systems. Therefore, a cyberattack could disable the vast majority of systems which control these pieces of critical infrastructure, as well as traffic control, dispatch, utility, and response systems. Targeted cyberattacks can impact water or wastewater treatment facilities. The disruption of the virtual systems tied to this infrastructure could cause water pollution or contamination and subsequent environmental issues.

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<sup>50</sup> Florida State Hazard Mitigation Plan, 2013

<sup>51</sup> <https://www.cityofpensacola.com/3083/Cyberattack-FAQs>

Cyberattacks can interfere with emergency response communication and activities. Given that many first responders rely on technology both at operations center and in the field, a cyberattack could impair the ability to communicate. For example, many agencies rely on technology to notify and route responders to the scene of the emergency. More specifically, 911 dispatch centers rely on technology which makes them vulnerable to cyber exploits.

v) Terrorism

1) *Description*

A terrorist incident could involve a wide variety of materials or actions, or combinations of materials and actions. These could range from uncomplicated incidents impacting relatively small areas, to highly complex incidents with very widespread physical or economic consequence. The response to such an incident would require specialized personnel and resources beyond the capabilities of Escambia County and its municipalities, and would require assistance from mutual aid organizations, adjacent counties, the State of Florida, and the Federal government.

2) *Location and Extent*

Escambia County has many facilities and systems that are considered to be critical infrastructure; whose continued and uninterrupted operation is necessary for the health, safety and well-being of the community. These facilities could be considered potential targets for a terrorist attack which could have potentially widespread consequences for adjacent neighborhoods or the community as a whole. With a military naval air station located in Escambia County, the County and its residents could be considered a potential target for acts of terrorism as has happened recently.

3) *Previous Occurrences*

Escambia County has one recent act of terrorism and a limited number of incidents that would be classified as domestic security incidents. These incidents have been of low severity, but depending upon the circumstances, there always remains a potential for a high severity/high cost incident to occur. Continued community diligence will keep that threat low and the risk minimal. Some of the notable occurrences of domestic security events include:

- 1984: Abortion clinic bombing in Escambia County. The incident gained national attention.
- 1994: An abortion doctor and his bodyguard were shot and killed, and the Doctor's wife injured. The perpetrator was executed in 2003 for that crime.
- 2019: On the morning of December 6, 2019, a terrorist attack occurred at Naval Air Station Pensacola in Pensacola, Florida. The assailant killed three men and injured eight others. The shooter was killed by Escambia County sheriff deputies after they arrived at the scene. He was identified as Mohammed Saeed Alshamrani, an aviation student from Saudi Arabia.

The FBI investigated the case as a presumed terrorism incident, while searching for the motive behind the attack. On January 13, 2020, the Department of Justice

said they have officially classified the incident as an act of terrorism, motivated by "jihadist ideology."

On February 2, 2020, al-Qaeda in the Arabian Peninsula claimed responsibility for the shooting. In an audio recording, Emir of the Yemen-based group Qasim al-Raymi said they directed Alshamrani to carry out the attack. On May 18, 2020, the FBI confirmed the claims.<sup>52</sup>

#### 4) *Probability of Future Events*

The probability of a terrorist act within Escambia County is considered low with a minimum to moderate impact.

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.

#### 5) *Vulnerability and Risk Assessment*

The potential for terrorism exists within the US; however, the risk of international or homegrown violent extremists acting specifically within Escambia County is relatively low. This is due in part to its citizens the community's attributes, as well as, to the pro-activity of law enforcement and the response community, and the interagency cooperation and communication present within the county.

However, low risk does not translate into zero risk. Escambia County is comprised of the typical community and governmental infrastructure, facilities, military facilities, and special events venues that one may find in any established, medium-sized community around the country. And when you combine that with an attractive climate and beautiful beaches that draw large numbers of tourists and visitors to the community, there are those types of individuals whose discontent with government, or other views, if taken to the extreme, may take advantage of those community attributes for potential nefarious activities.

Even with some of the groups residing in our County, the risk for domestic violence and security issues remains low.

#### w) Prolonged Utility/Communications Failure

##### 1) *Description*

A utility failure can result from a variety of related causes, including sagging lines due to hot weather, flashovers from transmission lines to nearby trees and incorrect relay settings. According to the electric utility industry's trade association, the potential for such disturbances is expected to increase with the profound changes now sweeping the electric utility industry.

A communication failure is defined as the severe interruption or loss of private and or public communications systems, including but not limited to transmission lines, broadcast, relay, switching and repeater stations as well as communications satellites,

<sup>52</sup> Multiple sources cited: [https://en.wikipedia.org/wiki/Naval\\_Air\\_Station\\_Pensacola\\_shooting](https://en.wikipedia.org/wiki/Naval_Air_Station_Pensacola_shooting)

electrical generation capabilities, and associated hardware and software applications necessary to operate communications equipment. These disruptions may result from equipment failure, human acts (deliberate or accidental), or the results of natural or human made disasters.

#### *2) Location and Extent*

A prolonged utility failure can have the following potential impacts on Escambia County: electrical power outage, surface and air transportation disruption, potable water system loss of disruption, sewer system outage, telecommunication system outage, human and health safety, psychological hardship, economic disruption, and disruption of community services. All municipalities are at equal risk for prolonged power outages; however, some communities may be restored more quickly than others depending on other high priority locations with which they share a grid.

A prolonged communications failure would affect essential facilities and the day to day operations of local government as well as the business community. Sites of concern would range from dispatch agencies, satellite uplink and downlink sites, internet service provider sites, and the telecommunication industry switching sites. Interruptions in day to day communications would create problems for businesses, public agencies, citizens and emergency services.

#### *3) Previous Occurrences*

Utility failure/disruption occurs on a daily basis and is typically minor and services are restored quickly. Most of the prolonged utility failure/disruption is directly associated with other contributing hazards such as hurricanes, tornadoes, floods, technological failures etc.

#### *4) Probability of Future Events*

While the probability of future utility and communications failure incidents in the County is difficult to predict, the historic record indicates that significant disruptions or failures have occurred. Data is not readily available on the frequency of smaller outages across the county; however, it is reasonable to assume that utility and communications failure events of shorter duration will continue to occur in the future. The potential for another major utility or communications failure that disrupts services for Escambia County residents is always possible, yet are expected to occur less frequently than smaller incidents. In addition, future changes in climate may also impact the frequency and probability of future utility or communication failure occurrences.

#### *5) Vulnerability and Risk Assessment*

Loss of electricity can lead to the inability to use electric-powered equipment, such as: lighting; heating, ventilation, and air conditioning (HVAC) and necessary equipment; communication equipment (telephones, computers, etc.); small appliances such as refrigerators and medical equipment. This all can lead to food/medical supply spoilage, loss of heating and cooling. Utility failure can also pose a threat to the general population of Escambia County regarding the loss of communications, gas, and water supply that are critical to ensure the health, safety, and general welfare of the population. The special needs population can be especially vulnerable to loss of heat or air conditioning during extreme weather conditions.

Considering all of these factors, prolonged utility failure/disruption would generally have a moderate impact to the County and its jurisdictions.

x) **Mass Casualty**

1) *Description*

A mass casualty incident (MCI) is any incident in which emergency medical services resources, such as personnel and equipment, are overwhelmed by the number and severity of casualties.

2) *Location and Extent*

A mass casualty incident can be caused by various incidents/factors. Largely these are associated with the following examples: terrorism; large gatherings/special events; biological; and transportation.

Any location in Escambia County is at risk of experiencing a mass casualty event. Areas or events that are densely populated within the of the county that could potentially be more likely targets for a mass casualty event, especially one caused by terrorism.

3) *Previous Occurrences*

Historically, Escambia and its jurisdictions have been fortunate not to have experienced any notable mass casualty incidents in the past.

4) *Probability of Future Events*

The probability of disasters involving mass casualties resulting from the factors listed is considered possible, although the probability is low within Escambia County.

5) *Vulnerability and Risk Assessment*

As previously mentioned, any location in Escambia County is at risk of experiencing a mass casualty event, especially those that are more densely populated. Additionally, any areas surrounding a mass casualty event will be in danger of additional injuries and fatalities depending on the type of incident. A mass casualty event can be particularly chaotic for first responders who can become quickly overwhelmed by responding simultaneously to the crisis and consequences of an attack. In the event of a terrorist attack, response could become inhibited due to debris on the road, traffic, or airborne disease/chemicals. Access must be coordinated in order to perform effective rescue efforts. First responders may also be targeted in the event of secondary attacks.

**E. Additional Hazard Considerations**

a) **Sea Level Rise**

Florida is vulnerable to sea level rise given its extensive shoreline and low elevation. If sea levels do rise, a number of consequences including the salination of fresh water sources, land loss, and increases in storms and flooding could be observed.

As sea levels rise, water inundates and erodes coastal wetland ecosystems such as mangroves and salt marshes. Higher water levels wash away wetlands and flood previously dry land. These coastal wetland ecosystems are crucial to absorbing the impact of tropical storms and provide a breeding ground for a significant proportion of sea life.

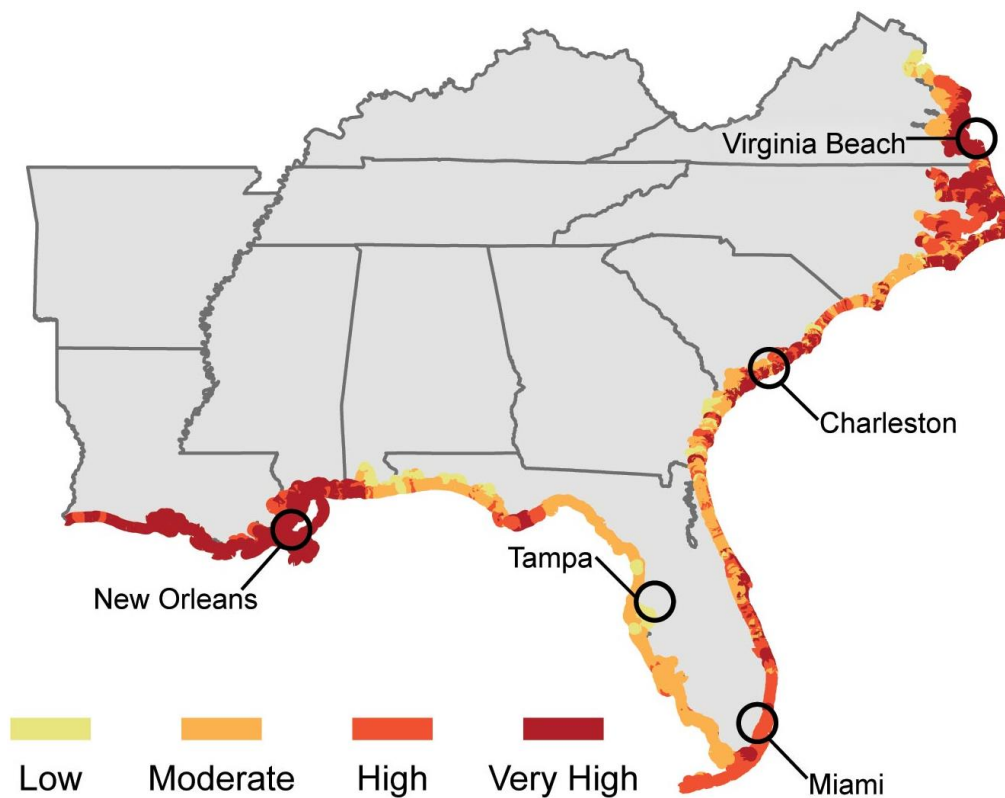
Sea level rise would increase the vulnerability of coastal areas to flooding during storms. During a tropical storm or hurricane, storm surge would build up on top of a higher base of water resulting in damages that are more significant.

Additionally, shore erosion increases storm vulnerability by removing the dunes and beaches that otherwise provide a buffer between coastal property and storm waves and surge.

Lastly, sea level rise would result in an increase in coastal flooding from rainstorms because low areas drain more slowly as sea levels rise.<sup>53</sup>

The figure below shows the relative risk as sea level rises using a Coastal Vulnerability Index calculated based on tidal range, wave height, coastal slope, shoreline change, landform and processes, and historical rate of relative sea level rise. The approach combines a coastal system’s susceptibility to change with its natural ability to adapt to changing environmental conditions, and yields a relative measure of the system’s natural vulnerability to the effects of sea level rise.<sup>54</sup>

**Figure 19: Vulnerability to Sea Level Rise**



Projected risk scenarios for population, building structures, infrastructure, contamination risks, and land vulnerabilities for the County can be simulated using the Risk Finder tool.<sup>55</sup>

<sup>53</sup> <https://www.floridadisaster.org/dem/mitigation/statemitigationstrategy/state-hazard-mitigation-plan/>

<sup>54</sup> <https://www.globalchange.gov/browse/multimedia/vulnerability-sea-level-rise>

<sup>55</sup> <https://riskfinder.climatecentral.org/county/escambia-county.fl.us>

### III. RISK AND VULNERABILITY ASSESSMENT METHODOLOGY AND CONCLUSIONS

The Local Mitigation Strategy must include an assessment of risk and vulnerability to all hazards.<sup>56</sup> For some hazards such as lightning, hail, high winds, excessive heat, and freezes, all jurisdictions are equally at risk and have similar hazard vulnerabilities. For other hazards, some areas are more vulnerable than others due to geographical or property characteristics. Such as flooding, sinkholes, wildfires, and dam/levee failure.

#### A. Assessing Risks

The risk and impact assessment include an analysis of the number and type of structures, potential economic impacts, and an analysis of critical facilities. Critical facilities are defined as those structures and systems that provide essential government services to the public. These may include but are not limited to: fire, law enforcement, emergency operations centers, shelters, water treatment facilities, communications towers, medical/healthcare facilities, government offices, and business service and product suppliers.

The County maintains a critical facilities list that is also a data layer within the GIS and is readily available for access and view.

##### a) Geographic Information System (GIS)

The County has a GIS database available to assist the general public. Over the last few years, data has been gathered from numerous sources that allows for the County and municipalities to have immediate access to volumes of information that can be graphically displayed. Information continues to be updated and entered into the database from the Property Appraisers Office, the County Tax Collector, US Census Bureau, Emergency Management, the City of Pensacola, the Town of Century, ECUA, the School District, Facilities Management, SRIA, Growth Management, Building Inspections, State of Florida, Water Management District, County Engineering, and others.

With all the information being integrated into the GIS database, the LMS plan is able to provide statistical and graphical data on present and future disaster outcomes from various hazards identified and analyzed, allowing the County to address vulnerabilities through educational outreach as well as mitigation measures that may be implemented to reduce or eliminate those vulnerabilities.

##### b) Mapping the Hazards

One of the outcomes of enhancing our GIS database with all the community properties and landmarks and identifying and creating hazard and vulnerability map layers, is to be able to extract data that allows us to present data that may help identify areas that may be more vulnerable to hazards and allow the LMS to focus outreach efforts and mitigation measures that will help prepare for and mitigate against those hazards. This will allow us to identify economic areas that may be at risk for various hazards, providing information to direct educational and mitigation efforts to help insulate the local economy from disaster impacts.

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<sup>56</sup> United States Code of Federal Regulations 44 CFR 201.6(c)(2)(ii)



The County can also identify those vulnerable areas to be able to predict in advance how our community could be impacted by various disasters and even with weather events headed in our direction that would allow us to potentially identify whether we were headed for a presidential declaration. This will assist in advance of, or in the aftermath of, a disaster event in order to acquire some immediate preliminary economic figures and financial impacts of those disasters until physical assessments can be made, potentially streamlining Federal and State disaster aid. With current and expected future GIS data, the County is moving into a more efficient and effective period of disaster management.

In an effort to decipher the available data into usable information, the LMS has divided the County into Planning Areas based upon US Census tracts. Dividing up the County into these neighborhoods allows us to compare different areas of the County and the potential economic and financial damage a hazard event could inflict. This will allow the County to focus on mitigation efforts in a more cost effective and efficient manner in considering population densities, development, future development and the existing hazards.

The process of generating these maps with the established twelve neighborhoods is also a way to demonstrate the ability of our GIS capability to create more localized maps down to the neighborhood block level, and extract specific demographic information and potential damage estimates. For the purposes of this plan, it was decided that to produce such detailed maps would be impractical, unmanageable, and quickly outdated. Based on this decision, a macro-level snapshot based on the twelve (12) neighborhoods were created to provide an overview of the information that the LMS and County can practically use and manage for planning purposes.

Appendix I-F, Map 37 that represents the twelve (12) study areas for the County and its jurisdictions. Map 36 shows population density within those twelve regions, noting that most of the population can be found in the southern half of our county, making it more vulnerable when compared to the northern areas of our county. Map 32 represents the 41 drainage basins that have been identified in Escambia County and its jurisdictions.

Of all the hazards identified in the previous sections of this plan, the LMS identified eight hazards which presented a significant degree of risk throughout the County and its municipalities to produce a hazard map. The hazard maps depict the higher risk areas for the identified hazards. Most of the mapped risks are based upon studies or software programs that identify those areas more at risk. The maps we have produced are as follows:

- Map1: 100-yr Floodplain
- Map 6: Storm Surge Areas
- Map 13: Wetlands
- Map 21: Beach Erosion
- Map 36: Hazardous Materials Risk
- Map 38: Wildfire Fire Hazard Area
- Map 40: Wind zones and Debris Line

As previously discussed under each hazard identification section, Storm Surge, Flood Zone, and Beach Erosion maps have been generated by specific study data for those areas. Wind zones and debris lines were derived from the adoption of the Florida Building Code, with the Fire Hazard and Freeze lines created by assessment from data and information gathered from various sources. The Hazardous Materials Map has been created from a software program that identifies all County 302 facilities and their worst-case scenario of release based upon the chemicals they store on site.

c) Potential Losses Due to Hazard Impacts (Structures and Dollars)

The data utilized to estimate losses comes from a variety of sources and resources that have been inputted into the County GIS, including; the Property Appraiser, Tax Collector, various County departments, local municipality organizations, SRIA, ECUA, and School District have all provided information that went into the system. The data collected typically comes in multiple formats, varying levels of current and updated information, as well as different accuracies.

The previously identified twelve (12) neighborhoods provided some detailed information that is valuable to mitigation planning as well as for response and recovery efforts, including identifying challenges of trying to get presidential declarations. While the data reflects total and catastrophic losses, a potential financial impacts to our community can be identified. This also allows the County to more quickly determine, prior to a damage assessment, the extent of the damages and the costs associated with a particular incident, potentially hours after an event, starting the recovery process much more rapidly from the State and Federal levels, with such immediate damage information.

GIS assessment tools provide us with the ability to identify development patterns and plan for potential impacts in the community by type of hazard and region of the County. It's our intent to continue to use the geo-coding characteristics in GIS to further implement the GIS database to identify each jurisdiction's infrastructure and furthermore an in-depth analysis of overall vulnerabilities. The County offers an online mapping service for public access. Multiple layers of information are available to the general public at [www.myescambia.com](http://www.myescambia.com).

d) Evaluation of Existing Agencies, Organizations, Plans, Code Ordinances, Programs, Studies and Guidelines that Impact the Mitigation Initiative

The next step in the process is to review any and all current and best available plans, codes, ordinances, studies, and guidelines that may impact the LMS's mitigation efforts and discuss the impacts and potential recommendations for improvement if appropriate. The 2009 update process was a continuation of the update process used for the 2004 LMS Plan; which reviewed, revalidated, and reincorporated the valuable information from the original LMS Plan. Each of adopting jurisdiction's representatives were asked to review their current codes, plans, ordinances and to provide updates, additions as needed to this section.

A comprehensive risk assessment of plans, ordinances, programs, studies, and guidelines is available in Appendix I-O – Risk Assessment. This document follows the same process and will continue to be updated as new information is provided. Access to County and City Comprehensive Plan documents and Land Development Codes is available at [www.myescambia.com](http://www.myescambia.com) and [www.ci.pensacola.fl.us](http://www.ci.pensacola.fl.us).

e) Indexing, Evaluation, and Enhancement of Existing Ordinances

The following is a table, which indexes the locations of specific policies, codes, and ordinances, which relate to hazard mitigation. The table identifies the communities guiding principles, specific codes and the jurisdictions involved.

**Table 15: Indexing of Existing Policies, Codes, and Ordinances**

COMMUNITY GUIDING PRINCIPLES	ESCAMBIA COUNTY				CITY OF PENSACOLA				TOWN OF CENTURY			
	LDC <sup>57</sup>	PDRP <sup>58</sup>	CP <sup>59</sup>	CEMP <sup>60</sup>	LDC	PDRP	CP	CEMP	LDC	PDRP	CP	CEMP
<i>Reduce Future Expenditures</i>	Article 4		CP 10:8; CP 11:2; CP 15.3									
<i>Repetitive Loss Areas</i>				Appx. G		Pg. 61						
<i>Protection of critical facilities</i>	Section 4-5.6 CHHA		CP 10:4	Pg. 66		Pg. 56,63						
<i>Removal and relocation of damaged and vulnerable infrastructure</i>	Pg. 206 Article 2		CP 11:6	ESF3		Pg. 45-53	7-1.5, 7-1.7					
<i>Land Use Mitigation</i>	Chapter 4, Article 5		CP 11:7, CP 8:9, CP 11:1	Appx. A, Pg. 4								
<i>Eliminating development in hazard prone areas</i>	Article 4; Article 5		CP 11:3, CP 11:7	Table 2, Pg. 11, 13	12-2-26 12-2-11	Pg. 61	7-1.2, 7-1.3		5.02.02 5.03.02			
<i>Regulation of non-Conforming land uses</i>	Chapter 1, Article 2		FLU 1.1.2		14-3	Pg. 60			4.03.04			

<sup>57</sup> Land Development Code

<sup>58</sup> Post-Disaster Redevelopment Plan

<sup>59</sup> Comprehensive Plan

<sup>60</sup> Comprehensive Emergency Management Plan

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COMMUNITY GUIDING PRINCIPLES	ESCAMBIA COUNTY				CITY OF PENSACOLA				TOWN OF CENTURY			
	LDC <sup>57</sup>	PDRP <sup>58</sup>	CP <sup>59</sup>	CEMP <sup>60</sup>	LDC	PDRP	CP	CEMP	LDC	PDRP	CP	CEMP
<i>Environmental Issues</i>												
<i>Regulation of hazard prone areas:</i>												
<i>Land Use Mitigation</i>	Art. 10,12,13		11.A.5		12-2-26 12-2-2 12-8-8	Pg. 56	7-1.2, 7-1.3					
<i>Beach and dune preservation</i>	12.06.00 13.04.09 2.05.04		1.A.4 11.A.9 7.A.6		39061	Pg. 61	7-1.7.6					
<i>Floodplains</i>	Art.10 13.26.00 Chapter 14 Article II Section 14-35		11.A.4		12-2-2 12-10	Pg. 30-31	8-1.5	5.04.00			Pg. 378	
<i>Storm water runoff</i>	7.15.00		11.A.2.2-3 11.B.2		12-9	Pg. 61	7-1.7.6	7.03.00				
<i>Sanitary sewer/septic tank use</i>	4.04.09 4.04.14 5.11.00		11.A.2.5		12-8.6		6-2.1	7.02.00			Pg. 50	
<i>Hazardous materials</i>	7.07.00 7.12.03		11.B.5				7-2.5, 8-1.4, 6-2.7	5.07.00 6.05.00			Pg. 61	
<i>Prioritization of use of coastal areas for water dependent uses (public access, etc.)</i>	12.03.00 7.17.02		11.A.3.3 11.A.9 12.A.2		12-2- 27G 12-2-28		7-1.1.2, 7-1.1.4, 8-1.4					
<i>Regulation of watershed alteration</i>			11.A.2.2-3 11.B.2				6-2.4	7.03.00				

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COMMUNITY GUIDING PRINCIPLES	ESCAMBIA COUNTY				CITY OF PENSACOLA				TOWN OF CENTURY			
	LDC <sup>57</sup>	PDRP <sup>58</sup>	CP <sup>59</sup>	CEMP <sup>60</sup>	LDC	PDRP	CP	CEMP	LDC	PDRP	CP	CEMP
<i>Administrative Mitigation</i>												
<i>Economic diversification</i>				Pg. 16								
<i>Designation and Prioritization of properties for acquisition</i>												
<i>Procedures for post-storm reconstruction</i>			11.A.8.2			Pg. 45-53	7-1.7					
<i>Local government building code- Florida Building Code</i>					Chapter 4, Article II Section 14-33 Section 14-36							
<i>Local government NFIP participation</i>	13.00.05		11.A.8.1 -4 11.A.8.2	Pg. 56	12-10		7-1.7.2					
<i>Revision of FIRM studies</i>						Pg. 61						
<i>Stormwater Management</i>	4.04.13 7.15.00		11.A.2.2 -3 11.B.2 10.C		12-2-2 12-9	Pg. 61	6-2.2, 2.3 7-1.7.6		7.03.00		Pg. 54,59	
<i>Wetland Protection</i>	7.13.00 12.09- 12.17 7.17.00		7.A.5 11.A.2		12-2-2		7-2.1, 8-1.10		5.01.00		Pg. 39-40, Pg. 61	
<i>Evacuation Procedures</i>			11.A.7	Pg. 27		Pg. 33-39	7-1.6					

### 1) *Evaluation and Enhancements of Existing Ordinances*

One of the key elements in hazard mitigation is the evaluation and enhancement of the existing rules and regulations that govern the jurisdictions in relation to mitigation. This portion of the LMS Plan presents an objective analysis of the existing Escambia County, Town of Century, and City of Pensacola Land Development Codes (LDC). This analysis compares and contrasts the municipalities' existing codes and presents options that should be considered for unilaterally strengthening and reinforcing Escambia County's hazard mitigation initiatives. While most of the recommendations were developed with the original LMS plan in 1998; the background and recommendation were reviewed by staff from the jurisdictions, as part of the 2009 update process. Recommended updates have been incorporated, along with the addition of the Wildfire section during the 2009 update. All the recommendations are considered current and valid.

### **Stormwater Management**

In 1994, the County funded a stormwater study of three (3) of its most populous basins Scenic Hills, Eight Mile Creek and Eleven Mile Creek. This study developed a project list of over eighty-five (85) projects that would address the following five (5) goals;

- 1) Eliminate roadway over-topping in a 100-year storm event for evacuation routes;
- 2) Limit flooding during a 100-year storm event to streets and yards;
- 3) Eliminate roadway over-topping during a twenty-five (25) storm event;
- 4) Contain the 25-year event within defined channel banks;
- 5) Minimize head losses at roadway crossing by profiling low chord clearance during the 3-year storm event.

Since the original Storm Water Master Plan in 1994, the County has completed the construction of many of the drainage projects identified in those basin studies. The storm water management master plans are continually utilized to identify and prioritize storm water capital improvements. In 2003, the goals were revised for the development of a drainage improvement plans for watershed basins with the intent of meeting the following seven (7) criteria (slightly revised from the above 5 goals):

- 1) Eliminate roadway over-toppings at culvert/bridge crossings during the 100-year storm event for all primary arteries and evacuation routes.
- 2) Eliminate roadway over-toppings at culvert/bridge crossings during the 25-year storm event for all secondary arteries and collectors.
- 3) Contain the 25-year storm event within the banks of all open channels.
- 4) Limit flooding during the 100-year storm event to streets and yards.
- 5) Minimize street and yard flooding during the 25-year storm event.
- 6) Provide for future growth/development in the basin where feasible.
- 7) Reduce storm water pollutant loadings to improve overall surface water quality standards.

The Stormwater Management sections of the Escambia County LDC and the City of Pensacola's LDC are similar in intent yet differ in minimum design criteria. Escambia County and the City of Pensacola specify the following minimum design criteria: 1) 25-

year frequency, critical duration storm event; 2) retains the first half (1/2") inch of storm water on-site. The Town of Century specifies a 25-year, 24-hour storm event be used in computing the allowable off-site discharge while requiring the first one (1") inch to be retained on-site. Escambia County furthermore strengthens the design criteria to a 100-year frequency critical duration storm event if the proposed system does not utilize a positive discharge.

Escambia County and the City of Pensacola LDC require that a detailed storm water management plan be submitted and approved during the construction plan review process. The required information is consistent in all of the LDC. However, Escambia County details additional requirements concerning a positive discharge, stating that the developer must prepare any necessary easement or agreements if the site sheds water onto an adjacent property.

The LDC requires a maintenance plan for the storm water management system to be part of the development submittal with the owner or developer agreeing to implement the plan.

Escambia County also lists other general requirements to use during the development of a storm water management plan with topics ranging from drainage coefficients to use of wetlands for attenuation. Neither Pensacola nor Century has this provision in their LDC.

The Escambia County LDC has a section devoted to drainage, which details the design standards for drainage systems. The standards discuss the allowable swale/pipe slopes, maximum swale velocity vegetation requirements, minimum roadway elevations, minimum testing requirements, and other design considerations.

Based on the above information, it is recommended that the City of Pensacola and the Town of Century consider strengthening their LDC with additional sections detailing minimum design criteria. It is also recommended that the Town of Century require Storm Water Management plan be submitted under the guidelines outlined in either the Escambia County or City of Pensacola LDC. Furthermore, the Town of Century should consider strengthening their design to the 25-year critical duration storm. All of the municipalities should consider adopting measures that would allow them to decrease the permissible amount of post-development run-off for sites located within "strained" drainage basins or areas currently experiencing flooding. The more stringent requirements for post-development run-off will help to reduce the severity of localized flooding during minor events and widespread flooding during major storm events.

### **Marina Siting**

The Town limits of Century do not contain any coastal property; therefore, this section is not applicable for their LDC. Escambia County's LDC has a section for Marina Developments, while the City of Pensacola has a section for Waterfront Redevelopment. The Escambia County LDC states that all applicable Federal, state, and local permits must be obtained while still meeting all zoning requirements. It also presents locational and design standards which include: traffic study; sewage pump-out; hazardous spill prevention and control; storm, wind load, wave protection and

evacuation study; erosion control; and minimum dock standards. The City of Pensacola's LDC discusses the zoning issues as they relate to waterfront development: allowable uses; review procedure; sign regulation; parking; setback requirements; landscaping; and development guidelines.

Both of the LDC's should consider referencing the other sections of the LDC that could affect the design of projects on the water's edge: floodplain management, marine setback requirements, coastal management, and wetland policies. Furthermore, the City of Pensacola should consider expanding its LDC to include provisions for traffic study, evacuation evaluation, and other issues that would help mitigate future losses.

### **Marine/Estuarine/Riverine Setback (MERS)**

The Escambia County LDC MERS section presents the intent of the ordinance and defines setbacks for certain construction activities and allows for minor exemptions. Setbacks for new construction are defined as either above elevation +1.5 or a minimum of 30 feet from mean high water/ordinary high water, whichever is greater. An exemption to reduce the setback from 30 feet to 15 feet is available if wetlands are not present or the area does not contain highly erodible soils. The use of natural means (i.e. vegetation/beach nourishment) to stabilize shorelines is encouraged. The placement of rigid shore protection structures is prohibited seaward of mean high water.

The City of Pensacola LDC discusses setbacks in each of the different zoning districts and dedicates one section each to the Escambia Bay Shoreline (30 feet) and Bayou Texar Shoreline protection (ranges from 20 to 60 feet). These sections list regulation and development guidelines to protect the shoreline and to mitigate future losses due to unsafe construction.

In the Town of Century, for those areas where small streams/creeks exist but where no base flood data have been provided or where no flood ways have been provided, no encroachment including fill material or structures shall be located within the distance of the stream/creek bank equal to three times the width of the stream/creek at the top of the bank or twenty feet each side from the top of the bank, whichever is greater.

The different sections of the Escambia County and City of Pensacola LDC that regulate marine setbacks all appear to be adequate. However, it is suggested that the municipalities review the historical flooding data generated from recent storm events to analyze the need for strengthening the setback requirements. It is also suggested that all of the codes be cross-referenced to list other sections of the LDC that are similar in nature to this section, (i.e., zoning sections dealing with setbacks, marina siting, etc.). The cross-referencing will enable quicker access to all sections, hopefully minimizing omissions of any design element that might be critical to hazard mitigation.

### **Mobile/Manufactured Homes**

The City of Pensacola LDC has one section dedicated to the subject of manufactured homes. Topics discussed include: placement, storing, parking, parks, and review / approval process. The Escambia County LDC discusses the development



requirements associated with mobile homes and mobile home parks. However, the City code does require that the mobile home meet all of the applicable building, safety, and sanitary code requirements of the County. The Town of Century LDC requires that the mobile home construction comply with Housing and Urban Development and Florida Manufactured Home Requirements.

In an effort to mitigate losses due to instability associated with mobile homes, it is recommended that all of the municipalities review their ordinances and consider strengthening the foundation or tie-down sections of their code. Also, a cross-reference to other applicable sections would help to ensure that all of the regulations are satisfied.

### **Industrial Processing and Storage**

The Escambia County LDC states that within all districts (except ID-2 & GID), all business, services, manufacturing or processing of materials, goods or products must be conducted inside the building structures themselves. In the ID-2 and GID districts, permitted uses may be conducted either indoors or outdoors, provided the site is not within 200 feet of residential zoning districts. If the site is within 200 feet of residential zoning districts, all activities must be conducted indoors. The City of Pensacola discuss issues surrounding industrial developments within their Industrial Zoning sections which specify setback ranging from 20 feet to 40 feet with building heights limited to 45 feet. The City of Pensacola also cross references other applicable portions of the LDC. The Town of Century does not detail development requirements as stringent as Escambia County or the City of Pensacola.

It appears that the Escambia County and City of Pensacola LDC have the necessary requirements (buffer, fencing, screening, etc.) to adequately mitigate any potential hazards. The Town of Century should consider adopting similar ordinances. However, measures should be considered to allow the municipalities to increase requirements should they be warranted.

### **Adverse Off-Site Impacts**

#### **Fire and Explosive Hazards**

The Town of Century and the City of Pensacola LDC do not directly discuss this issue. The Escambia County LDC requires that all operations comply with their fire safety code as well as the National Fire Code, and in case of conflict, the more stringent regulation applies. The LDC also presents the minimum standards for location, container composition and Chief Fire Safety Inspector notification.

The municipalities should consider altering their LDC to contain information detailing minimum requirements for the safe storage of Detonable Materials, Fire Hazard Solids, and Fire Hazard Liquids and Gases. Alteration of the LDC to include the aforementioned articles will help to mitigate future damage caused by the uneducated storage and handling of the hazards. Also, the municipalities should consider listing and cross referencing the other codes or regulations outside the LDC that need to be satisfied.

### Air Pollutants

The Town of Century LDC states that all sources of air pollution should comply with the regulations set forth by the Environmental Protection Agency and the Florida Department of Environmental Protection. The City of Pensacola LDC does not present any regulations on this subject and therefore is assumed to rely on County, State, and Federal regulations.

The Escambia County LDC Air Quality section seeks to protect air quality through regulation or requiring compliance with applicable state or federal regulations. Permits are required for industrial and manufacturing activities that may discharge emissions. Further, permits to burn are required to be obtained through the Florida Department of Forestry. There is a continuing obligation for permitted discharge facilities to remain in compliance with air quality standards.

The municipalities should consider altering their LDC to contain a listing of the other codes or regulations that need to be satisfied. Also, the municipalities should require that copies of permits be submitted for review prior to development or commencement of pollution generating activities.

### Hazardous Wastes

The Town of Century LDC specifies that any hazardous wastes must be permitted with the Town prior to generation or transportation through the town limits. The Escambia County and City of Pensacola LDC's do not directly address the issue of generating and transporting hazardous waste. Hazardous waste is mentioned briefly in the zoning and wellhead protection sections.

All of the municipalities should consider creating a section for the discussion of hazardous waste or a section citing the applicable state and Federal regulations, which the County (Department of Neighborhood and Environmental Services) and state DEP enforce. This section could be included or combined with the Adverse Off-Site Impacts section. Citation of this type of regulation would help mitigate any future losses.

### Wellhead Protection

The Escambia County LDC breaks Wellhead Protection into four (4) sections: 1) Intent, 2) Definitions, 3) Development Restrictions, and 4) Development Standards. Escambia County also references Utility and other regulatory agencies that must be satisfied: Northwest Florida Water Management District and Emerald Coast Utilities Authority. The City of Pensacola LDC divides this topic into three sections: 1) Purpose and Intent, 2) Location of Wellheads, and 3) Prohibited Installations. The Town of Century LDC specifies the prohibited development zone radius and the prohibited activities.

The Escambia County LDC Wellhead Protection seeks to protect the potable water supply through a 200-foot minimum setback for all development other than single-family residential and modeled 7- and 20-year time of travel cones of influence, whichever is more restrictive. Within the 7-year time of travel, land use is restricted as well as substances found on Lists of Hazardous Waste (40 CFR Part 261, Subpart D), Hazardous Constituents, and EPA Designation Reportable Quantities and Notification

Requirements for Hazardous Substances Under Circular (40 CFR 302). Development within the 20-year time of travel requires a groundwater/wellhead impact report to provide evidence of the probable impact of the proposed development on the groundwater supply and recharge potential for the wellhead. While the City of Pensacola uses a 200-foot radius, the Town of Century specifies a 200-foot radius with an option for an additional 300 feet.

All of the LDC has the basic information regarding restrictions that should be enforced in and around wellhead protection zones. However, LDC should consider listing all of the utility and regulatory agencies that have vital interests in these areas and require proper notification prior to receiving approval for activities located within and adjacent to wellhead protection zones.

#### Environmentally Sensitive Areas

The Town of Century requires a 30-foot buffer of natural vegetation around and along all wetlands. The City of Pensacola LDC does not contain a section that details procedures for the protection of environmentally sensitive areas. The Escambia County LDC Wetlands and Environmentally Sensitive Lands defines environmentally sensitive areas primarily as wetlands as defined by the Florida Department of Environmental Protection, listed species and associated habitat as defined by the US Fish and Wildlife Service and Florida Fish and Wildlife Conservation Commission. Protection standards are defined including requirements for avoidance, minimization, and mitigation for an impacted resource. An additional minimum 30-foot buffer is required between development and the ESA. Provisions are included for utility companies, encouraging clustering of development, and enforcement.

While this topic does not tie directly into hazard mitigation, the protection of environmentally sensitive areas helps limit development in potentially harmful areas. The municipalities should consider strengthening their LDC to limit development in these areas. Topics to consider should include increasing the required buffer, further mitigation efforts, and increased fines for non-compliance. Municipalities could also include cross-referencing other applicable sections to make the LDC easier to use.

#### Signage

The Escambia County LDC signage codes are very thorough, specifying the allowable sign variables from the sign dimensions to the zoning requirements. The LDC also lists the applicable design, performance, and maintenance standards, while referencing the other regulations that must be satisfied. The City of Pensacola sign code is also quite thorough with respect to the construction of a sign. During the submittal process, Pensacola requires that structural calculations must be presented. The City of Pensacola also has the discretion to require that the sign be designed by a Registered Professional Engineer in the State of Florida. The Town of Century's LDC states that all signs must be designed to meet the Town Building Code and the National Electrical Safety Code.

All of the LDC's have enough requirements to help reduce loss due to sign failure. However, specifying which building and electrical codes that need to be satisfied could also reduce any omissions during the sign design and further mitigate potential loss.

#### Floodplain Management

Following the impact of Hurricane Ivan in 2004 and Hurricane Dennis in 2005 the City of Pensacola adopted a 3-foot freeboard in all Special Flood Hazard Areas (SFHAs) and Escambia County adopted a 3-foot freeboard in all SFHAs except for the approximate A Zones, which have a 1-foot freeboard. SRIA-Pensacola Beach adopted a 3-foot freeboard requirement in 1987, and adopted a Coastal A Zone requirement in the mid 1990's. All new development or substantial improvements on Pensacola Beach must meet V-Zone requirements.

In October of 2017, the Town of Century amended the adopted Floodplain Ordinance to provide a joint review between the Town and Escambia County for all construction permits within the Special Flood Hazard Areas. Additionally, the Century Town Council adopted a three (3') foot freeboard requirement above the designated FEMA Base Flood Elevation in order to remain consistent with Escambia County's codes and policies.

The municipalities should review their Floodplain Management Ordinance, to ensure that the requirements provide higher than the minimum National Flood Insurance Program (NFIP) requirements as suggested in 44CFR60.1. The local jurisdictions are encouraged to adopt more restrictive regulations, based upon local conditions and historic flooding data.

#### Coastal Management and Conservation

The City of Pensacola discusses the regulations for coastal management in their Floodplain Management section. The Town of Century does not contain any coastal areas; therefore, this section does not apply to their LDC. The Coastal Management and Conservation section of the Escambia County LDC includes gulf-front setbacks, protection for the natural sands of barrier islands, and dune/beach restoration. Sections in the Comprehensive Plan require cooperation with State and Federal wildlife agencies to provide for protection of listed species

It is recommended that Escambia County consider cross-referencing this section with the other similar sections (Floodplain Management, Marine, Estuarine, Riverine Setbacks, Environmentally Sensitive Areas, etc.) The City of Pensacola does not have a section dedicated to this topic, however, Coastal Management and Conservation are adequately covered in other zoning sections of their LDC. The Town of Century does not have the need for such a section.

#### Wildfire

Florida Division of Forestry officials have compiled the following list of communities in Escambia County which are considered at higher risk of wildfire: Barrineau Park, Barth, Bellview, Beulah, Century, Cottage Hill, Gonzalez, Millview, Molino, Myrtle Grove, and Quintette.

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It is recommended that Escambia County and the Town of Century consider the following recommendations of the Florida Division of Forestry:

- To request developers to strongly consider incorporating concepts of Firewise Communities ([www.firewise.org](http://www.firewise.org)) into developments to help protect them and minimize damage from uncontrolled wildfire.
- Consider when amending their local Land Development Codes or Comprehensive Plan in those geographic areas predominately shown on the DOF FRAS LOC as level 7, 8, and 9 (medium, high and extreme).
- Amend the Land Development Code, requiring developers wishing to begin projects in areas designated as “rural fringe” to follow the following guidelines: “Work with Escambia County Emergency Management staff and managers of any adjacent or nearby public lands to develop a Wildfire Prevention and Mitigation Plan which will reduce the likelihood of threat to life and property from wildfires.

### **B. Assessing Vulnerabilities**

In 1997-1998, the LMS did a vulnerability assessment for some of the facilities within the County. A questionnaire was sent out to people and returned that identified facilities and scored the vulnerabilities of those facilities to various hazards. The information was not inclusive of all facilities, restricted to some critical facilities, and the list appeared to be rather incomplete. The contractor at the time, along with the original LMS participants, created a scoring spreadsheet that was used for the vulnerability assessment, most likely developed using guidance from the State and FEMA.

In the previous LMS update, we utilized the previous assessment and expanded the analysis to include all facilities from all of our participating entities using the same evaluation spreadsheets and explanations. We delivered the designed blank spreadsheet to all of our public facility infrastructure owners and County jurisdictions, to include Escambia County Facilities Management, Escambia County Fire-Rescue, Division of Emergency Management, City of Pensacola, Town of Century, Santa Rosa Island Authority, the School District of Escambia County, the Emerald Coast Utilities Authority and Gulf Power. This covered the entire public infrastructure and a majority of the utilities for the County.

At the same time, we were able to take our list of facilities and update our GIS database for all the public facilities in the community that had not been previously captured. The vulnerability analysis' that were returned are presented in Appendix I-G. Emerald Coast Utilities Authority (ECUA) and Gulf Power did go through the same exercise as the rest of the LMS jurisdictions; however, citing security risks and issues, they are maintaining their facility's vulnerability analysis in-house to protect this information. The LMS will refer any inquiries about their facilities directly to those entities.

The ECUA and Gulf Power have been extremely willing to participate and contribute to the entire LMS process, to include the vulnerability analysis. While they may not be submitting the actual data for this plan, it has been completed and is available with specific and qualified individual requests to those organizations individually and directly. The other jurisdictions have provided their information and can be found in Appendix I-G. The installation of future infrastructure and

facilities shall be governed by the respective local development requirements and risk determined prior to development approval.

Additionally, information focused on the public infrastructure does not include any private facility analysis. The assessment process will continue to be reviewed on an ongoing basis, and re-evaluated with the annual review schedule for the LMS plan.

The facility data gathered for this hazard vulnerability analysis is based on empirical evidence where professional judgment, observation, and experience was used to score facilities for the various review categories based on interpretation of the scoring criteria. Several subject matter experts from the LMS Strategy Committee or the jurisdiction typically met to review each facility as a collective group.

a) Methodology

Below, is the description for each category in the vulnerability analysis and methodology for scoring the facility’s vulnerability to the various hazards. The resulting vulnerability analysis can be found in Appendix I-G.

1) *Facility Category:*

How critical the facility is to the operations of the organization.

Is this a critical facility? Category 2 & 3 is considered a critical facility. Critical facility as defined by The State of Florida Critical Inventory Initiative December 1995, Draft as, “...those “structures” from which essential services and functions for victim survival, continuation of public safety actions, and disaster recovery functions are performed or provided. Though not specifically included in the definition, supporting life-line infrastructure essential to the mission of critical facilities must also be included in the inventory when appropriate.”

<b>Category</b>	<b>Description</b>
0	Can be more than 72 hours before regaining operational capability
1	Must be operationally capable within 24 to 72 hours
2	Must be operationally capable within 24 hours or less
3	Must not lose operational capability

2) *Facility Type:*

Which of the following classifications does this facility fall within?

<b>Category</b>	<b>Description</b>
GG	General Government (Government offices, recreation facilities, courthouses, etc.)
PS	Public Safety (Fire or police stations, EOC’s, radio/warning systems, jails, bridges, etc.)
PH	Public Health (Hospitals, clinics, health departments, etc.)
HC	Health Care (Nursing homes, mental health facilities, etc.)
UT	Utility (Power, phone/cell, water, sewer, storm water, natural gas, etc.)
PC	Private/Commercial (facilities owned by the private sector, other than utilities)

3) *Public or Private:*

Is this a public or privately-owned facility?

<b>Category</b>	<b>Description</b>
<i>PUB</i>	Publicly Owned Facility
<i>PRI</i>	Privately Owned Facility

4) *Subject to High Winds/Hurricanes and Coastal Storms:*

How vulnerable is the facility to “sustained” winds of 74 mph or greater?

<b>Category</b>	<b>Description</b>
0	This facility is not particularly vulnerable to high winds to its construction, profile, design or other factor.
1	This facility is probably vulnerable to a minor degree to the effects of high winds due to one or more of the following characteristics: its construction, profile, design, lack of protection for building openings, high surface area walls, gable ends, expansive ceiling systems or its exposure to a tree lay down zone.
2	This facility is moderately vulnerable to the effects of high winds due to one or more of the following characteristics: its construction, profile, design, lack of protection for building opening, high surface area walls, gable ends, expansive ceiling systems, or its exposure to a tree lay down zone.
3	This facility is highly vulnerable to the effects of high winds due to one or more of the following characteristics: its construction, profile, design, lack of protection for building openings, high surface area walls, gable ends, expansive ceiling systems, or its exposure to a tree lay down zone.

5) *Vulnerability to Flooding:*

How vulnerable is the facility to flooding?

<b>Category</b>	<b>Description</b>
0	This facility is not vulnerable to flooding and has no history of flood damage.
1	This facility is in a flood prone area and/or has had some minor flooding incidents from ponding in parking or grassy areas; but has no history of financial impact.
2	The facility is located within a flood prone area and/or has experienced periodic flooding with only minor financial impact.
3	The facility has a history of flooding and/or has experienced moderate to heavy financial impact from a flood incident.

6) *Vulnerability to Storm Surge:*

How vulnerable is the facility to storm surge?

<b>Category</b>	<b>Description</b>
0	This facility is not subject to damage from a storm surge.
1	This facility is located within a designated storm surge zone, and would probably sustain damage, if affected by a Category 4 or 5 storms.
2	This facility is located within a designated storm surge zone, and would probably sustain damage if affected by a Category 3 storm.
3	This facility is located within a designated storm surge zone, and would probably sustain damage if affected by a Category 1 or 2 storms.

7) *History of Damage:*

Does the structure have a history of prior damage?

<b>Category</b>	<b>Description</b>
0	This facility has no history of flood, wind and/or subsidence damage.
1	This facility has had at least one incident of flood, wind and/or subsidence damage that resulted in a loss of less than \$1,000.
2	This facility has had at least one incident of flood, wind and/or subsidence damage that resulted in a loss of more than \$1,000 but less than \$44,800.
3	This facility has had at least one incident of flood, wind and/or subsidence damage that resulted in a loss of more the \$44,800.

8) *Subject to Riverine/Coastal Erosion:*

This category focuses on damage from water action, not from the potential damage of a sinkhole.

<b>Category</b>	<b>Description</b>
0	This facility is not subject to “the undermining of the ground it rests upon” from any wave or water (canal, river, dam, etc.) action.
1	This facility has some possibility of earth loss from its foundation from riverine flooding.
2	This facility would probably suffer some deterioration of its foundation from riverine flooding or wave action.
3	This facility has a high probability of deterioration of its foundation from wave action due to its location on the coastline.



9) *Vulnerable to Power Outage:*

Is the facility vulnerable to a power outage?

<b>Category</b>	<b>Description</b>
0	This facility has an onsite generator capable of supporting the entire facility.
1	This facility can lose power but an onsite generator will support only part of the facility; or the building is configured to accept a dedicated portable generator that is readily available. A power outage at this facility will cause some minor difficulties for customers and/or users of this facility until power is restored.
2	This facility is configured to accept a portable generator, but that generator may have to be shared with other facilities depending on the situation. A power outage may create moderate difficulties for customers and/or users of this facility until power is restored.
3	This facility has no emergency power capabilities and/or a power outage may create major difficulties for customers and/or users of this facility until power is restored.

10) *Vulnerable to Lightning:*

This category is intended to score the facility in question for the effects of the electrical surge from a lightning strike. It is assumed that most facilities could be affected by a fire caused by a direct strike on a structure.

<b>Category</b>	<b>Description</b>
0	This facility is not particularly vulnerable to lightning due to its location, construction, profile or the fact that there are protective systems in place.
1	This facility is vulnerable to lightning, but equipment on site is not of a nature that disruption from a strike would create a public safety/health problem or do major damage to critical systems.
2	This facility is vulnerable to lightning, has critical systems and/or equipment, but protective measures have been taken to lessen the likelihood of system failure from a strike.
3	This facility is vulnerable to lightning and a strike would create public safety/health problem and/or critical systems will go down. No protective systems are in place.

11) *Vulnerable to Roadway Blockage by Debris or Flooding of Access Roads:*

Are the roadways connecting to critical facilities vulnerable to blockage or becoming inaccessible?

<b>Category</b>	<b>Description</b>
0	This facility is not vulnerable to roadway blockage, or it is a critical facility that will receive immediate attention from road clearing crews.
1	This facility is vulnerable to roadway blockage, but personnel assigned to this facility are equipped to gain access within 12 to 24 hours.
2	This facility is vulnerable to roadway blockage and will need attention. Road closure in excess of 24 hours will create moderate problems for the facility owner, and/or customers and employees.
3	This facility is highly vulnerable to roadway blockage, and inaccessibility will create moderate to severe problems for the facility owner, and/or customers and employees or no plan is in place to clear roads or ensure accessibility.

*12) Dependence on Water Supply:*

What is the capacity of the facility to function without access to a water supply and can it continue to function?

<b>Category</b>	<b>Description</b>
0	This facility can operate without normal water supply for over 72 hours. Either the process provided at this facility does not require water or a reserve water supply system is located onsite.
1	This facility can operate without a normal water supply for between 24 and 72 hours. After that period processes and/or onsite staff will experience difficulties.
2	This facility must have a normal water supply within 24 hours or processes and/or onsite staff will be unable to function.
3	This facility must not lose a normal water supply.

*13) Vulnerable to Sewer System Outage:*

What is the capacity of the facility to function without a functioning sewer system?

<b>Category</b>	<b>Description</b>
0	This facility is not vulnerable to a sewer outage.
1	A sewer system outage would cause minor problems for or because of this facility.
2	A sewer system outage would cause moderate problems for or because of this facility.
3	A sewer system outage would cause major problems for or because of this facility.

*14) Dependent upon Communications:*

What is the capacity of the facility to function during a communications failure?

<b>Category</b>	<b>Description</b>
0	This facility is not vulnerable to communications equipment failure.
1	This facility could lose communications capability without major problems as long as that capability is restored within 24 to 72 hours.
2	This facility will experience major problems if communications capability is not restored within the first 24 hours.
3	This facility must not lose communications capability.

*15) Disruption would cause Psychological Hardship:*

Will the disruption of the facility cause a mental or emotional hardship for the community?

<b>Category</b>	<b>Description</b>
0	A disruption of this facility will cause no psychological hardships.
1	A disruption of this facility for between 24 and 72 hours could cause minor to moderate psychological hardships.
2	A disruption of this facility for over 24 hours would likely cause psychological hardships.
3	A disruption of this facility for any length of time will cause psychological hardships.

*16) Disruption would have Economic Impact:*

Will the disruption of the facility have an economic impact to the County?

<b>Category</b>	<b>Description</b>
0	Disruption of this facility should not cause any meaningful economic impact.
1	Disruption of this facility should cause some economic impact.
2	Disruption of this facility should cause moderate economic impact.
3	Disruption of this facility should cause major economic impact.

*17) Disruption impacts Community Services:*

To what affect will the disruption of the facility impact community services?

<b>Category</b>	<b>Description</b>
0	Disruption of this facility would not affect Community Services.
1	Disruption of this facility could affect certain non-critical Community Services.
2	Disruption of this facility could affect one or more important Community Services.
3	Disruption of this facility could affect a critical Community Service.

*18) Environmental Problems could occur:*

Will the damage or disruption of the facility cause any environmental impact?

<b>Category</b>	<b>Description</b>
0	Damage to this facility will create no environmental problems.
1	Damage to this facility may create certain short-term environmental problems.
2	Damage to this facility may create a health hazard and/or certain long-term environmental problems.
3	Damage to this facility may create a situation that is life threatening and/or has long-term environmental implications.

*19) Facility has Historic Value:*

Does the facility have any historic value and can it be repaired/replaced?

<b>Category</b>	<b>Description</b>
0	This facility has no historic value.
1	This is a historic structure, but can be repaired without compromise.
2	This is a historic structure and/or contents that have a historic value that would be difficult to repair or replace without compromising that value.
3	This structure and/or its contents have historic value that can neither be replaced nor repaired.

*20) Facility impacts Agriculture:*

Does the facility impact agriculture?

<b>Category</b>	<b>Description</b>
0	Damage to this facility and/or its contents would have no effect on agriculture.
1	Damage to this facility and/or its contents will have some effect on agriculture.
2	Damage to this facility and/or its contents will have moderate effect on agriculture.
3	Damage to this facility and/or its contents will create a situation that has a major effect on agriculture.

*21) Hazardous Materials:*

Does the facility have hazardous materials and what is the concern of those hazardous materials if present?

<b>Category</b>	<b>Description</b>
0	Hazardous materials are not a concern with this facility.
1	This facility is not considered a hazardous materials site, but periodically uses materials and/or processes that could create a minor hazard.
2	This facility is not considered a hazardous materials site, but does contain some materials or processes that could create health and environmental problems or there is a facility within close proximity that could create hazardous materials problems for this facility.
3	This facility is considered a hazardous materials site. Damage to this facility will likely create a situation with moderate to major health, safety and/or environmental implications.

*22) Subject to Major Fire:*

Is the facility vulnerable or at risk of a major urban fire or wildfire due to its location?

<b>Category</b>	<b>Description</b>
0	This facility does not face a high risk of major urban fire or wild land fire.
1	This facility is in a position to face the risk of major urban fire or wild land fire, but the threat is considered minor.
2	This facility is in a location that makes it moderately vulnerable to the threat of a major urban fire and/or wild land fire.
3	This facility is located in a position that makes it highly vulnerable to a major urban fire and/or wild land fire.

23) *Structural Fires:*

Vulnerability assessment takes into consideration structural materials, type of use, and fire protection devices within, or nearby, the facility.

<b>Category</b>	<b>Description</b>
0	This facility does not face a high risk of becoming a structural fire statistic
1	This facility is in a position to face the risk of being impacted as a structural fire, but the risk is low
2	This facility is in a location that makes it moderately vulnerable to the threat of being impacted as a structural fire.
3	This facility is located in a position that makes it highly vulnerable to the threat of being impacted as a structural fire.

24) *Severe Storms/Tornadoes:*

Is the facility vulnerable or at risk of a severe storm or tornado?

<b>Category</b>	<b>Description</b>
0	This facility does not face a high risk of major tornadoes and Severe Storms.
1	This facility is in a position to face the risk of a tornado or sever storm, but the risk is considered to be minor.
2	This facility is in a location that makes it moderately vulnerable to the threat of a tornado or severe storms.
3	This facility is located in a position that makes it highly vulnerable to tornadoes and severe storms.

The last column of the analysis is the total vulnerability score for each facility.

b) Development Trends

The Future Land Use Maps (FLUM) are available for all of our jurisdictions (Appendix I-H). Each jurisdiction has looked to compare the FLUM, the hazard maps, and future planned developments in the jurisdictions and provided a local assessment.

1) *Escambia County*

Development trends in Escambia County are diverse. The central part of the county is experiencing the greatest boom in growth and development, the Future Land Use Categories of Mixed-Use Urban and Suburban. The development in the central part of the county is much lower at risk for most hazards. Flooding is potentially the most significant hazard to these areas. These FLU category areas are most susceptible to potential wildfires due to the forested areas within them.

The Mixed-Use Perdido Key Future Land Use (FLU) Category is the Perdido Key Barrier Island. Perdido Key continues to be developed as shown by the table below. Currently Perdido Key development is regulated via State imposed development caps, the newly adopted Perdido Key Beach Mouse Habitat Plan and the existing zoning districts. In 2015, the Board adopted the Perdido Key Towncenter Overlay which adds additional standards to development within the designated areas in Perdido Key. Being that Perdido Key is a

barrier island, it is vulnerable to beach erosion, storm surge, flooding, wind damage and other natural hazards.

The Mixed-Use PB applies to Pensacola Beach, located on the Gulf of Mexico. Development continues in this high-risk area with the majority being hotel lodging units but is slowing down due to the development caps quickly being reached. Pensacola Beach is also a barrier island; it is vulnerable to beach erosion, storm surge, flooding, wind damage and other natural hazards.

The Northern section of Escambia County is mainly Rural Residential (RR), Agriculture (AG). The County recognized that growth is occurring in this area, as a result the Mid-West Escambia County Sector Plan and Detailed Specific Area Plans were developed and adopted by the Commission. The Plan offer predictable, organized future development while at the same time providing for the protection of the natural environment. The North end of the county has many different hazard vulnerabilities. Flooding in these areas does happen as a result of heavy rainfall and can cause crop damage. Riverine flooding on the Escambia River can result on evacuations and property damage. This part of the county also has the highest risk for freezing temperatures.

The Department of Growth Management, now Department of Economic Opportunity (DEO), completed an inventory of infrastructure located in the Coastal High Hazard Area (CHHA) in 1994. At the time of the study it was determined that there were no vital public or semi-public facilities in the CHHA requiring relocation. In 1998, the County changed the definition (and thus the geography) of the CHHA to meet the new State definition. Since 2010, the County has not built any new vital public or semi-public facilities in the CHHA as now defined. Both documents, the Land Development Code and the Escambia County 2030 regulate any proposed development within the designated CHHA.

## 2) *Town of Century*

The Town of Century has a designated FLUM. Population fluctuations up or down have been under 100 in either direction, with no anticipation of a population surge from any identified or planned development. No long or short-term growth or development is expected for the Town of Century, unless a minimal impact is realized from the opening of the new Molino Park Elementary School, which may bring a couple of small businesses and home developments into the area surrounding the school, but that impact has yet to be realized or determined.

Century exists because money is brought from employment outside of the community or from those dollars that travelers spend for fuel and groceries. There are, of course, support businesses in the community that contribute to some gross domestic product in Century. The oil fields have a small economic impact and employment in that industry is on the downslide. The service sector, healthcare, and governmental/school district employment is where the revenue comes from in Century. The adult congregate care facility, Helicopter Technology, Inc, the Flomaton CSX rail yard, and several other businesses in the Century Industrial Park, Century-Carver K-8 School, Century Correctional Institution, and a number of retail establishments (primarily service sector) are the employers of Century proper. Exxon-Mobil employs about 60 people in Jay, Florida and probably another 60 in

Flomaton, Alabama. We cannot forget the Alabama factor for employment, as well. There are a number of residents from Century working in Brewton, Flomaton, Bay Minette, Evergreen, Monroeville, and Atmore and Mobile, all in Alabama. Not to mention Cantonment, Milton and Pensacola.

As for future growth, the land for expanded development is readily available in the industrial park, the old Alger/Sullivan mill, and along US 29 itself along with SR 4 to the east for about 1/2 mile. Infrastructure such as sewer, water, gas, road network, even an incubator for small businesses developed by EDA. it's all there. One of the challenges that face Century is how to attract local and outside investment into the community.

Since Century needs every possible personnel minute invested in its economy, not having to be distracted from that focus with disasters impacts, mitigation is vitally important. One of the greatest vulnerabilities in Century is the substantial number of wood frame homes that are susceptible to fire and high wind/tornado/hurricane damage. Upgrading of the housing stock to withstand wind and rain, and considerations of the wild land interface for fire with older wood frame vernacular housing will substantially increase the disaster resistance of the Town.

With no expected or planned growth, mitigation of the existing situation should be a short-term goal, with consideration for improved growth standards taking all hazards into consideration.

### 3) *City of Pensacola*

The City of Pensacola has minimal impacts from disaster events as mapped in this LMS document, however, the downtown area can be significantly impacted by storm surge. Future development in the City, however, will be minimal as the City is almost "built out" and what development opportunity that is left, will have minimal impact on the hazard areas as defined by this LMS document.

The recommended reuse plan for the American Creosote Works Superfund Site provides opportunities for economic development on a portion of the American Creosote Works (ACW) site and surrounding areas and the development of an open space/park buffer for the residential properties to the south of the site.

An open space/park facility will be developed on the site in the area generally located north of the Pine Street and south of the proposed buildings on the south side of Gimble Street. A parking area will be provided on the site's western end and a permanently wet storm water retention pond will be developed on the eastern end.

Development on the ACW site, south of Gimble Street will consist of one and two-story buildings with local retail/office/service uses. Residential use may be located in the second story. Development will be limited to 100 feet south of Gimble Street and a building setback of 30 feet from the rear property line will be required to provide access and parking. Buildings fronting the north side of Gimble Street will be a maximum of 3 stories and will include office/retail/service/residential uses.

Buildings along Main Street will not exceed 4 stories. The commercial land uses that attract a regional and community wide market is encouraged but will not include big box

retail type of development. A retail theme, such as the “renovation design district”, may be developed to attract businesses of a similar type and to market the area to the region. Residential uses on upper floors would be encouraged.

The local roads will be improved in the following manner. Pine Street improvements are limited to providing local access to properties fronting on Pine Street and portions of the right-of-way may be incorporated into the open space/park facility. Gimble Street will be reconstructed from Barrancas Ave. to “F” Street in a manner that inhibits speeding and does not result in creating a “cut through.” Main Street will be reconstructed in a design suitable for the western gateway to the downtown area. “L” “I” and “F” streets will also be reconstructed with design similar to Main Street and Gimble Street.

Other improvements include an environmental/historical resource building on the south side of Gimble Street. The facility will include educational exhibits about the history of the ACW site. The facility will also include public restrooms and a snack shop. The existing treatment buildings will be relocated in architecturally compatible buildings.

To promote the redevelopment of the area, a Western Gateway Redevelopment District (WGR) zoning classification will be created. The WGR classification will be similar to the City’s existing Waterfront Redevelopment District and will include a list of permitted uses that are of a character suitable to the classification as well as building and site development design requirements. Design requirements will include regulations to promote redevelopment of the district in a character and scale that is consistent with traditional neighborhood development principals. Upon City ownership of the ACW site, the area of the site designated for the open space/park facility will be rezoned to Conservation District to assure the continued public open space/park use of this property.

It is also recommended that the City designate the general area as a Community Redevelopment Area and that a tax increment-financing district be established to fund infrastructure and redevelopment related improvements. A Brownfields designation will be pursued for the general area to provide aid and incentives to property owners to redevelop their properties. In addition, Economic Development incentives such as offered by the Enterprise Zone and the Commercial Façade Program will be offered to attract businesses to the area.

The 20+acre site referred to as the "Aragon" site is a Traditional Neighborhood Development (TND) project that extends the neighborhood "fabric" of the Seville area to the north. There are 129 residential lots and several mixed-use (office, retail, residential) sites on this water view location. Sidewalks, tree-shaded streets, historic street lighting, a central park space and easy access to downtown Pensacola's thriving business district have created a renewed interest in downtown living. This project will further realize the long-held goal of the CRA to create a 24-hour-a-day population in the inner City through infill residential development. Construction of the project is underway. The only direct hazard to this facility will be found in the category 5 storm surge and potential hazardous material area. As identified by the LMS hazard maps.

Port Royal Phase II Residential Project. The City-owned peninsula of land located south of Main Street, between Baylen Street and Spring Street, generally referred to as the



Baylen Peninsula, includes approximately 9.85-acres. The 4.37-acre site at the southern end of the peninsula identified as Port Royal Phase I has been developed in 21 condominium townhouse units and 39 tower condominium units. A public promenade open to the general public is located on the eastern edge of the Phase I & II parcels overlooking a 40-slip marina that is leased to a private developer.

The Phase II parcel, with 4.03-acres, is located immediately north of Phase I. This property was leased in 1997 for the construction of 24-single family and carriage house residential units. Phase III includes 1.45 acres of land in two parcels that front Main Street. These parcels will most likely be offered for development through a request for proposal (RFP) process.

4) *Santa Rosa Island Authority*

The future development assessment portion for SRIA can be found in the County section above, as they technically fall under the County jurisdiction.

5) *Emerald Coast Utilities Authority*

ECUA has no significant future developments planned that will be impacted by or impact the various hazards as identified by the LMS. Most of what gets built for infrastructure with the ECUA are water wells, and lift stations, with most of that infrastructure following the development trends of the County, City, and Town.

6) *School District of Escambia County*

The School District, while having the ability to build hazard aware, does have a more limiting ability to develop in new and better locations in relation to our LMS hazard areas. Though most new development for schools involves additions and portables, they tend to reside where a school campus has already been located, thus being able to mitigate those new structures is dependent upon mitigating technologies for the hazards located at that site. Most of what has been mitigated is what was directed by EHPA and the local building code. As with all of the other jurisdictions, no policy develops better than the current building code dictates.

As far as future development, additions are the only short-term plan for the next 5 years, with a handful of additions going into already existing campuses. Those additions will certainly be required to be developed according to the local building and minimum NFIP and wind standards<sup>61</sup>. On July 29, 2008, the Governor and Cabinet approved the Enhanced Hurricane Protection Area (EHPA) requirements. All are within the realm of potential chemical impacts under worst-case scenarios, and most of the risks they run can be directly associated with the risks found on the campus as identified in the vulnerability assessment for the campus found in Appendix I-G.

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<sup>61</sup> The Enhanced Hurricane Protection Area (EHPA) requirements are currently being waived due to a regional surplus in shelter space, per the 2008 Statewide Emergency Shelter Plan (SESP), approved by the Governor and Cabinet on July 29, 2008. The following language was removed. *“but one benefit of new public school building is the ability to mitigate those structures based upon the Enhanced Hurricane Protection Area (EHPA) requirements. This basically requires 50% of the new school building to be built with its use a risk hurricane shelter in mind.”*

**IV. MITIGATION GOALS AND OBJECTIVES:**

The purpose for developing a set of goals and objectives is to clearly state the community’s overall vision for hazard mitigation and ensure that the community adequately addresses its mitigation needs before and after a disaster. This is consistent with purpose of the LMS, to provide guidance to the County in building a safer and more resilient community. Mitigation goals and objectives must be consistent with the goals and objectives of the County its jurisdiction’s master plans, their codes and ordinances, as well as other endeavors that reflect the aspirations for the welfare, safety, and quality of life of its citizens. During the planning process, the LMS Planning Committee reviewed and updated a set of community values or guiding principles that serve as a vision for hazard mitigation in Escambia County. This set of values guided the Committee in the formulation of specific goals and objectives and helped to direct the planning process and the selection and implementation of mitigation initiatives and programs.

**A. Goals and Objectives**

The current LMS Plan update process followed the same steps used for the previous LMS Plan updates. The LMS discussed goals and objectives early on in the update process. This allowed participants in the process the opportunity to start thinking about the LMS and what we want to accomplish. Goals and objectives were reviewed toward the end of the update process to take in all the information and data generated during this process to determine where the goals and objectives needed to be adjusted and/or enhanced. The specific participants involved with the process are identified on the meeting sign-in sheets and as noted within the meeting minutes and agendas in Appendix I-R. The following goals, objectives, and tasks were identified:

**Table 16: Mitigation Goals, Objectives, and Tasks**

GOAL	OBJECTIVE	TASK	DESCRIPTION
1	A		Enhance coordination and communication among local and regional organizations to implement the hazard mitigation goals and objectives.
			Continue to identify and solicit effective participation from all governing bodies, regulating authorities, regional organizations, for-profit and non-profit organizations, community organizations, neighboring governing bodies and organizations, and any other organizations that may have an interest in being a stakeholder in the mitigation process.
		1	On an on-going basis, incorporate mitigation concepts and ideas into any relevant discussions and presentations by any organization or entity out in the community, to include a comment and invitation to attend and be a part of the LMS meetings.
		2	Annually conduct an LMS/NFIP/CRS workshop for public officials and the community.
		3	By November of each year, review and update the LMS invitation list with potential stakeholders as generally identified in the objective. This list will be provided to all organizations in the email group for update and suggestions.

GOAL	OBJECTIVE	TASK	DESCRIPTION
		4	During December of each year, provide a written invitation to each of the relevant organizations as identified in task 3.
		5	Annually meet with representatives of local military bases to explore potential mitigation opportunities.
2			Reduce risks and vulnerabilities of facilities and properties in hazard-prone and environmentally sensitive areas.
	A		Identify the risks and vulnerabilities that need to be addressed in our community through a risk assessment and hazards analysis.
		1	Annually, complete broad natural disaster vulnerability and risk assessment for the county and surrounding jurisdictions using current and available information to update the LMS planning document. Incorporate man-made disasters where appropriate.
		2	On an ongoing basis, at least annually, refine the data in the LMS planning document as information becomes available and time dictates.
		3	On an ongoing basis, engage local, state, and federal agencies to develop partnerships with LMS to assist in identifying tasks on their goals and priority lists to further the LMS Plan.
		4	As soon as released by DOF, incorporate the new DOF hazard analysis study into the LMS plan as appropriate. (Include DOF not just GIS information.)
		5	Annually and during plan review, update vulnerability analysis as buildings and infrastructure are improved or developed.
		6	Every three and a half years, from the date of the last LMS FEMA plan approval, start the formal process of updating the LMS planning document for re-certification from FEMA.
		7	Expand the vulnerability analysis to include other at-risk infrastructure components and at-risk structures whether public or private.
	B		Create a method of reviewing and prioritizing recommended mitigation initiatives and projects for our community.
		1	As required by CRS annually, review, assess, prioritize and organize the repetitive loss properties in all the jurisdictions in Escambia County and start preparing grant applications.
		2	Annually, conduct a public awareness program to solicit interest, for participation in various grant programs for repetitive loss properties in all LMS jurisdictions.
		3	Review and update, as needed, the review and ranking process for all projects submitted for consideration to the LMS.
	C		Maintain and update periodically the prioritized mitigation project list through required project status and project close-out reporting.

GOAL	OBJECTIVE	TASK	DESCRIPTION
		1	Require all funded project organizations complete a project status report and closeout form for better historical record keeping and documentation of success stories.
		2	On an ongoing basis, revise the projects list to include additional relevant information found from information acquired from task #1.
3	A		Integrate and coordinate all local mitigation activities and programs under the LMS as appropriate, or as directed or required by programmatic rules and requirements. Identify any and all intergovernmental plans, studies, reports, and technical information from various agencies at the Federal, State, and Local levels of government and community organizations that have a mitigation function and incorporate those into the LMS mitigation strategy.
		1	On an on-going basis, continue to encourage members to identify all possible intergovernmental and organizational plans, studies, reports, and technical information that may be relevant to the LMS and include in any future update to the LMS Plan and analysis.
4	A		Provide Education, Outreach, Research, and Development of mitigation initiatives and programs.
		4	Provide education to all potential stakeholders, governing and political bodies, and to the general public as to the goals and objectives of the LMS.
		4	Annually, coordinate and review inventory of materials, both printed and on the LMS website, that are being provided to the public in relation to preparedness and mitigation to update the information and the message that is being presented.
		5	Develop a standardized annual report that LMS Members are required to submit every June, identifying presentations, public speaking engagements that have or will take place in the County to more accurately monitor our outreach efforts and the potential successes.
		6	Develop printed materials relating the LMS efforts, goals and objectives that relate to our public outreach efforts to be included in the annual report that is due in June.
		7	On an ongoing basis target homebuilders, home buyers, real estate brokers and professionals to enhance their educational efforts at Expos, Homebuyer Programs, or within other programs with regard to mitigation techniques and options. Whenever possible offer CEUs to professionals to encourage attendance.

GOAL	OBJECTIVE	TASK	DESCRIPTION
5			Improve and enhance current development rules, laws, regulations, and codes to ensure that future development will continue to be less vulnerable to our hazards.
	A		Continue to improve upon the use of the minimum NFIP standards through improved local, regional or state codes and ordinances.
		1	On an ongoing basis, review and evaluate our current development regulations and determine any short falls in the level of protection against the identified hazards in this plan. Meet with the appropriate regulating agencies to discuss options and recommendations.
		2	On an on-going basis, continue to participate in the CRS Program and implement activities that will earn points in the program and better mitigate our community in the future.
	B		Continue to improve upon and increase the minimum Florida Building Code with regard to wind load and flying debris minimum standards through improved local, regional, or state codes and ordinances where appropriate and possible.
		1	Evaluate the current building code for wind load requirements and make suggestions for improvement to the appropriate regulating agency. Meet with appropriate regulating agencies to discuss options and recommendations.
		2	Make an effort to work with the local Florida Building Association to develop informational tools that will provide better information about wind mitigation when they are building homes.
	C		Continue to improve upon and increase the minimum standards of any other identified mitigation activities, plans, or policies that impact our community against our identified hazards through improved local, regional, and state codes and ordinances.
		1	Identify and evaluate any and all plans, policies, etc., and make suggestions and recommendations, where appropriate, for possible improvement or consideration.
	6		

GOAL	OBJECTIVE	TASK	DESCRIPTION
	A		Continue to support the CRS program for the multiple jurisdictions participating in the LMS Plan.
		1	On an ongoing basis, review current CRS criteria to consider implementing activities that could earn additional points through the LMS by working with the various jurisdictions cooperatively where possible to pursue and implement any new activities to acquire additional points for all CRS communities.
		2	By October 1 of each year, provide and present an annual progress report of the Floodplain Management/LMS plan per the requirements of CRS.
	B		Escambia County (120080) will conduct Outreach Programs for Floodplain Management and other Hazards in support of CRS Activity 330; Outreach Projects pursuant to a Public Information Program Strategy (OPS).
		1	Continue to utilize the AT& T Real Yellow Pages to provide Flood Protection Preparedness Information to the Citizens of Escambia County
		3	Provide Floodplain and other Hazard protection information at Emergency Management Outreach/Training Sessions
		4	On an annual basis, review the Public Library’s circulation materials to verify that they are maintaining the FEMA materials provided by the County.
	C		City of Pensacola (120082) will conduct Outreach Programs for Floodplain Management and other Hazards in support of CRS Activity 330; Outreach Projects pursuant to a Public Information Program Strategy (OPS).
	D		Santa Rosa Island Authority (125138) will conduct Outreach Programs for Floodplain Management and other Hazards in support of CRS Activity 330; Outreach Projects pursuant to a Public Information Program Strategy (OPS).

The LMS Board will be responsible for the implementation of all identified tasks and the annual updated of the goals, objectives, and tasks through the LMS. Each January, the LMS will review the current goals and objectives and update them with new or modified goals and objectives including the identification of specific tasks with timelines for completion.

With the initial development of these goals and objectives, the LMS identified short-term goals to start guiding the process into the direction necessary to develop long-term goals and objectives

in the future. The original goals, objectives, and tasks will remain with the LMS plan as written to demonstrate the initial process guiding this document. Appendix I-L provides our annually adjusted goals, objectives, and tasks as well as the most current of goals, objectives, and tasks.

The LMS Board will be responsible for the generation of an annual progress report on the identified goals and objectives, its successes and disappointments, annually.

a) Addressing Known Risks and Vulnerabilities:

Proposed mitigations projects, in addition to meeting the long-range intent of the goals and objectives, are used to address known problem areas in the community. These can include hardening and retrofitting or existing critical facilities as well as addressing stormwater issue in known problem areas. These may not projects can be used to address problems that do not necessarily affect an entire neighborhood but can cause unsafe conditions or damage properties.

## V. MITIGATION PROGRAMS

The County and all of its municipalities participate in several mitigation programs and utilize mitigation grant programs in an effort to minimize the impacts to our community from natural disasters. The County participates in the following mitigation programs:

### A. The National Flood Insurance Program (NFIP)

All four of the County's eligible governmental jurisdictions are participating in the National Flood Insurance Program. To become a participant in the program, certain requirements must be met, including the adoption of minimum floodplain management development standards that are required to be incorporated into jurisdiction ordinances. The NFIP allows communities and their residents to be able to purchase flood insurance through the national program, where flood insurance would not otherwise be available. More detailed information about the program may be found at the NFIP website at <http://www.fema.gov/national-flood-insurance-program>.

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

- Continue to enforce their adopted Floodplain Management Ordinance requirements to include regulating all new development and substantial improvements in Special Flood Hazard Areas (SFHA).
- Continue to maintain all records pertaining to floodplain development, which shall be available for public inspection
- Continue to notify the public when there are proposed changes to the floodplain ordinance or Flood Insurance Rate Maps.
- Maintain the map and Letter of Map Change repositories.
- Continue to promote Flood Insurance for all properties.
- Continue their Community Rating System outreach programs.

Additionally, the County will continue to participate with the Northwest Florida Water Management District (WFWMD), and actively take part in all future floodplain mapping projects initiated by the State or FEMA. The following table illustrates the number of NFIP policies "in force" for the County and its jurisdictions as of May 8, 2020<sup>62</sup>.

**Table 17: NFIP Claim Information for Escambia County (May 2020)**

COMMUNITY	NFIP COMMUNITY #	POLICIES "IN FORCE"	INSURANCE "IN FORCE" (\$)	WRITTEN PREMIUMS "IN FORCE" (\$)
<b>UNINCORPORATED ESCAMBIA COUNTY</b>	120080	13,645	\$3,661,000,500	\$5,982,563
<b>SRIA (PENSACOLA BEACH)</b>	125138	3,697	\$943,370,800	\$3,100,368
<b>CITY OF PENSACOLA</b>	120082	2,454	\$756,678,500	\$1,620,203
<b>TOWN ON CENTURY</b>	120084	3	\$850,000	\$1,703

<sup>62</sup> <https://www.fema.gov/policy-claim-statistics-flood-insurance>



**B. The Flood Mitigation Grant Program (FMA) and Severe Repetitive Loss Program (SRL)**

The Flood Mitigation Assistance (FMA) Grant Program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 to reduce or eliminate claims under the National Flood Insurance Program (NFIP). The FMA Grant program was updated in FY 2013 by the Flood Insurance Reform Act of 2012 (Public Law 112-114).

Under the FMA program, FEMA provides assistance to states and communities for activities that will reduce the risk of flood damage to structures insurable under the National Flood Insurance Program (NFIP). FMA is a state-administered, cost-share program through which states and communities can receive grants for flood mitigation planning, technical assistance, and mitigation projects. FMA project and planning target allocation is based on the national percentage of NFIP policies present within the jurisdiction. An applicant may apply for funding up to or exceeding its target allocation. Historically, there is typically about \$2 million that becomes available for the State of Florida to distribute to cost effective projects that elevate, flood proof, or even acquire residential or commercial properties that meet the minimum Federal criteria.

The following entities are eligible to apply for FMA funding assistance: state-level agencies including state institutions (e.g. state hospital or university); federally-recognized Indian tribal governments; local governments, including state-recognized Indian tribes, authorized Indian tribal organizations; public colleges and universities; and Indian tribal colleges and universities. Private Non-Profit (PNP) organizations and private colleges and universities are not eligible to apply for an FMA grant. However, an eligible, relevant state agency or local government may apply on the behalf of the private entity.

Escambia County has mitigated several properties throughout the county and continues to solicit more opportunities in the program. More specific information about eligibility and the program specifics can be found at <https://www.fema.gov/flood-mitigation-assistance-grant-program>.

The Severe Repetitive Loss (SRL) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP).

The primary objective of the Repetitive Loss Properties Strategy is to eliminate or reduce the damage to property and the disruption of life caused by repeated flooding of the same properties. A specific target group of repetitive loss properties is identified and serviced separately from other NFIP policies by the Special Direct Facility (SDF). The target group included every NFIP-insurance policy that since 1978 and regardless of an ownership change during that period has experienced:

- Insurance property with 2 flood claims where the repairs equaled or exceeded 25% of the market value of the structure at the time of the flood event.
- Insured property with flood history of 4 or more separate claims of \$5,000 each with cumulative total exceeding \$20,000 or at least 2 claim payments where the cumulative amount of 2 claims exceeds the market value of the structure.

Although the FMA Grant Program is federally funded, and administered through a partnership with the Florida Division of Emergency Management (FDEM), local and Native American Tribal

governments, and the Federal Emergency Management Agency. Authority and responsibility for developing and maintaining a State Mitigation Plan, assisting local and Native America Tribal governments in developing and maintaining Flood Mitigation Plans, reviewing FMA Grant sub-applications, recommending cost effective sub-applications to FEMA and providing pass-through grant funds to awarded FMA Grant projects from eligible sub-applicants resides with FDEM. They also are responsible for ensuring the projects funded are completed and all reporting requirements are met.

The SRL program is different from the other mitigation grant programs because property owners who decline offers of mitigation assistance may experience an increase in their flood insurance premium to more closely reflect the flood risk to the structure.

a) Repetitive Loss Properties

Each CRS community typically receives a copy of the repetitive loss property list in September of each year. Upon receipt the community begins reviewing the list to determine:

- 1) Is the property located in the community, and,
- 2) Has the property been mitigated. The community, as needed, provides correction and updates.

Escambia County and SRIA-Pensacola Beach experienced a dramatic increase in the number of repetitive loss properties following the 2004 & 2005 hurricane seasons. Both communities are still working to collect mitigation data, in an attempt to bring the list data current. Since reconstruction and demolition are still occurring, this remains a work in progress.

The actual database of repetitive loss properties will not be provided in this LMS plan because of the specific address and personal information that is associated with the information. However, specific requests for information may be requested from any of the appropriate jurisdictions directly, or through the NFIP at FEMA.

Each jurisdiction in Escambia County, with the exception of the Town of Century, is making a variety of efforts in relieving the burden of the repetitive loss properties from the NFIP. The effort being made not only satisfies the CRS and its activities, but also allows the jurisdictions to reduce or eliminate high-risk property from the flood zone, potentially eliminating the need to respond to those properties with emergency vehicle and public works response when they begin to flood.

The Town of Century has no repetitive loss properties in their community, therefore, the jurisdiction does not have a repetitive loss program. However, for the County, City, and SRIA, each jurisdiction maintains a database through the NFIP of those properties, provides educational outreach directly to those properties, and provides the opportunity for those property owners to voluntarily participate in the various mitigation grant programs to assist them in reducing or eliminating their repetitive loss flood risk, by providing supplemental funding to those that are eligible and wanting to participate. The building officials in each community can direct citizens to the people managing the programs in their jurisdictions. The actual database of repetitive loss properties will not be provided in this LMS plan because of the specific address and personal information that is associated with the information.

However, specific requests for information may be requested from any of the appropriate jurisdictions directly, or through the NFIP at FEMA.

Below is a summary of the Repetitive Loss Properties within the County and its jurisdictions.

**Table 18: Repetitive Loss Property Data**

	ESCAMBIA COUNTY	CITY OF PENSACOLA	SRIA-PENSACOLA BEACH
<b># OF PROPERTIES BY TYPE:</b>			
<i>RESIDENTIAL</i>	431	29	269
<i>COMMERCIAL</i>	13	7	10
<i>INSTITUTIONAL</i>	4	5	0
<b>TOTAL # OF REPETITIVE LOSS PROPERTIES</b>	448	41	279
<b># OF REPETITIVE LOSS PROPERTIES IN A SPECIAL FLOOD HAZARD AREA</b>	316	19	279
<b># OF REPETITIVE LOSS PROPERTIES, REPORTED AS MITIGATED BY FEMA</b>	12	3	137

Through various outreach methods in each jurisdiction that has repetitive loss properties, an effort is being made to eliminate or reduce the risks of future flooding to those properties through various mitigation techniques. Each jurisdiction sends a notice to each owner of a repetitive loss property, soliciting interest and participation in various potential grant programs, in an attempt to mitigate their property from future flood losses. Each interested property owner that responds to the solicitation will be prioritized utilizing the prioritization guidelines, produced by the program in which they apply.

Currently, each jurisdiction maintains the above information. When projects come to the LMS for funding support, all projects submitted for alternative funding opportunities are supported by the LMS regardless of the jurisdiction and in priority as they are individually scored utilizing the LMS project scoring criteria. Depending upon the grant program or alternative funding source, those sources or grant programs may have their own prioritization process, which may compliment or negate the local prioritization. A list of interested people can be found in each of the jurisdiction’s repetitive loss property coordinator offices.

b) Severe Repetitive Loss Properties

SRIA and Escambia County will continue to assess the SRL list, to encourage and promote the property owners to mitigate their properties.

**C. Repetitive Flood Claims Grant Program**

The Repetitive Flood Claims<sup>63</sup> (RFC) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108-264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al).

<sup>63</sup> For more information regarding RFC eligibility and program specifics visit:

Up to \$10 million is available annually for FEMA to provide RFC funds to assist States and communities reduce flood damages to insured properties that have had one or more claims to the National Flood Insurance Program (NFIP).

FEMA may contribute up to 100 percent of the total amount approved under the RFC grant award to implement approved activities, if the Applicant has demonstrated that the proposed activities cannot be funded under the Flood Mitigation Assistance (FMA) program due to lack of State or local capacity, which includes either inability to manage the sub grant or lack of 25% match.

#### **D. FEMA's Map Modernization Program**

On September 29, 2006, Escambia County, the City of Pensacola, SRIA-Pensacola Beach and the Town of Century adopted the newly created Flood Insurance Rate Maps. The maps were created as part of the FEMA Map Modernization Program.<sup>64</sup> The fieldwork and analysis for the 2006 FIRMs was significantly underway when Hurricane Ivan struck the Alabama/Florida region in September 2004. Following extensive discussion, it was decided that adoption of the FIRMs would move forward, with an understanding that a new coastal model and study was warranted based upon the impact experienced in Ivan. A new coastal model has been created and was used to create the recently adopted FIRMs for coastal Mississippi. A Coastal Vulnerability Study for Escambia County was completed in 2016.<sup>65</sup>

#### **E. Hazard Mitigation Grant Program (HMGP)**

The Hazard Mitigation Grant Program (HMGP)<sup>66</sup> was created by section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The HMGP provides funding for communities to implement long-term hazard mitigation measures that reduce or eliminate risk to people and property from natural hazards and their effects. Funding is made available following a Presidential declaration in the state. The amount available to the state for HMGP projects is based on a percentage of the federal funds expended on the Public and Individual Assistance programs for the disaster. The objective of the HMGP is to protect lives and significantly reduce or eliminate future disaster expenditures. HMGP grants can be awarded to eligible applicants throughout the state, regardless of the boundaries of the disaster declaration.

Eligible applicants include local governments, private non-profit organizations, and Indian tribes or authorized tribal organizations. Federal funds are available for up to 75% of eligible project costs. The remainder of the cost for the project is the responsibility of the applicant and must be non-federal funds. The HMGP can be used to fund projects to protect either public or private property.

In September of 2008, FEMA implemented a Wildfire Mitigation Policy for the HMGP. This policy ensures national consistency in the use of HMGP funds for wildfire mitigation projects. Specifically, the policy describes the availability of HMGP funds for defensible space, structural protection through application of ignition resistant construction, and limited hazardous fuels reduction to protect life and property.

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<https://www.fema.gov/repetitive-flood-claims-program>.

<sup>64</sup> <https://www.fema.gov/map-modernization>

<sup>65</sup> [https://floridadep.gov/sites/default/files/CRI\\_Coastal\\_Vulnerability\\_Assessment\\_Escambia.pdf](https://floridadep.gov/sites/default/files/CRI_Coastal_Vulnerability_Assessment_Escambia.pdf)

<sup>66</sup> <https://www.fema.gov/hazard-mitigation-grant-program>

The LMS completed project list for the County can be found in Appendix I-M.

#### **F. Pre-Disaster Mitigation Grant Program (PDM)**

The Pre-Disaster Mitigation Grant Program (PDM)<sup>67</sup> was created by section 203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act, 42 U.S.C. 5133. The PDM program provides an annual mitigation funding source to communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures, while reducing reliance on federal funding from actual disaster declarations. The PDM is a nationally competitive grant program. Interested applicants can apply for either planning or project grants. The requested federal share of a planning project is limited to \$1 million and the requested federal share of the project grants is limited to \$3 million.

The following entities are eligible to apply for PDM funding assistance: state-level agencies including state institutions (e.g. state hospital or university); federally-recognized Indian tribal governments; local governments, including state-recognized Indian tribes, authorized Indian tribal organizations; public colleges and universities; and Indian tribal colleges and universities. Private Non-Profit (PNP) organizations and private colleges and universities are not eligible to apply for a PDM grant. However, an eligible, relevant state agency or local government may apply on the behalf of the private entity.

In September of 2008, FEMA implemented a Wildfire Mitigation Policy for the PDM. This policy will ensure national consistency in the use of PDM funds for wildfire mitigation projects. Specifically, the policy describes the availability of PDM funds for defensible space, structural protection through application of ignition resistant construction, and limited hazardous fuels reduction to protect life and property.

Escambia County has submitted multiple projects for consideration and will continue to solicit more opportunities in the program.

#### **G. Community Development Block Grant (CDBG)**

The Community Development Block Grant Program<sup>68</sup> is a Federal program that provides funding for housing and community development. In 1974, Congress passed the Housing and Community Development Act, Title I, and created the program. The program, administered by the U. S. Department of Housing and Urban Development, consists of two components - an entitlement program that provides funds directly to urban areas and a small cities program which funds rural community activities. The program consolidated several grants relating to housing and infrastructure, which did not adequately address local needs. In 1981, the law was amended to allow states to administer the program on behalf of small local governments, or non-entitlement communities. Since then several changes have been made to the law. The most recent was incorporated into the Cranston-Gonzales Affordable Housing Act of 1990. Mandates now require that the states:

- Adhere to many of the stringent requirements imposed by the U. S. Department of Housing and Urban Development on entitlement communities;

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<sup>67</sup> <https://www.fema.gov/pre-disaster-mitigation-grant-program>

<sup>68</sup> <https://www.hudexchange.info/programs/cdbg-dr/>

- Target low- and moderate-income persons (70% of the funds must be used for activities that benefit such persons);
- Provide for citizen and public participation;
- Allow home ownership assistance as an eligible activity.

The program has five preliminary categories:

- Housing;
- Public Services;
- Real Property Improvements;
- Public Facilities; and,
- Economic Development.

a) Section 108 Loan Guarantee Program

The Florida Legislature requires that each of the first four categories be allocated funding based on a percentage of the total amount received from the U. S. Department of Housing and Urban Development.

While CDBG focuses its efforts as described above, CDBG funds have been used for common and less typical mitigation activities that lessen the impact of a disaster. Mitigation activities have involved the use of CDBGs to fund buyouts of real property in areas prone to a recurrence of the event. For instance, following the Midwest floods of 1993, CDBG and Hazard Mitigation

Grants from the FEMA were used to acquire privately-held real property within flood plain areas in the nine affected states and to convert the land to public uses, such as recreation or allowing it to return to its natural state. CDBG funds were also used to construct and repair levees in an effort to reduce the area's vulnerability to future flood losses. Following the Midwest floods of 1997, Congress again appropriated CDBG funds to cover buyouts of privately- held land in flood-prone areas in the affected states. Following the terrorist attacks of September 11, 2001, Congress appropriated \$2 billion under P.L. 107-117 for disaster relief and recovery assistance to New York. The act earmarked at least \$500 million for economic losses to individuals, businesses, and nonprofit organizations in an effort to mitigate the attack's economic impact. That provision required HUD to implement the program within 45 days after passage of the act. It limited economic loss grants to small businesses located within a designated area to no more than \$500,000. In addition, the act earmarked at least \$10 million for the tourism and travel industry.

All of our jurisdictions take advantage of this program.

b) Community Redevelopment Agency – (Utilizing CDBG and Other Funding to Fund Mitigation Activities in Select Neighborhoods)

The County established the Redevelopment Agency in 1995. Since then five redevelopment areas have been designated. These areas focus on historic urban residential and commercial centers in the community. Most of these neighborhoods are located within fifteen minutes of

downtown Pensacola and offer a range of urban environments from waterfront settings to large tree covered lots and are served by numerous major commercial corridors.

The Agency is tasked with enhancing the quality of life within the five redevelopment areas and Enterprise Zone by encouraging private sector reinvestment, promoting economic development and providing public sector enhancements. This is being accomplished through numerous programs and initiatives available to residents, commercial property owners and tenants living and working within these areas. CRA uses a combination of Tax Increment Financing, Community Development Block Grant and other grant funding sources and partnerships to finance its programs and initiatives.

The programs available for funding residential mitigation activities are as follows:

*1) Residential Rehab Grant Program (Includes eligible mitigation retrofit construction)*

This program provides a \$6,000 matching grant to residential property owners of single-family dwellings located within Escambia County's redevelopment areas zoned for residential use. The program is used to upgrade the property value, and safety of residential properties. Eligible projects include connection to sanitary sewer, electrical rewiring, installing new central Heating and Air Conditioning systems, installing a new roof, installing new storm shutters, and installing new windows.

*2) Emergency Tree Trimming Program*

This program provides financial assistance to income-qualifying homeowners located in the redevelopment areas with the removal or trimming of damaged, diseased trees or limbs. The tree or limb must present a danger to a primary residence or a neighbor's primary residence if it were to fall.

More information about the Residential Rehab Grant Program is provided in Appendix I-E.

**H. Emergency Management Preparedness and Assistance Grant (Base and Competitive)**

In the hours and weeks following the South Florida landfall of Hurricane Andrew in late August of 1992, many instances of dedication and effectiveness were evident during the response and recovery efforts, but there were also many recurring themes of significant deficiencies and delays.

To ensure the Andrew experience would be documented and deficiencies would be identified, the late Governor Lawton Chiles appointed a blue-ribbon review committee. The Governor's Disaster Planning and Response Review Committee's final report, on January 15, 1992, made 94 specific recommendations for improvements to Florida's readiness for future disasters. Recommendation #94 resulted from the finding that Florida devoted insufficient resources to emergency management programs and recommended the creation of the Emergency Management Preparedness and Assistance (EMPA) Trust Fund to implement necessary improvements in its emergency preparedness and recovery programs and facilities. Based largely on the review committee's work, the Florida Legislature subsequently enacted major revisions to Chapter 252, F.S. and funded the EMPA Trust Fund.

During the ten years that have followed the initiation of programs in this fund, much progress has been made toward resolving problems and enhancing capabilities. The following information offers a summary of the major program highlights.

- Funds are awarded annually to eligible applicants for competitively selected project proposals under two separate programs. Projects are designed to be completed in approximately one year. Specific selection criteria and other guidelines are detailed in Rule Chapter 9G-19, F.A.C. and in the Applicant Packet.
- The Emergency Management Competitive Grant Program is designed to implement projects that will further state and local emergency management objectives. Eligible applicants are state or regional agencies, local governments, and private non-profit organizations. Awards are capped at \$300,000 per project.
- The Municipal Competitive Grant Program is also designed to implement projects that will enhance emergency management objectives, but the funds are specifically earmarked for municipalities only. Eligible applicants are legally constituted municipalities which maintain an emergency management program and are signatory to the Statewide Mutual Aid Agreement. Awards are capped at \$50,000, and only one entry per municipality per funding cycle may be considered.
  - Examples of increased capabilities resulting from these competitive programs include:
    - Storm shelter and critical facility retrofitting and equipping (e.g., provision of generators and wiring, cots, nurse kits, special needs requirements, shuttering, re-enforcement/hardening of structures, volunteer training).
    - Informational studies and plans relating to evacuation scenarios, hurricane insurance risk assessment, transportation methodologies, and business recovery strategies.
    - Warning/alert devices such as NOAA weather radios, sirens, and reverse 911 systems.
    - Response activities and equipment
    - Public disaster education projects, including targeted training for elders, children, condominium/hotel occupants; radio and television PSA's; and brochures/publications.
    - Initiation of LMS (LMS) development activities; continued funding of LMS identified projects.

Revenues for the trust fund are disbursed through the Department of Revenue from a surcharge collected and remitted to the State by insurance companies on Florida homeowners (\$2/year) and business owners (\$4/year) insurance premiums.

Though the focus of this program is on emergency management operations enhancement many mitigation initiatives can be argued to benefit the emergency management operations for community.

#### **I. State of Florida Shelter Initiative Grant Program**

This program is an annual grant-funding program that has historically provided State funds to identify and retrofit as necessary, qualified hurricane shelter spaces for every community in Florida. The requirement by statute is to eliminate shelter space deficits as identified in the 1999 Northwest Florida Hurricane Evacuation Study in the State of Florida. Escambia County, with all



of its jurisdictions, is taking advantage of this program to continually retrofit schools across the County to create quality and improved shelter spaces for our citizens and visitors.

#### **J. Urban and Community Forestry Grant Program**

As part of the federal government's Urban and Community Forestry Matching Grant Program, funds will be available to organizations to develop or enhance their urban and community forestry programs.<sup>69</sup>

Awards are made as 50-50 matching grants (50 percent federal, 50 percent applicant) to local governments, educational institutions, Native-American tribal governments, and legally organized nonprofit (volunteer) organizations in the five grant categories listed below.

##### a) Local Government Program Development

This includes tree ordinance development or revision, tree inventories, management plans, master plans, in-house training, staffing, student internships, and equipment purchases.

##### b) Demonstration or Site-Specific Projects

This includes tree planting on public land, tree protection projects, and tree maintenance projects.

##### c) Nonprofit Administration

This is for personnel costs only and is meant to help nonprofit groups become more effective in their ability to support and promote local tree management programs.

##### d) Urban Forestry or Arboricultural Training

This category is intended to provide cost-share funding for the development of new or additional continuing education courses or degree track educational courses in urban forestry or arboriculture.

##### e) Information and Education

This category includes educational programs, Arbor Day programs, Workshops/Training sessions, Youth programs, PSA (public service announcements) development, volunteer training, purchasing or developing brochures and exhibits.

A maximum of \$10,000 will be awarded to successful applicants for demonstration and for information and education projects. Staffing grants will be limited to three years, and the applicant will have to reapply on an annual basis. Otherwise, the maximum award is \$20,000 for each applicant, and \$20,000 for individual practices.

#### **K. Flood Warning Program Plan**

Escambia County utilizes the CEMP to respond and recover from natural disasters to include flooding. The Flood Warning Plan supports the CEMP Appendix I-K as a more detailed program outlining the capabilities and processes for threat recognition and information dissemination to

<sup>69</sup> <https://www.fdacs.gov/Divisions-Offices/Florida-Forest-Service/For-Communities/Urban-Forestry/Florida-Urban-and-Community-Forestry-Grants>

the general population, as well as providing historical data and information about flood forecasting. The Plan was developed to provide a more detailed tool for planning purposes and for decision-making processes during a flooding or potential flooding disaster event. The Plan also provides details and descriptions of our processes and our information assessment tools that also provide Escambia County and all of its jurisdictions credit points in the CRS program. Appendix I-O contains a copy of this plan.

#### **L. National Florida Insurance Program (NFIP) and Community Rating System (CRS)**

Flood insurance is designed to provide an alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the Nation's floodplains. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance. Flood insurance policy information is listed on the next page.

The Escambia County Development Services Department and the LMS Strategy Committee will continue to promote and educate the community about the benefits of this program and its implications on reducing flood hazards throughout the community. Jurisdictions within Escambia County are continuing to conduct a variety of activities associated with the NFIP. Activities include, but are not limited to:

- Collecting flood elevation certificates
- Eliminating repetitive flood loss properties
- Informing residents of map changes
- Adopting new maps

As the jurisdictions of Escambia County adopt the Local Mitigation Strategy, the list of actions related to the NFIP within individual jurisdictions will continue to be refined and updated to reflect the most comprehensive list of possible activities within the LMS relating to the NFIP and CRS.

The Community Rating System (CRS) is a voluntary program for NFIP-participating. The goals of the CRS are to reduce flood losses, facilitate accurate insurance rating, and to promote the awareness of flood insurance. The CRS has been developed to provide incentives in the way of premium discounts for communities to go beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding. At this update, Escambia County (Class 6), the Santa Rosa Island Authority (Class 5), and the City of Pensacola (Class 7) are participating in the CRS as of October 1, 2019. The Town of Century is not currently participating in the program, as the staff available to work on such activities is extremely limited, as well as, the fact that there are only six policy-holders residing in the Town. The Town also has minimal flood zones found within the jurisdiction as identified on the FEMA flood maps.<sup>70</sup>

All three jurisdictions are continuously working toward improving their CRS ranking. More detailed information about the CRS program can be found at <https://www.fema.gov/national-flood-insurance-program-community-rating-system>.

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<sup>70</sup> The Town of Century is no longer exploring the CRS program.

**Table 19: Flood Insurance in Escambia County<sup>71</sup>**

<b>Community Name</b>	<b>Policies In-force</b>	<b>Total Coverage</b>	<b>Total Written Premium + FPF</b>
<i>City of Gulf Breeze</i>	3	\$800,000	\$1,432
<i>City of Pensacola</i>	2,454	756,678,500	\$1,620,203
<i>Escambia County</i>	13,645	\$3,661,000,500	\$5,982,563
<i>Pensacola Beach – Santa Rosa Island Authority</i>	3,697	943,370,800	\$3,100,368
<i>Town of Century</i>	3	\$850,000	\$1,703

**VI. MITIGATION PROJECT PRIORITY LIST:**

The project priority list is located in Appendix I-M of this plan and also includes completed and deleted project lists.

**A. Project Submission**

Projects may only be submitted to the LMS by those “eligible applicants” as defined by the grant program the project seeks for supplemental funding. The definition of “Eligible Applicant” by default, to be used by the LMS will be defined by 44 CFR 206.434. Should there be a funding program that is required to be supported by the LMS and expands the “eligible applicant” list from that of 44 CFR 206.434, the potential “eligible applicant” may present a project for approval and inclusion in the LMS project list upon verification and evidence of that information. 44 CFR 206.434 defines an eligible applicant as:

- State and local governments;
- Private non-profit organizations or institutions that own or operate a private non-profit facility as defined in Sec. 206.221(e);
- Indian tribes or authorized tribal organizations and Alaska Native villages or organizations, but not Alaska native corporations with ownership vested in private individuals.

Projects eligible for submission to the LMS for review, consideration, and ranking are to be deemed mitigation projects that are considered planning, educational, or construction type projects that seek to reduce or eliminate the risks of natural or man-made disasters.

The LMS project list is NOT for projects that would be considered capital improvement projects or general revenue supplanting projects that have no consideration for mitigation.

Individuals or private for-profit organizations are not “eligible applicants” and may not directly submit or recommend projects for inclusion into the LMS project list. Individuals or private for-profit organizations must solicit those projects to “eligible applicants” for them to sponsor and submit to the LMS. Those “eligible” applicants will also be responsible financially and contractually for implementing the projects.

<sup>71</sup> <https://www.fema.gov/policy-claim-statistics-flood-insurance>

As a guiding principle for project eligibility, the Hazard Mitigation Grant Program (HMGP) eligibility requirements will be used for definitions and eligibility, unless a specific grant program other than HMGP requires project coordination through the LMS.

Each project submitted for consideration will be required to have a “Benefit-Cost” analysis completed utilizing the appropriate FEMA approved benefit-cost modules and the LMS benefit cost module for local project ranking.

a) Project Eligibility

Typical eligible project types include:

- Planning Grants
- Educational outreach projects
- “Brick and mortar” construction type mitigation projects

Newly recognized and invited organizations that first discover the LMS and were not previously invited to participate in the LMS, may become a member in good standing immediately upon the submission of a membership form and are eligible to submit their mitigation projects as the rules allow. The organization then must maintain their membership in good standing moving forward as previously defined, to keep their projects active and eligible on the project list.

For those project sponsoring agencies that decide to participate only long enough for their projects to be awarded funding and do not participate beyond the time that their project receives funding, that entity will not be able to present a new project for inclusion in the LMS project list and funding consideration and will not receive LMS support until they have re-established their membership in good standing for a period of one year. An organization that does not meet the membership attendance requirements for the second time after their second project has been funded, will have to re-establish membership over a two-year period before any new project from that organization will be accepted and supported by the LMS.

For those projects that may fall under the responsibility of two or more organizations, the financially responsible organization must maintain their membership “in good standing” to remain eligible through the LMS. If two or more organizations are financially responsible, then all of the organizations must maintain their membership in good standing to remain eligible and have support from the LMS.

Exceptions can be made to any rule, guideline, procedure, or requirement of the LMS by a majority vote of an LMS Board quorum, and if a project is deemed to be a significant benefit to the community and the LMS does not want to punish the community for the lack of participation by any one organization.

b) Types of Mitigation Projects

The tools and techniques for hazard mitigation fall into three broad categories: design and construction guidelines (structural), environmental interventions, and non-structural interventions. Structural mitigation projects identified through the LMS may include, but not be exclusive of, the strengthening of vulnerable structures, public facilities, and public

infrastructure to withstand hurricane forces wind and flying debris, elevation of structures to protect them from damage caused by flooding, construction of storm water flood control facilities, and completion of small-scale drainage improvements to existing facilities.

Environmental intervention refers to actions that reduce the vulnerability of communities by armoring them against the elements. This term commonly evokes images of works of engineering as well as beach restoration and planting vegetation on loose hillsides and berms. Non-structural mitigation usually refers to policies for avoiding hazard impacts. These policies may include choosing to apply zoning and density restrictions, acquiring land in the floodplain, promoting citizen awareness of hazard risk or other planning initiatives. The non-structural mitigation initiatives identified in the LMS can also include educational and outreach programs and the updating of the Post-Disaster Re-Development plan.

The implementation of a mitigation program is a key component in the achievement of a “sustainable community,” one in which citizens, businesses and institutions are protected from the disruptions and impacts from emergencies and disasters.

c) Project Submittal Modifications

The following Project Submittal Modification process was instituted on September 20, 2005. Once a project has been accepted and put on the LMS project list and ranked, a project may be modified only twice per year, June 1 and November 30, where if a score improves based upon the modification by 20% or less of the points, the LMS will automatically accept the improved scoring and appropriate ranking change, barring any glaring inconsistencies. If there is more than a 20% cumulative change in points in any given year, the project will receive a full review of the score by the Project Review and Ranking Technical Support Group.

**B. Responsible for Mitigation Actions:**

The implementation and completion of approved mitigation projects will be administered by the jurisdiction, agency, or organization that proposed the project. On an annual basis, the Escambia County Development Services Department, in coordination with the LMS Strategy Committee, will check the status of the mitigation initiatives to ensure that efforts have been made to complete any projects on the LMS project list. This approach is utilized as only the jurisdiction, agency, or organization that proposed the project has the authority or responsibility for implementation. During the plan implementation process, the LMS Strategy Committee monitors the status of projects, assigns priorities, and will take other action for support and coordination.

a) Cost-Benefit Analysis:

When a project is submitted to the LMS Strategy Committee, it must be accompanied by a cost-benefit analysis (CBA) for consideration. Projects not including a CBA will be returned to the proposer for completion of the appropriate information prior to resubmission. A copy of a form that has been accepted for documenting the CBA has been included in Appendix I of this plan behind the project lists. This form can be utilized by the proposer to document what the costs are associated with a proposed project and estimate the value that will be received as a benefit resulting from completion of the project. The cost benefit analysis results will be factored into the prioritization process to determine the project ranking.

b) Actions Completed:

Any project that has been funded and completed will be added to the Completed Project List regardless of the source of funding. The County maintains all project lists for Escambia County. The project list can change as funding, requirements, etc. change and/or are updated. For deleted projects, an explanation is included to document the action.

## VII. IMPLEMENTATION

The LMS implementation strategy will identify projects and activities that will support the tasks identified in the Mitigation Goals and Objectives section to accomplish those goals and objectives. Those projects and initiatives identified will be activities that work to mitigate our community against the threat of potential natural and man-made disasters. They will be projects and activities that will provide a benefit to our citizens, their property, and our infrastructure.

Projects will be submitted to the LMS by eligible applicants, defined by the various grant programs or funding alternative sources that the LMS seeks to apply, for any particular project. The LMS project list is not a capital improvements supplemental funding stream. The process in which to get a project on the LMS project-ranking list is described in the following sections.

### A. Project Review and Ranking

Through the Project Review and Ranking Technical Support Group (Appendix I-D), a set of prioritization procedures have been developed that to judge projects solely on their hazard mitigation merits. The procedures and criteria were originally developed based upon the criteria required in the HMGP and FMA programs and what the LMS Committee felt was important community priorities based on professional experience and expertise, along with the public input in the planning process.

In 2005 during the review of the HMGP grant applications, the LMS Group members began questioning the validity of the project ranking criteria. Following extensive discussion at the Project Review and Ranking TSG and LMS Board level a new project scoring criteria was created and approved on January 17, 2006. The approved project scoring criteria is provide in Appendix I-J, and explained here.

The scoring criteria takes into consideration a lot of different areas of local concern to include: environmental impact, historical impact, population impact, whether a project is in one of our mapped hazard areas, etc., and includes a benefit/cost analysis of the project. The benefit/cost analysis is a mathematical formula that weighs the long-term costs of a project against the long-term benefits of a project. A final project ranking worksheet can be found in Appendix I-M. All of the County jurisdictions have identified projects or action items, with the exception of the Town of Century, which is currently re-evaluating its mitigation needs, and will incorporate any projects or action items in the near future as appropriate.

To submit a project to be ranked and placed on the project list, an eligible sponsoring agency or organization must complete both, the project worksheet found in Appendix I-J and a Pre-Disaster Mitigation/Flood Mitigation Assistance/Severe Repetitive Loss/Repetitive Flood Claim (PDM/FMA/SRL/RFC) program e-grant application<sup>72</sup>, or the application of the grant or supplemental funding source program that the project is targeting.

Each potential applicant will need to register with FEMA to complete applications if they are planning on submitting a Pre-Disaster Mitigation Grant Program of FMA project. This process may be coordinated through the Escambia County Development Services Bureau. The FEMA E-grants application will be the baseline application to be completed for all projects, unless there are

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<sup>72</sup> <https://www.fema.gov/mitigation-egrants-system-0>

projects that will not be seeking PDM/FMA/SRL/RFC funds but some other funding source specifically for the project being proposed, such as the Shelter Retrofit Program; our shelters will be funded from specifically dedicated shelter retrofit dollars that no other LMS project will be eligible to receive which requires an application different from PDM/FMA/SRL/RFC. For those not seeking PDM or FMA funds, an alternative funding source program application will be required.

For those projects seeking funds from programs that require a benefit/cost analysis to be completed, the appropriate FEMA approved benefit/cost module, or equivalent, will also need to be completed and submitted to the LMS with the project application for consideration. Should the alternate funding source specifically being targeted not require a benefit/cost analysis, then the benefit/cost analysis will not be required. The PDM/FMA/SRL/RFC application, or approved equivalent application, and the LMS Project Proposal forms, along with an appropriate completed FEMA Benefit/cost Analysis mathematical formula will be submitted to the entire LMS group for questions, comments, and review for consistency with the LMS. The questions, answers, and comments will be taken to the LMS project ranking TSG, who will then review the project, its score, and the comments presented by the LMS group, and review the application material for completeness and accuracy of information.

The project will then be presented to the LMS Board for acceptance, approval, and placement on the prioritized project list. Projects can be submitted at any time and will be presented to the group at the next LMS meeting for the review process to begin. Some projects submitted to the LMS for review may be time sensitive where the next LMS meeting may be too far in the future to be able to gain LMS support for a project looking to submit an application to a grant program with a quick deadline. In that situation, e-mail will be used to solicit the entire LMS group for comment, questions, and then to the LMS Board for final approval. If the Board accepts the project and provides its support for the project, the decision will be ratified at the next LMS meeting allowing for public comment.

The project list will be constantly updated as projects are submitted and completed. The Development Services Bureau will have the responsibility of maintaining and updating the project list. The Project Ranking TSG will keep all the Escambia County LMS Mitigation Proposal Forms on file. The PDM/FMA/SRL/RFC applications will be returned to the sponsoring agency once a decision has been made on the acceptance or rejection of a particular project. The responsibility for submitting applications to the various alternative funding source programs will remain with the projects sponsoring agency and not the LMS. When any project applications have been submitted and/or approved by any funding programs whether Federal, State, or local, the sponsoring agency must notify the Chairperson of the LMS so historical project documentation can be maintained and any LMS supporting letters can be provided. The current LMS project list is found in Appendix I-M.

#### **B. Funding for Projects Using the Project List**

As grant opportunities become available, the LMS will solicit those sponsoring agencies with projects on the LMS to apply for those grant funds. The LMS will solicit all projects and sponsoring agencies that would typically be eligible for the particular funding source and the provide support to those projects in the order in which they are ranked on the LMS project list.



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**C. Who May Submit Projects for Consideration**

Because the LMS group consists of both public and private organizations as well as the general public, consideration must be given to all projects that are consistent with the LMS goals and objectives, as well as, the funding sources we identify as potential opportunities. The LMS must also consider the changing and evolving philosophies of grant programs and other supplemental funding sources at the State and Federal levels, which now are requiring or providing additional points for projects that are included on the LMS project list.

Our specific requirements for applicants to the LMS will model applicant eligibility from 44 CFR 206.434, which defines eligible applicants as local governments, private non-profit organizations and institutions (501c's), Native American tribes and Alaskan Native villages. Any other organization or individual may recommend or suggest a mitigation project, but it must be sponsored and financially supported by one of the eligible organizations.

If a potential funding source requires a project to be on the LMS or can receive extra points, applicants other than the ones listed previously will be considered on a case-by-case basis. The sponsoring agency/applicant will be responsible for completing and submitting any applications for funding sources and will also need to consider the responsibility for any match requirements.

**D. Project Administrative Overview**

From the time of application, the individual and or the organization that submitted the project becomes responsible for the administration and management of the project. On a bi-monthly basis, during the scheduled LMS Board meetings, the applicant presents a project progress report to the LMS group all the way through completion.

**E. Prioritization of Projects**

Projects will be submitted to the LMS Strategy Committee for consideration and must include a cost-benefit analysis and a scoring form. Projects can be submitted to the group at any time and action will be taken at the next LMS Strategy Committee meeting. At any time, the LMS Strategy Committee may choose to review the project list and update the prioritization ranking. Environmental factors may dictate that some projects need to be considered due to current conditions that require a project to be moved up on the list for available funding. Other factors may lead to this review include declared disasters, funding availability, new or revised policy development, plan revision cycles, legal or fiscal restraints, and life safety priorities.

**F. Mitigation Project Ranking Process**

Escambia County and its municipalities, through the development of their LMS, have identified the need for the implementation of several hazard mitigation initiatives. Because the resources available for implementation of these mitigation initiatives are limited, it is vitally important that a priority is established for implementation of the mitigation initiatives. This prioritization will enable the participants in the strategy, as well as, outside agencies and the general public, to understand and justify which initiatives will be implemented first when resources become available.

A fundamental purpose in the prioritization of project initiatives is to allow the local decision-making to identify the mitigation projects or programs that are the most important to the community and should be implemented first. By establishing such priorities, applications to State and Federal

funding programs need not be competitive among County jurisdictions, but instead allow us to work collectively to determine which projects are more important to the community than others, and focus efforts on the higher ranked projects first.

In order to prioritize the identified mitigation initiative, the Escambia County LMS Group has developed a point-based system to judge the merits of a project and assign it a priority score. The Escambia County Mitigation Initiative Prioritization Worksheet is included In Appendix I-J.

a) Project Prioritization Criteria

There are thirteen categories by which individual mitigation initiatives are evaluated. Each category has an associated point schedule outlined for a total possible score of 125 points. In the event that more than one project receives the same priority score, there will be a “tie-breaker” defined to rank the projects. The “tie-breaker” will be applied at the time that the applications are actually being completed for possible funding. The project that can ensure that the required matching funds will be available will receive priority over a competing project that cannot guarantee matching funds.

The criteria by which the priority score is obtained can be found within the Project Prioritization Criteria documentation in Appendix I-J.

b) Deductions

To facilitate a proactive approach to mitigation and to not reward projects for ignoring mitigation up front with respect to new construction, new construction projects that do not take mitigation into consideration will receive point deductions based on their level of consideration. A date has been decided to be used to create a cut-off for structures that will either have the points negatively reflected or for structures that will be exempt from the point deduction. Any structure seeking to be placed on the LMS Project list and had completed construction before December 31, 1999 will not be subject to review under this criteria and will be subject to point reductions in this section.

- If a structure had construction completed on or after December 31, 1999, it will be subject to review and possible point reductions under this section as defined here:
- If construction of the structure has not yet been completed, mitigation techniques were fully considered in design and engineering, mitigation has been budgeted, and the mitigation will be implemented, regardless of the identification and receipt of supplemental funding, deduct 0 points.
- If construction of the structure has not yet been completed, mitigation techniques were fully considered and included in design and engineering, but the mitigation techniques were not budgeted for construction and would not be implemented without supplemental funding, deduct 15 points.
- If mitigation was not considered, not in design or engineering, not in the budget, and the structure not yet built, then deduct 30 points.
- If the structure has been completed on or after December 31, 1999, mitigation was never considered or budgeted in design, engineering, or construction, reduce points by half.

NOTE: It is important that the person(s) responsible for completing the prioritization worksheet should be prepared to explain all assumptions and show any pertinent supporting data to validate the priority score achieved. This documentation of data utilized can prevent any disputes as to the validity of the priority score obtained for each project.

The LMS project proposal form can be found in Appendix I-K.

c) Completed Projects

Regardless of how a mitigation project was funded, if it was submitted to the LMS and included on the LMS project list, we request that an LMS project closeout form be completed. It is a simple form that provides a brief summary of the project so that all projects that have been considered by the LMS are documented as potential success stories in our attempt to better prepare and mitigate our community. This form should be completed shortly after a project has been completed, turned into to the LMS secretary for record keeping, and then the project will be added to our LMS completed project list for historical documentation. The LMS project closeout form can be found in Appendix I-M.

d) Mitigation Project Ranking Process

1) *FEMA Approved Benefit/Cost Modules*

Should a project being submitted to the LMS for inclusion in the Project List have the intention of seeking funds from and of the various FEMA grant programs that require a FEMA Approved Benefit/Cost Module to be completed upon application submission to FEMA, then that Benefit/Cost Module and appropriate grant program application will also be required to be completed and submitted with the project application to the LMS for consideration. The FEMA B/C module results will not be used for the LMS ranking process, as all the projects will be consistently ranked locally based on the Benefit/Cost formula created by the LMS. The completion of the application and FEMA B/C analysis as required will be a requirement for all sponsored projects before the LMS will consider projects submitted to the LMS.

2) *Incorporation of Mitigation Philosophies into Other Organizations, Policies, and Plans*

- FEMA Region IV has taken the approach under 44 CFR 201.6(c)(4)(ii), to require that the LMS plan must include a description of the process by which local jurisdictions incorporate the requirements of the mitigation plan into other planning mechanisms such as a comprehensive or capital improvements plan, when appropriate. Escambia County's LMS plan is to bring our philosophies and recommendations to those already existing regulating boards and documents and to try and improve and incorporate those mitigation philosophies and recommendations into those already existing planning documents and development codes.
- As part of the planning process, the Planning TSG identifies current plans, programs, policies/ordinances, and studies/reports that augment or support mitigation planning efforts (Appendix I-E). The LMS Working Group will be the mechanism for ensuring that entities integrate hazard mitigation into its future planning activities. Presently, the LMS Plan is integrated into the Escambia County Comprehensive Emergency Management Plan (CEMP) and principals

incorporated into the Escambia County Comprehensive Plan (CP). The LMS Coordinator will continue to ensure that policies, programs and mitigation actions are consistent between the LMS Plan and the Escambia County CEMP, and CP. Further, all Escambia County jurisdictional entities that develop a separate CEMP are required to be consistent with the Escambia County CEMP.

- The CEMP identifies the LMS as the focal point for mitigation planning and decision making for Escambia County. It should be noted that most municipalities have indicated that the vulnerability assessment section of the LMS Plan has been incorporated into the Comprehensive Emergency Management Plan, and is also utilized in the same manor to help develop Continuity of Operations (COOP) Plans.
- Escambia County, the City of Pensacola, and the Town of Century utilize the LMS as a planning tool to help identify potentially vulnerable assets and to develop mitigation strategies to harden critical infrastructure and facilities. Additionally, Escambia County utilizes LMS data to support changes to the Escambia County Comprehensive Plan and Land Development Code (zoning and land use) to encourage development and facility siting outside of higher hazard areas as appropriate.
- Escambia County's LMS plan is to bring our philosophies and recommendations to those already existing regulating boards and documents and to try and improve and incorporate those mitigation philosophies and recommendations into those already existing planning documents and development codes.
- The LMS is and will continue to be an organized "awareness group" that provides suggestions, ideas, concepts, philosophies, principles, and recommendations to other regulating bodies, and to get those regulating bodies to "buy-in" to our LMS principles and make changes directly to the development regulations that better mitigate our community against natural disasters, rather than trying to make the LMS plan a requirement of those other regulating organizational documents. For example, if the LMS develops hazard maps, hazard study data, or any other valid scientific data that supports the need for change in our development codes and regulations, the LMS will present that information for consideration to the relevant regulating bodies in an attempt to incorporate the new data and philosophies into the already existing processes.
- The LMS will continue to be the lead with regard to mitigation issues and try to set the example for what we as a community should be doing to better prepare ourselves for future potential disaster scenarios. The LMS is not a regulating organization, should not become a regulating organization, nor do we wish to become one.

#### **VIII. PLAN MAINTENANCE:**

The LMS Strategy Committee will submit the LMS planning document(s) for re-certification and re-adoption to the various governing boards of all four jurisdictions represented in the LMS document after each FEMA review and conditional approval every five years. As long as the basic philosophies of the LMS remain unchanged, any information, priorities, processes, procedures, data or other plan

information that is added to update the LMS plan between the FEMA five-year review cycle, will automatically become part of the original or most recent jurisdictionally approved LMS plan for each adopting jurisdiction.

Escambia County is committed to involving the public directly in updating and maintaining the Multi-Hazard Mitigation Plan.

The Planning/Plan Review TSG is charged with the maintenance of the document, the scheduling of updates and the implementation of approved changes to the Plan as directed by the LMS Group. The TSG will brief the LMS Group annually, on the LMS Plan update status. Community citizens can easily access LMS activities and projects, as well as, meeting schedules by accessing the Escambia County website<sup>73</sup>. The LMS Plan, along with meeting minutes and agendas are available for review on the website through Page Links and Attachments.

#### **A. LMS Monitoring and Evaluation:**

Escambia County continues to maintain the Local Mitigation Strategy as a mechanism to guide mitigation actions that are being pursued in both the incorporated and unincorporated areas. The LMS Plan is housed in the Escambia County Development Services Department. One of the primary methods by which to maintain the plan is to track the status of the mitigation initiatives. The County has devised a database management system that tracks the projects as they are completed in the county to monitor progress. The Escambia County LMS Strategy Committee will make attempts to complete projects within five years (before the next plan update) as funding becomes available.

The LMS Strategy Committee will meet at least annually to discuss any projects or changes that might have occurred that would be addressed by the update. Meetings can and will be scheduled following after times of natural disaster events and other times as deemed appropriate by the LMS Strategy Committee Chair. Criteria used to evaluate the LMS Document and activities should include and are not limited the following situations:

- Change in requirements at any governmental level
- Changes in development trends and land use
- Completion of existing mitigation projects and introduction of new goals
- Changes in policy, procedure, or code
- Changes in building codes and practices
- Review of legislative actions that could affect funding of mitigation efforts
- Changes in Flood Insurance Rate Maps, National Flood Insurance Program, etc.

These meetings will be organized by the Escambia County Development Services Department. This meeting will result in the preparation of the Annual LMS Progress Report that will be submitted to the state and satisfy the annual CRS program requirement as well. Escambia County Development Services Department will maintain an up-to-date list of all active Strategy Committee members will be utilized as a distribution list for notification.

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<sup>73</sup> <https://myescambia.com/our-services/development-services/planning-zoning/local-mitigation-strategy>

Since the last revision of the LMS there has not been any significant changes to development in Escambia County that would impact the hazards identified within this plan. As of this writing, there are no anticipated development changes or trends that would impact these hazards in the future. This of course is subject to change in the future and will be a topic to be considered at future LMS meetings.

At each LMS meeting, representatives will report on the current status of projects, and if a project's scope or details have changed. It may also be reported that the project has been cancelled all together, in which case the project will be removed from the mitigation initiative prioritization list with an explanation. All changes and activities as a result of the LMS meeting will be considered part of the overall evaluation process, which will be administered and documented by the Escambia County Development Services Department and become an official component of the LMS.

The LMS Strategy Committee will use the following criteria, among others, as a starting point for monitoring the overall LMS process:

- Goals and objectives address current and expected conditions
- The nature, magnitude and/or type of risks have changed
- The current resources are appropriate for implementing the plan
- There are implementation problems, such as technical, political or coordination issues with other agencies
- The outcomes have occurred as expected (demonstrating progress)
- The agencies and other partners participated as originally proposed

**B. LMS Updates:**

An important key of the planning process is to begin thinking about the steps to update the plan prior to the next review date, which is in 2020. Revisions to the plan should be well underway in 2019, with the Planning Committee providing drafts to state staff for preliminary comments ahead of time. This will ensure that the plan remains in active status and does not lapse for any period of time between plan review periods. Based on experience, it is easy to underestimate the time that it takes to complete the plan update.

In addition to the ongoing maintenance of the plan and LMS activities, the staff assigned to handle mitigation activities will be responsible for the Five-Year Update. The expectation is that continual review and refinements of the LMS Plan between plan updates will allow future updates to go smoothly. The update of the plan will take place by reading the document, identifying items to be fixed and utilizing a computer to make edits to the LMS document. This will occur as changes need to be made, instead of doing all of the changes at once for the five-year update. The Escambia County Development Services Department will continue to update the plan and be the responsible organization for this activity. This will be accomplished through continual review of the plan by LMS Strategy Committee and support staff, as well as input from the general public.

Notice of upcoming meetings will be posted for at least ten days prior to the date of the meeting and available by the following means:

- Escambia County LMS Website notice

- Email distribution list maintained by the Escambia County Development Services Department
- Notice published in local newspapers

Updates will be identified through the input of anyone with sound ideas to improve the plan from Escambia County staff, LMS Strategy Committee members and from the general public. Staff from the Development Services Department assigned LMS responsibilities will update the electronic version of LMS document. The LMS Strategy Committee will review the plan proposed to be submitted for the next update, guide changes as necessary and have final approval of the updated plan to be forwarded to state and federal counterparts for review and ultimate approval.

### **C. Implementation through Existing Plans and Programs:**

While some jurisdictions have taken steps towards integrating mitigation actions into their plans, some have not explicitly addressed these matters within their documents. It is important that some or all of the goals and actions of this local mitigation strategy be incorporated into other plans so that they will have a greater chance of being accomplished. Integrating plans is accomplished by having groups invite each other to each other's meetings. Information sharing can ensure that the common elements are understood and documented within the various plans within Escambia County. Through upcoming meetings that will be taking place with jurisdictions to adopt the Escambia County LMS, integrating the LMS with their respective planning mechanisms will be discussed and encouraged to promote further continuity.

The municipalities utilize the approved LMS in connection with their own plans and procedures to further mitigation efforts working closely with the county to continue making all of Escambia County resilient to the hazards identified.

While the majority of the planning efforts are aimed at flooding mitigation it is recognized that all hazards should be considered when revising plans and policies especially concerning land use, floodplain management, stormwater, development, etc. The LMS is adopted by all municipalities in Escambia County and individual municipal and county-wide plans take mitigation efforts into consideration when making revisions.

Through upcoming meetings that will be taking place with jurisdictions to adopt the Escambia County LMS, further integration of the LMS with their respective planning mechanisms will be discussed and encouraged to promote further continuity. Staff from the various organizations responsible for these individual plans will continue communicating with each other to further the process of better integrating these plans and improving overall dialogue about mitigation.

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**IX. AUTHORITIES AND REFERENCES:**

Code of Federal Regulations Title 44 201.6. *Local Mitigation Plans*. <http://www.ecfr.gov/cgi-bin/text-idx?rgn=div5&node=44:1.0.1.4.53>

FEMA (2011, Oct 1). *Local Mitigation Plan Review Guidance*, [www.fema.gov:7498/plan\\_review\\_guide\\_final\\_9\\_30\\_11.pdf](http://www.fema.gov:7498/plan_review_guide_final_9_30_11.pdf)

Florida Administrative Code 27P-22. *Hazard Mitigation Grant Program*, <https://www.flrules.org/gateway/ChapterHome.asp?Chapter=27P-22>

Florida Statutes. *Chapter 252 Emergency Management*. [http://www.leg.state.fl.us/STATUTES/index.cfm?App\\_mode=Display\\_Index&Title\\_Request=XVII#TitleXVII](http://www.leg.state.fl.us/STATUTES/index.cfm?App_mode=Display_Index&Title_Request=XVII#TitleXVII)

FEMA. *The Stafford Act*. [http://www.fema.gov/media-library-data/1383153669955-21f970b19e8eaa67087b7da9f4af706e/stafford\\_act\\_booklet\\_042213\\_508e.pdf](http://www.fema.gov/media-library-data/1383153669955-21f970b19e8eaa67087b7da9f4af706e/stafford_act_booklet_042213_508e.pdf)



**APPENDIX I: ATTACHED SUBAPPENDICES**

Maps, graphs, charts, tables, diagrams, and other additional data that provide support for the information presented in the LMS Plan are located in attachment Appendices A thru S. The appendices are available for review by the public and maintained by the Development Services Department.

**Table 20: List of Appendices**

<b>SUBAPPENDIX</b>	<b>CONTENT</b>
<b>A</b>	<b>44 CFR</b>
<b>B</b>	<b>LMS JURISDICTION ADOPTIONS</b>
<b>C</b>	<b>LMS ANNUAL INVITEE AND CONTACT LIST</b>
<b>D</b>	<b>TECHNICAL SUPPORT GROUPS (TSG)</b>
<b>E</b>	<b>MITIGATION PLANS</b>
<b>F</b>	<b>MAPS</b>
<b>G</b>	<b>VULNERABILITY ASSESMENTS</b>
<b>H</b>	<b>FUTURE LAND USE MAPS</b>
<b>I</b>	<b>MITIGATION SURVEY</b>
<b>J</b>	<b>APPLICATIONS AND FORMS</b>
<b>K</b>	<b>FLOOD WARNING PROGRAM</b>
<b>L</b>	<b>GOALS &amp; OBJECTIVES</b>
<b>M</b>	<b>CURRENT AND COMPLETED PROJECT LISTS</b>
<b>N</b>	<b>REPETITIVE LOSS PROPERTIES</b>
<b>O</b>	<b>BLANK</b>
<b>P</b>	<b>FEMA CROSSWALK</b>
<b>Q</b>	<b>MEMBERSHIP</b>
<b>R</b>	<b>MEETING DOCUMENTATION</b>
<b>S</b>	<b>ARCHIVED DOCUMENTATION</b>

**APPENDIX I-F: MAP SUMMARY**

The following maps and the data display the County hazards and potential losses, which shows the potential risk in Escambia County and re-enforces the need to protect County investments through mitigation and awareness.

**Table 21: Map Index**

<b>MAP #</b>	<b>NAME</b>
1	100 YR FLOOD PLAIN
2	PARCELS & 100 YR FLOODPLAIN
3	FIRE DPT & 100 YR FLOODPLAIN
4	FACILITIES_AND_100_YEAR_FLOODPLAIN
5	TOTAL_POPULATION_FLOODPLAIN
6	HURRICANE_STORM_SURGE
7	PARCELS_AND_HURRICANE_STORM_SURGE
8	FIRE_DEPT_AND_HURRICANE_STORM_SURGE
9	FACILITIES_AND_HURRICANE_STORM_SURGE
10	WINDZONES
11	FACILITIES_AND_WINDZONES
12	FIRE_DEPT_AND_WINDZONES
13	WETLANDS
14	PARCELS_AND_WETLANDS
15	FACILITIES_AND_WETLANDS
16	WILDLAND_FIRE
17	SCHOOLS_AND_WILDLAND_FIRE
18	FACILITIES_AND_WILDLAND_FIRE
19	SCHOOLS
20	SCHOOL_BOARD
21	BEACH_EROSION_LEVELS
22	DAMS_AND_LEVEES
23	REPETITIVE_LOSS_PROPERTIES
24	REPETITIVE_LOSS_PROPERTIES_MITIGATED
25	ESCAMBIA_CRA_OVERLAYS
26	TOTAL_POPULATION
27	REBUILD_NORTHWEST_FLORIDA
28	FIRE_DISTRICTS
29	COMMISSIONER_DISTRICTS
30	PLANNING_AREAS
31	EVACUATION_ROUTES
32	DRAINAGE_BASIN
33	EXISTING_LAND_USE
34	EVACUATION_ZONES
35	SPECIAL_FLOOD_HAZARD_AREAS

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<b>MAP #</b>	<b>NAME</b>
36	HAZMAT_HAZARDOUS_AREAS
37	POPULATION_DENSITY
38	COUNTY_STUDY_AREAS
39	FIRE_HAZARD_AREAS
40	WINDZONE_DEBRIS_LINE

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**APPENDIX II: LMS STRATEGY COMMITTEE BY-LAWS AND MEMBERSHIP****A. PURPOSES OF THE STRATEGY COMMITTEE**

The existence of the LMS is voluntarily required for our community under 44 CFR 201 & 206, and 44 CFR 78 to remain eligible to apply for the Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation (PDM) Grant Program, the Flood Mitigation Assistance (FMA) Grant Program, Repetitive Flood Claims (RFC) Grant Program, and the Severe Repetitive Loss (SRL) Grant Program. So, even though communities do not have to develop mitigation plans, Escambia County and its jurisdictions have opted to voluntarily develop a FEMA approved plan.

Based on the Federal requirements for a variety of grant programs, the LMS exists for two reasons: 1) the LMS exists to meet the 44 CFR 201 & 206 requirements so as to remain eligible for mitigation grant funding opportunities, and 2) the LMS exists to promote and strengthen our communities' ability to prepare for and recover from natural and man-made disaster events.

**B. MEMBERSHIP**

Participation in the Escambia County LMS Strategy Committee is voluntary by all entities. Membership in the Strategy Committee is open to all jurisdictions, organizations and individuals supporting its purposes.

**a) Membership in General**

As previously stated, attendance and participation are encouraged by everyone in our community. However, since participation in the LMS is voluntary and optional, the LMS has decided upon minimal requirements to achieve the benefits of membership from the LMS Group. Additional benefits may be identified as the LMS evolves and grows.

To become a member, a membership form must be completed and returned to the Secretary (or administrative support) of the LMS Board, Appendix I-J. Once the membership form has been completed and returned to the Secretary, membership will be immediate.

The LMS Membership List will be maintained by the Secretary (or administrative support) of the LMS Board and will be available for review as needed or requested.

**b) Maintenance of Standing**

However, to continue to be a member active and in good standing with the LMS, attendance and participation must be maintained in at least 50% of the LMS meetings on an ongoing basis. This 50% rate includes any and all meetings the LMS has scheduled or decides to schedule as the circumstances dictate. Only those meetings specifically identified by the Board will not be counted toward the participation rate. Such meetings may be workshops, etc. Membership also requires that a person or organization be a participating member of at least one of the six TSG's of the LMS. The choice of TSG will be determined by the individual or organization, but the goal will be to try and evenly distribute the members between the TSG's.

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Attendance and participation will also be required for the TSG meetings where 50% of the meetings must also be maintained on an ongoing basis from any scheduled or unscheduled TSG meeting to remain eligible as a member in good standing with the LMS, which will continue to allow a member to reap the benefits of membership.

c) Benefits of Membership

Members of the LMS will have the benefit of being able to sponsor an eligible mitigation project for inclusion and ranking in the LMS project list, allowing it to become eligible in various grant programs requiring LMS support. See the requirements for sponsoring a project in the project eligibility and submission sections of this plan.

Also, as a benefit of being a member in good standing, an organization's name and contact information will be posted in the LMS membership list on our website that is accessible to the general public. An organization's name only, will also be printed on LMS letterhead and any communications made by the LMS will carry the organization's name. Every effort will be made to include the organization's name as a member, as appropriate, in any outreach or educational effort made by the LMS. Continued marketing tools will be developed over time that will again help promote the LMS and the members. Inclusion of a business or organization's name as a member of the LMS does not constitute a recommendation or endorsement from the LMS for the services or products that the member business or organization provides to the public as a course of daily business.

Individuals not representing an organization, but merely themselves as a citizen of our community, may also become members if they wish. The LMS will make it standard practice to not publish the individual's name and address on the website, or to place their name on the LMS letterhead or other public outreach promotional efforts and tools, unless they specifically inform the LMS Board they wish that to occur. The LMS will make the initial effort not to make any personal information available using any of the LMS medias.

An additional benefit to members will be to promote their participation in trying to make a difference within the community in preparing and "reinforcing" our community against disaster. This ultimately is a partnership effort with everyone in the community for the benefit of everyone in the community.

Members may not use the LMS to promote their businesses or organizations without the written consent of the LMS Board. Businesses and organizations that are members of the LMS may promote their membership in the LMS Group and may promote/solicit interest in the LMS Group to increase membership and participation in the Group.

d) Recruitment of New Members

The Escambia County LMS plans to continue holding quarterly meetings and will continue to coordinate and encourage private, public, and non-profit interest and involvement. Efforts to expand the list of participating agencies and organizations include holding an informational workshop in order to provide new members and interested parties with materials regarding the LMS planning process and why their participation is important. Every effort will be made to offer a wide-variety of businesses and organizations the opportunity to participate in the planning process.

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**C. LMS Group Funding and Budget**

The LMS is an un-funded group that has no budget and no money to operate. The organization is purely voluntary and any tasks, action items, or efforts that require funding will be paid by donation or in-kind from our members or participants or any grants that may be acquired for such purpose. The projects typically are either funded through the normal general revenue process of the sponsoring agency or supplemental grant program funds, which may be identified and applications submitted for consideration. Specific processes for identifying projects on the project priority list will be described later in this document.

**D. Conflict Resolution Procedures**

The following procedures provide a formal process for the resolution of potential conflicts that may arise between governmental entities during and after the update of the LMS.

- The Escambia County Local Mitigation Steering Group will follow the guidelines contained in the Intergovernmental Coordination Element of Escambia County's Comprehensive Plan before including any Local Hazard Mitigation initiatives in the final LMS. This includes contracting and coordinating mitigation strategies with agencies within the county, adjacent local governments and any regional, state and/or Federal agencies that are likely to be affected by the initiative or having jurisdiction and/or permit authority over the initiative.
- Should a conflict arise during the coordination of mitigation strategies (as discussed above) that cannot be resolved through continued coordination and discussion, the LMS group will request use of the West Florida Regional Dispute Resolution process.
- This agreement will in no way limit the right of the County or any city therein to undertake any legal action necessary to protect its interests or citizens.

**E. LMS Organization**

It was decided by the LMS Group that there needed to be a more formal decision-making procedure in place, so that as the LMS grew and more people from other organizations and the community became interested and involved, a process would be in place to make what would hopefully be informed and equitable decisions. This decision-making process includes public comment and suggestions, and support from the LMS Group.

Having discussed the goals and activities of the LMS with County legal staff, it was determined that the LMS Board would be an organization that falls under the Florida Sunshine Law. In July 2007, the LMS Board adopted a new policy "To fulfill its responsibilities to the LMS Group, board members shall serve on a least one technical support group"; County legal staff reviewed the new policy and determined that the TSG meetings would now fall under the Florida Sunshine Law. As such, all LMS Meetings would be required to be publicized, meeting minutes and agendas would be appropriately available, and the meetings are open to the public.

The LMS Group will have a basic organizational structure. There will be five<sup>74</sup> Board Members; three of those will be officers as listed below; and three<sup>75</sup> TSG chair positions. The Board members have the authority to vote on the issues presented to the LMS and direct the activities and actions of the LMS TSG's. A quorum of three Board members will be required to make decisions and policy, with a majority vote of the quorum being the final decision of the Board. The TSG's will support the LMS Board as support staff in carrying out the tasks assigned in implementing the goals, objectives, and tasks of the LMS.

## F. **LMS Board**

### a) **BOARD ELECTIONS**

LMS Board elections will be held each January. On March 14, 2006 the LMS Board unanimously approved a new policy to stagger their elections from year to year, in order to keep continuity on the board by having some of the board members remain with the knowledge of on-going business and can keep the process moving forward with the addition of the new board members. In January 2011, the LMS Board revised the Board elections policy to reflect the change to a 5-member board.

Each position on the board was assigned a number: Chair- 1, Vice-Chair- 2, Secretary – 3, Board Member – 4, Board Member – 5. Elections will occur on even years for the even numbered positions and odd years for the odd numbered positions.

### b) **BOARD MEMBERSHIP**

There is no limitation as to which LMS members may hold the elected positions of the LMS Board or the TSG's. Any person interested and willing to participate may hold any one of the positions if nominated and elected by majority vote of the LMS members or TSG membership, as appropriate. The requirement of holding an elected position is:

- Be present at each of the LMS group meetings and any respective TSG meeting that they may chair,
- Be a member of at least one TSG,
- Participate in the process of the LMS and the TSG(s) as appropriate, take responsibility in accomplishing the goals and tasks of the LMS and the tasks assigned to the TSG's they may be responsible for as a TSG chairperson or as a regular LMS Group member, as appropriate.

The elected positions of the Board and TSG Chairpersons are identified in Appendix I-D.

## G. **Responsibilities**

LMS Board members should avoid communications with other Board members while accomplishing activities and tasks of the LMS with other Board members that may be considered violations of the Sunshine Law.

<sup>74</sup> The number of Board Members was changed to five members in October 2010, with a quorum of three present.

<sup>75</sup> The TSG members was set to three in October 2015.

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The responsibilities of each Board and TSG position are described in the sections that follow:

a) CHAIRPERSON

The Chairperson will facilitate each general LMS meeting and conduct business with the general “Robert’s Rules” for meetings. Decisions cannot be made without a quorum, but meetings and discussion can be held without a quorum. The chairperson is responsible for all the activities of the LMS and will be the spokesperson representing the LMS. The Chairperson or designee must sign all communications from the LMS. The chairperson is responsible, with the support of the entire LMS to implement the goals, objectives, and tasks as outlined in this plan.

b) VICE-CHAIRPERSON

The Vice-Chairperson will act as the secondary facilitator of the LMS supporting the Chairperson and all the actions of the LMS. The Vice-Chairperson is responsible, with the support of the entire LMS to implement the goals, objectives, and tasks as outlined in this plan.

c) SECRETARY

The Secretary may be responsible, with administrative support, for all LMS Group meeting agendas, sign-in sheets, meeting minutes, public notices, and the record keeping and archiving of such documentation that will be housed in the Development Services Department. This position will also be responsible for any written communications to and from the LMS. The secretary will act as the third in-line facilitator of the LMS supporting the Chairperson and Vice- Chairperson and all the actions of the LMS.

d) TECHNICAL SUPPORT GROUPS (TSG)

The general responsibilities of the TSG Chairpersons and the members will be to enhance the participation and membership of the LMS organization, to help mitigate our community against natural and man-made disasters, and to implement the goals, objectives, and tasks as outlined in this plan.

TSG’s are not limited to just their primary tasks. Other tasks may be assigned at the discretion of the LMS Board. The TSG’s are encouraged to support the efforts of other TSG’s with comments, suggestions, staffing needs, and resources as allowed by the Sunshine Law. It is the common goal of each TSG to holistically accomplish all the goals and objectives of the LMS Group regardless of their primary tasks. Tasks may fall outside the primary vision and tasks identified below.

There is no limit as to the number of members on any one TSG, but the LMS recommends that participation on TSG’s be distributed as equally as possible throughout all of the TSG’s. No one person may hold more than one Board position, but may chair more than one TSG. Any one organization may have multiple people elected on the Board.

1) *PROJECT REVIEW AND RANKING TSG*

- Review all project submissions from any organization seeking to have a project ranked on the LMS project list.



- Review the projects for eligibility and completeness of information on the project submittal forms,
- Refer the projects to the LMS Board for acceptance, approval, and ranking on the LMS Project List.

2) *HAZARD ASSESSMENT TSG*

- LMS document hazard identification,
- Vulnerability assessment,
- Development trends,
- Regulation assessment,
- Study data and information,
- Future land use analysis based upon the identified risks.

Note: All decisions to incorporate new or updated information will be at the discretion of the LMS Board.

3) *PLANNING/PLAN REVIEW TSG*

- Review the updates of the plan
- Coordinate future plan reviews and updates as directed by the LMS Board, this planning document, or as the federal or State requirements dictate, such as, but not limited to, 44 CFR 201 & 206.

4) *PUBLIC AWARENESS TSG*

- Provide Public Awareness strategies and recommendations to the LMS Board
- Carry out any public awareness campaigns
- Perform tasks to promote the LMS and the activities it implements to achieve the goals and objectives of the LMS through existing or newly developed medias or means.

5) *Authorized County Point of Contact*

Because the LMS is a County and municipality supported effort, the County Public Information Officer (PIO) will be utilized not only as a function of the Public Awareness TSG, but also tasked directly as a County Office to utilize their expertise to provide their services when coming into contact with media soliciting comments and information. They will also provide expertise and technical assistance with providing LMS related information to the media and general public. The County PIO will be the coordinator of those activities and may refer questions to the LMS Board members or to any other office that may be appropriate depending on the request for information.

H. **Actions by the LMS Committee Section**

a) **Meetings, Voting, and Quorum**

The LMS Board meetings will be held at a minimum on a calendar quarterly basis. Additional Board meetings may be scheduled at the discretion of the Board, and any additionally scheduled meetings will be included into the definition of “participation” as defined below.

The LMS Board meetings will follow the basic “Roberts’ Rules of Order” for public meetings.

TSG’s are not required to meet on a regularly scheduled basis, but should schedule meetings, as necessary to accomplish assigned tasks at the direction of the LMS Board. If the TSG wishes to have additional meetings outside of the need for the completion of tasks, they may set the schedule at their discretion.

TSG’s are encouraged to reach beyond their TSG members for the implementation of tasks to utilize skills, expertise, and assets from any participant or attendee of the LMS, or even beyond the LMS to any public, private, or non-profit agency or organization that is willing to assist in accomplishing the tasks at hand.

TSG meetings fall under the Sunshine Law requirements and are publicly advertised, each TSG will be required to maintain attendance/ participation records utilizing a sign-in sheet. Each TSG will develop meeting agendas and minutes for archiving. Should a TSG keep this documentation, they may be submitted to the LMS Board Secretary for proper documentation archiving.

b) Public Notice

Every Board meeting, at a minimum, will be publicly advertised within the standards of County advertisement for all other County Public Meetings. The LMS Board Secretary, with administrative support, will be responsible to create and submit those public notices. Creating and maintaining attendance records, agendas, and Board minutes for each meeting will be the responsibility of the Secretary, with administrative support. The Secretary, with administrative support, will also be responsible for electronically archiving the information, which will be maintained by Escambia County.