

Duval County, Florida
Local Mitigation Strategy
2015



Participating Agencies

Local Mitigation Strategy Working Group

Baldwin, Neptune Beach, Atlantic Beach and Jacksonville Beach Mayors
Chief Administration Officer - COJ
Chief Judge of the 4th Judicial Circuit - COJ
Chief of Staff - COJ
City Council President, COJ
Consolidated City of Jacksonville/Duval County Mayor
Consolidated City of Jacksonville/Duval County Security Coordinator
County Emergency Preparedness Chief
Director of Fire and Rescue, COJ
Duval County Legislative Delegation Chair
Duval County School Board Superintendent
Jacksonville Aviation Authority Managing Director
Jacksonville Port Authority Managing Director
Jacksonville Sheriff's Office, Sheriff
Jacksonville Transportation Authority Director
JEA Chief Managing Director
Florida Department of Health-Duval Public Health Officer
Public Works Director - COJ
Regulatory and Environmental Services Director - COJ
Representation from all Major Hospitals
Representation from each Military Branch
Representatives from civic, business, industry, labor, veterans, and professional groups

Local Mitigation Strategy Advisory Committee

AECOM, President or Designee
AMEC Foster Wheeler, President or Designee
AT&T, Director of Public Relations or Designee
Bank of America, President or Designee
Bi-Lo Holdings Corporation, Emergency Manager
Blue Cross Blue Shield Florida, Risk Manager or Designee
Citizen's Property Insurance Corporation, President or Designee
City of Atlantic Beach, Mayor or Designee
City of Jacksonville Beach, Planning Director or Designee
City of Jacksonville Emergency Preparedness, Director or Designee
City of Neptune Beach, Mayor or Designee
Duval County Public Schools, Superintendent or Designee
Eisman and Russo, President or Designee
Federal Alliance for Safe Homes, President CEO or Designee
Federal Emergency Management Agency, Region IV Bureau Chief
Fleet & Associates Architects/Planners Incorporated, President or Designee
Florida Department of Transportation, District 2 Chief or Designee
Florida Department of Health-Duval, Public Health Officer or Designee

Florida Division of Emergency Management, State Hazard Mitigation Officer
Florida Forest Service, District Chief or Designee
Florida State College at Jacksonville, Vice President of Construction or Designee
Gamma Brands, President or Designee
General Public
Jacksonville Airports Authority, Chairman or Designee
Jacksonville Chamber of Commerce, President or Designee
Jacksonville Electric Authority, CEO or Designee
Jacksonville Port Authority, CEO or Designee
Jacksonville Transportation Authority, CEO or Designee
Kustom Restoration, President or Designee
Langton and Associates, President or Designee
National Flood Insurance Program, Public Education Director or Designee
NOAA/National Weather Service Northeast, Chief Meteorologist
Neighborhoods & Housing Services, Division Chief or Designee - COJ
Northeast Florida Builders Association, President or Designee
Northeast Florida Chapter American Red Cross, President or Designee
Northeast Florida Chapter Association of Contingency Planners, President or Designee
Northeast Florida Coalition on Recovery/VOAD, Chairperson or Designee
Northeast Florida Regional Council, Chairperson or Designee
Paul Davis Restoration, President or Designee
Planning & Development Department, Director or Designee - COJ
Property Appraiser or Designee - COJ
Public Works, Director or Designee - COJ
Risk Management, Division Chief or Designee - COJ
St. Johns River Water Management District, Chairperson or Designee
State Farm Insurance Companies, Risk Manager or Designee
Suniland Roofing, President or Designee
Town of Baldwin, Mayor or Designee
United Way of Northeast Florida/ 211 Program, Director or Designee
University of North Florida Small Business Development Center, Director or Designee
US Army Corps of Engineers, District Chief or Designee
Wells Fargo, President or Designee

Risk Assessment Sub-Committee

AECOM, President or Designee

AMEC Foster Wheeler, President or Designee

Bi-Lo Holdings Corporation, Emergency Manager

City of Atlantic Beach, Mayor or Designee

City of Jacksonville Beach, Planning Director or Designee

City of Jacksonville Emergency Preparedness, Director or Designee

City of Neptune Beach, Mayor or Designee

Duval County Public Schools, Superintendent or Designee

Fleet & Associates Architects/Planners Incorporated, President or Designee

Florida Forest Service, District Chief or Designee

General Public

Jacksonville Electric Authority, CEO or Designee

Jacksonville Transportation Authority, CEO or Designee

NOAA/National Weather Service Northeast, Chief Meteorologist

Northeast Florida Regional Council, Chairperson or Designee

Public Works, Director or Designee - COJ

Town of Baldwin, Mayor or Designee

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Section I - Introduction

A. Local Mitigation Strategy

Purpose:

The Local Mitigation Strategy (LMS) is the major component of a state wide permanent process of community-based hazard mitigation planning (initiated through a partnership between the Florida Division of Emergency Management, Duval County's local governments and private sector organizations) which defines what must be done to minimize or avoid the impacts from future disasters. This unified all-hazards strategy has been developed and will be maintained by a committee of public and private sector officials, the Mayor's Security Emergency Preparedness Committee (SEPPC), which is known as the LMS Working Group. The work of gathering data, analyzing the information and preparing recommendations for project prioritization and ranking to mitigate hazards, is performed by the LMS Advisory Committee, also known as *Duval Prepares*. The Advisory Group membership include, but are not limited to, subject matter experts, liaisons to the municipalities within Duval County, members of State agencies, regulatory, military, public and private organizations, education, hospitals and members of the general public.

Since it is more cost effective to prevent losses than to recover from them, Duval County has developed a Local Mitigation Strategy. The Local Mitigation Strategy will be reviewed, revised and updated every year by the LMS Advisory Committee/*Duval Prepares* and approved by the LMS Working Group, the SEPPC, according to established criteria which includes a point system for rating potential mitigation initiatives, consistency with adopted mitigation guiding principles, goals, objectives and funding availability.

The heart of the strategy is a component called the Hazard Identification and Vulnerability Assessment (HIVA), which identifies all types of hazards threatening Duval County, defines the vulnerabilities to those hazards and estimates the risks posed. Mitigation initiatives are then developed to minimize or eliminate those vulnerabilities. The LMS is a living document that is updated to integrate and reflect current and projected issues, and to track mitigation measures and actions that have occurred, are occurring, are planned for or are desired.

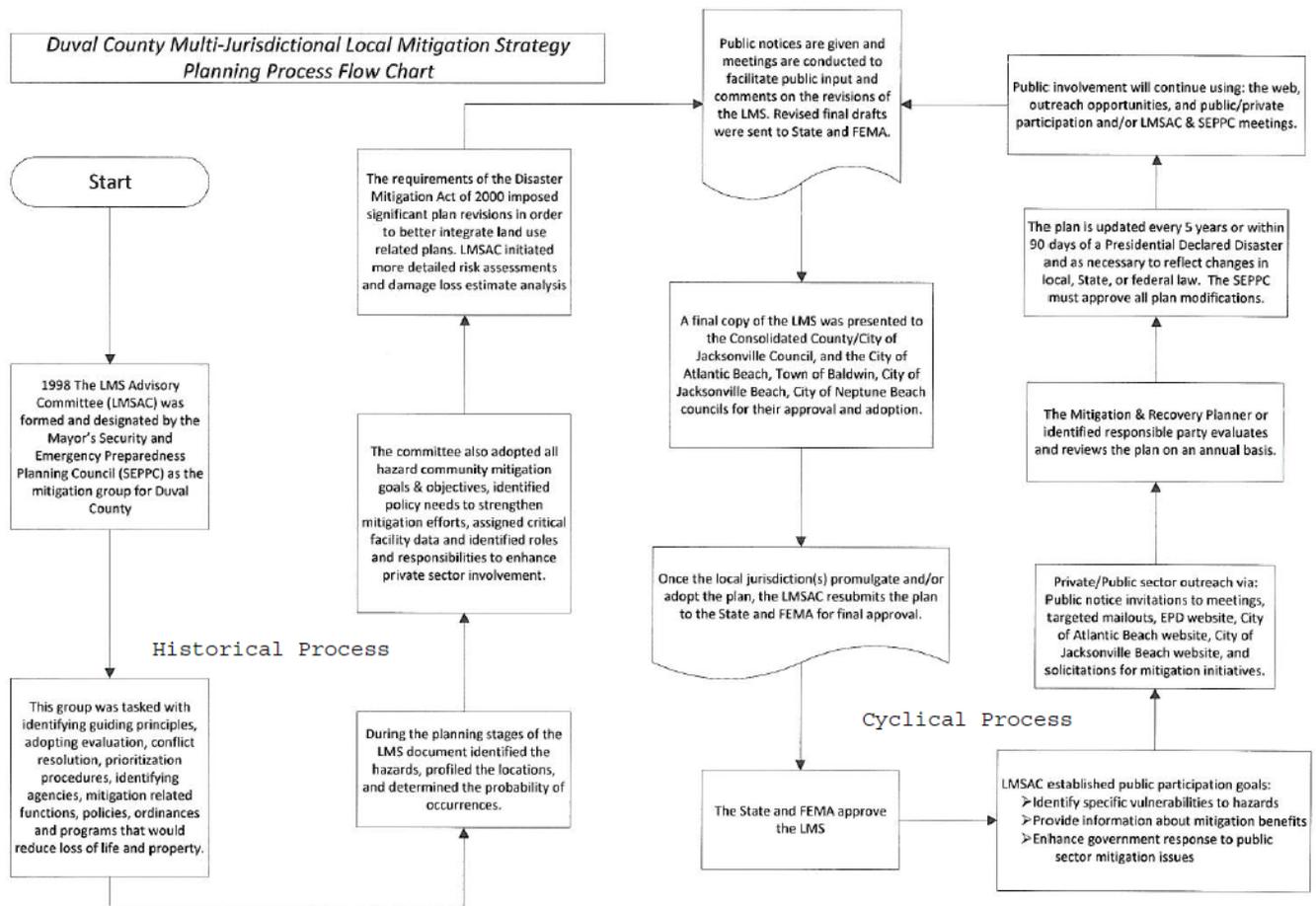
This assessment indicates that Duval County is most vulnerable and has the highest levels of risks for 1) wind from tropical cyclones, 2) storm surge, 3) floods, 4) brush, wildfires and forest fires, 5) thunderstorms and tornadoes, 6) hazardous materials accidents, 7) critical infrastructure disruption, 8) terrorism, 9) extreme temperature, 10) drought, and 11) adaptation to climate change.

The top mitigation initiatives as prioritized by the LMS Working Group include retrofitting water, sewer and electrical facilities to protect against failure caused by flooding and storm surge, hardening against wind impacts, fully implementing stormwater management plans, purchasing emergency generators for municipalities, prioritizing redevelopment options prior to disaster loss, operationalizing a safety review procedure for new development, renourishing beaches, identifying specific vulnerable facilities which need to be relocated or elevated, increasing education efforts in evacuation procedures, funding regional stormwater retention impacts, and developing a pre-disaster plan of locating underground utilities for post-disaster installation.

Policy changes recommended by the Local Mitigation Strategy include seeking alternative sources of funding for beach re-nourishment based on mitigation; re-prioritizing storm water management projects in light of mitigation priorities; requiring a public safety review of new development; flood-proofing sewer lift stations, water wells, developing a plan for underground utilities and adapting to climate change.

B. Planning Process

Figure 1: LMS Planning Process Flow Chart



History/Background:

In 1998 the LMS Advisory Committee/*Duval Prepares* was formed. The Local Mitigation Strategy Advisory Committee was designated by the Mayor's Security and Emergency Preparedness Planning Council (SEPPC) on September 24, 1998 as the official mitigation advisory group for Duval County. The SEPPC serves as the official Working Group for Duval County.

Organizational Structure:

The advisory committee consists of representatives from Duval County, the Cities of Jacksonville Beach, Neptune Beach, Atlantic Beach, and the Town of Baldwin, City/County of Jacksonville divisions/ departments, local, regional and state governmental agencies, and business & industry. This group was charged with identifying guiding principles, adopting evaluation, conflict resolution and prioritization procedures, identifying agencies and mitigation-related functions, and identified existing mitigation policies, ordinances and programs and assessing their effectiveness at reducing loss of life and property.

During the planning stage of the LMS document, the committee also adopted all-hazard community mitigation goals & objectives, identified policy needs to strengthen mitigation efforts, assigned data and

critical facility needs to committee members and identified potential data sources, and identified roles and responsibilities to strengthen private sector involvement in the LMS process. They also identified methods for disseminating project-related information to citizens.

In 2001 the *Duval Prepares* Partnership was formed. The partnership now serves as the LMS Advisory Committee. The Partnership is a group of partners and programs that share the vision of making Duval County more disaster resistant. This group includes both public sector and private sector partners, local businesses, organizations and associations, and representatives from the five municipalities in the County. One of the objectives and priorities of the Partnership is to maintain the LMS document to reflect current information regarding projects, goals, and objectives for the county.

This group meets, and will continue to meet, on a regular basis to discuss hazard mitigation related issues and projects, including the continual maintenance to the LMS document. The *Duval Prepares* Partnership recommends changes in the LMS to the Working Group, which then approves the changes to the document to make them official. This continuous review and updating of the LMS assures that the document will remain consistent with current information. The *Duval Prepares* partners are members by representation of their designated agency or municipality, entities with a commitment or interest in mitigation, public and private organizations, including business, hospitals, education, and faith based. Members of the public can also join *Duval Prepares*.

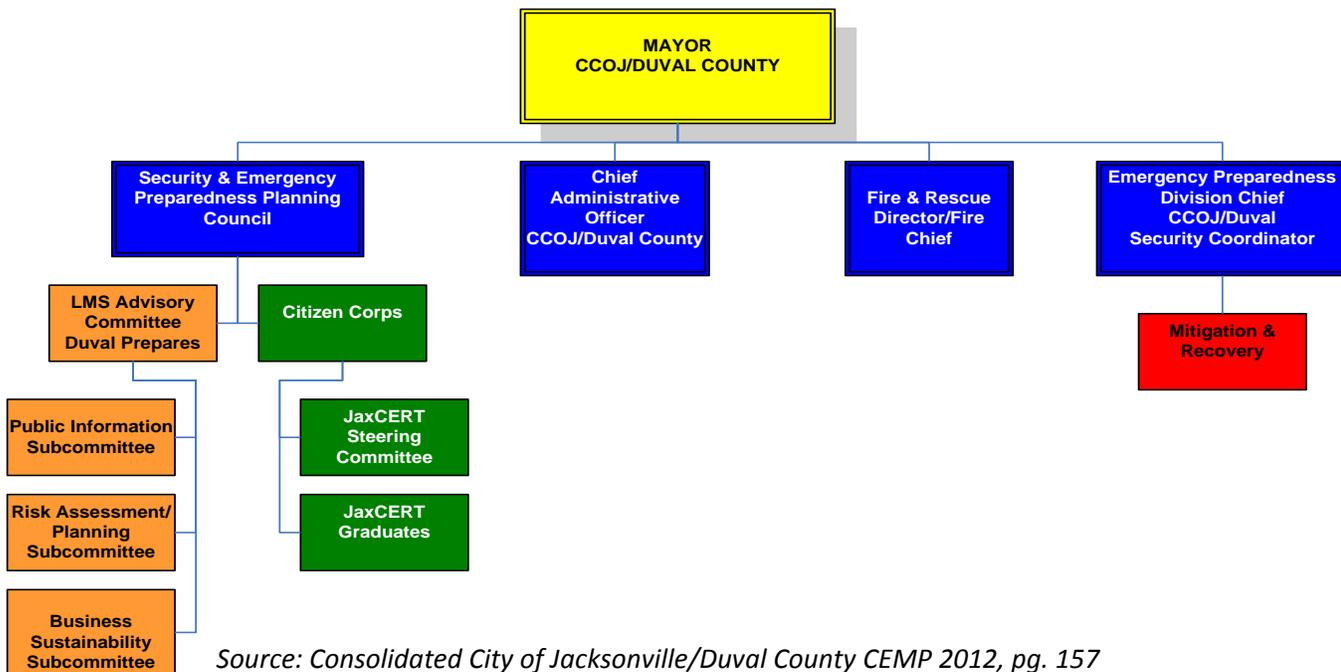
A final copy of the document reviewed and approved by FEMA and the State of Florida will be presented to all participating jurisdictions to the Duval County/Jacksonville City Council, City of Atlantic Beach City Commission, Town of Baldwin Town Council, City of Jacksonville Beach City Council, and the Neptune Beach City Council for their approval and adoption. There have been no changes to the jurisdictions participating in this process.

2015 Planning Process:

The 2015 LMS update process was commissioned by the LMS Working Group, also known as the Mayor's Security Emergency Preparedness Planning Council (SEPPC). This body charged *Duval Prepares*, the LMS Advisory Group, to furnish initial review and recommendations. On January 27, 2014, SEPPC was briefed on the update process and further details and updates on progress were given to the group on May 6, 2014. A timeline was established for each of the *Duval Prepares* Subcommittees, with the lead responsibilities for review and recommendation emanating from the Risk Assessment and Planning Committee, to meet and formally evaluate each section of the LMS, as required by the Local Multi-hazard Mitigation Planning Guidance, July 1, 2008 Requirements 201.6 (b0 and 201.6(c)(1), pp. 26-27).

The Risk Assessment and Planning Subcommittee was the lead review team as the subcommittee membership is comprised of each Duval County jurisdiction's liaisons, private sector engineering and emergency management representatives, City Planning Department planners, and City of Jacksonville Division of Emergency Preparedness staff. This group has the knowledge and expertise to render valuable decisions about hazards and vulnerability analysis for the whole of Duval County and the individual jurisdictions. For the timetable and description of meetings where the plan sections were reviewed and adopted to be forwarded to *Duval Prepares* and SEPPC for approval, which in turn will be sent to the State of Florida and FEMA for approval. Each of the four incorporated municipalities and the county had representatives attending each of the meetings described above and are considered to be active participants.

Figure 2: Mitigation Organizational Structure



From January 2014 to January 2015, the subcommittees, including the Risk Assessment and Planning committee, the Public Information Committee and the Business Sustainability Committee met to (a) review existing documents for hazards and vulnerabilities, (b) provide input on completed, delayed and deferred mitigation projects, and (c) propose new mitigation projects. The Chief of Emergency Preparedness distributed letters and copies of the plan to the SEPPC membership and key stakeholders in Duval County. Partners for *Duval Prepares* met with the representatives and liaisons for each of the municipalities within Duval County. The Division of Emergency Preparedness took the information from these meetings and the interim assignments to prepare the 2015 LMS Update which was posted for public comment twice in January 2015.

During the 2015 Planning Update process, the multi-jurisdictional entities within Duval County which participate in the Local Mitigation Strategy include:

- The Consolidated City of Jacksonville
- City of Jacksonville Beach
- City of Atlantic Beach
- City of Neptune Beach
- Town of Baldwin
- Duval County as a whole

Coordination with Counties in Northeast Florida for Input on Local Mitigation Strategy:

In a highly interconnected world, the ramifications of county planning for a mitigation strategy require input from counties physically adjacent to a neighboring county. Planning would also consider projects of such magnitude for impacts and consequences beyond the immediate county's borders. Duval County solicited input via email from adjoining counties in the Florida Region 3 as delineated by the Florida Division of Emergency Management (DEM). Planning issues include, but are not limited to, roadways serving as evacuation routes throughout the region, economic development and stimulus, and developments of

regional impact.

Table 1: Northeast Florida Counties Coordination Table

County	Date Requested	Recipient of Request	Response (Edited for Space)
Baker	January 21, 2015	Emergency Manager	Acknowledged receipt.
Clay	January 21, 2015	Emergency Manager	Will Duval incorporate social media in public outreach methods. Suggested including repetitive flood loss area maps and drainage basins. Incorporate Brannan Field and Chafee roadway corridor (new name: First Coast Expressway) into evacuation road system as it is critical to Clay County evacuation.
Flagler	January 21, 2015	Emergency Manager	Consider revising objectives to encompass whole community benefit.
Nassau	January 21, 2015	Emergency Manager	Acknowledged receipt.
Putnam	January 21, 2015	Emergency Manager	Has Duval used the Tornado History project as a data source. Will our LMS incorporate sea level rise as a hazard? Consider using the NEFRC reports for impacts.
St. Johns	January 21, 2015	Emergency Manager	Acknowledged receipt of request. Duval and St. Johns share the unincorporated 23.5 square mile Nocatee community and its impacts on roadways, evacuation, sheltering, fire and rescue services.

C. Community Participation

The public participation goal of the LMS Advisory Committee/*Duval Prepares* is to reach a broad representation of Duval County’s business and citizen-participant population to (1) identify specific vulnerabilities to hazards, (2) provide targeted information about the benefits of mitigation, and (3) enhance government responsiveness to public sector issues. Because of Duval County’s unique governmental structure, extensive geographic area and diverse economic base, a multi-directional effort is necessary to inform county residents about the Local Mitigation Strategy initiative and include their input and suggestions into the process.

The SEPPC (Security & Emergency Preparedness Planning Council) serves as the LMS Working Group. The public's involvement is cultivated through the *Duval Prepares* Partnership. Business and citizen involvement in the LMS process has been accomplished using various methods. These methods include printed information disseminated through newsletters, targeted mail outs and the Emergency Preparedness Division’s Web page on the Internet. In addition, brief surveys targeted to specific groups of the population, such as elected officials, builders, homeowners and business owners inform about potential mitigation measures and solicit prospective mitigation initiatives. Public presentations also serve to inform both citizen

and business groups in Duval County and its municipalities. Citizen interests are represented by participation from the City of Jacksonville Planning and Development, an outreach and response division, which provides staff for Citizen Planning Advisory Committees (CPAC) in the six planning districts of the City, and coordinates neighborhood service issues for approximately 200 neighborhood organizations.

The *Duval Prepares* Partnership, the group of public and private organizations and agencies, which serves as the LMS Advisory Committee, advertises meetings as open to the public. The notices are put on public display and the public is encouraged to attend and participate. This will allow the public and all other interested people to view the document. A public workshop/informational meeting will be held prior to completion of the final LMS so that comments are gathered from the general public as well as the Advisory Committee/*Duval Prepares*, and the Working Group members who are consistently involved. The public is invited and encouraged to attend *Duval Prepares* meetings that are held regularly, and discuss all hazard mitigation issues in addition to the Local Mitigation Strategy updates. *Duval Prepares* agenda's include place and time for public comment in order to get comments, questions and suggestions from those in attendance.

For the 2015 LMS Update process, each *Duval Prepares* quarterly meeting and subcommittee meetings were posted for public notice to invite community participation into plan review and project recommendations.

D. Private Participation

Both business and citizen interests are represented on the LMS Working Group through the Advisory Committee/*Duval Prepares*. Business representatives include economic development organizations, such as the Jacksonville Chamber of Commerce, and specific key economic interests. In addition, a business representative on the Working Group through the Advisory Committee is the president of the Northeast Florida Chapter of the Association of Contingency Planners and serves as a liaison to the members of that organization who represent some of the larger employers in the area.

The extensive list of partners in the *Duval Prepares* Partnership includes: AECOM; AMEC Foster Wheeler; AT&T; Bank of America; Bi-Lo Holdings Corporation; Blue Cross Blue Shield Florida; Citizen's Property Insurance Corporation; City of Atlantic Beach; City of Jacksonville Beach; City of Jacksonville Emergency Preparedness; City of Neptune Beach; Duval County Public Schools; Eisman and Russo; Federal Alliance for Safe Homes; Federal Emergency Management Agency; Fleet & Associates Architects/Planners Incorporated; Florida Department of Transportation; Florida Division of Emergency Management; Florida Forest Service; Florida State College at Jacksonville; Gamma Brands; General Public; Jacksonville Airports Authority; Jacksonville Chamber of Commerce; Jacksonville Electric Authority; Jacksonville Port Authority; Jacksonville Transportation Authority; Kustom Restoration; Langton and Associates; National Flood Insurance Program; NOAA/National Weather Service Northeast; Neighborhoods & Housing Services; Northeast Florida Builders Association; Northeast Florida Chapter American Red Cross; Northeast Florida Chapter Association of Contingency Planners; Northeast Florida Coalition on Recovery/VOAD; Northeast Florida Regional Council; Paul Davis Restoration; Planning & Development Department; Public Works; Risk Management; St. Johns River Water Management District; State Farm Insurance Companies; Sunniland Roofing; Town of Baldwin; United Way of Northeast Florida/ 211 Program; University of North Florida Small Business Development Center; US Army Corps of Engineers; Wells Fargo.

Meetings are held quarterly, and motions are taken at the meetings for the business brought to the group for discussion, review, input and action. At this time, the *Duval Prepares* partners are not subject to mandatory attendance at the meetings and meeting quorum is established by a simple majority. Decisions at the Advisory Committee level regarding actions and recommendations for project prioritization are advanced to the Mayor's Security Emergency Preparedness Committee (SEPPC) for ratification and approval prior to

advancing the action/project to the appropriate City Council or Commission body, or the State or Federal agency.

In addition to posting the notice of each meeting in a public location to notify members of *Duval Prepares* and the general public of the date and time, an email is also sent out to every member of the Advisory Committee prior to the meeting to provide them with an invitation. Efforts are also continuously being made to recruit new members into the *Duval Prepares* group. As new groups, businesses, organizations, and individuals decide to participate in the meetings, their names will be added to the email list to notify them of upcoming meetings as well.

E. Use and Incorporation of Existing Documents

During the planning process the LMS Advisory Committee members were asked to study existing policies, ordinances, plans, and programs of the county, its associated municipalities and related regional, state and federal agencies that support hazard mitigation in Duval County. Members were asked to score each issue area based on the ability to support and enhance mitigation activities in Duval County. During this process, goals, objectives and policies in existing documents of the county, associated municipalities, and regional, state and federal agencies were reviewed and incorporated in to the LMS to help determine the effectiveness of existing items and identify the gaps. Documents that were reviewed for hazard mitigation related information included: The City of Jacksonville Ordinances, Floodplain Management Plan, Community Rating System Plan, Town of Baldwin Comprehensive Plan, Growth Management Task Force Report, Florida Administrative Codes, City of Jacksonville 2030 Comprehensive Plan, City of Jacksonville Flood Map Modernization Plan, City of Jacksonville Beach Comprehensive Plan, City of Atlantic Beach Comprehensive Plan, City of Neptune Beach Comprehensive Plan, Stormwater Management Plan, Land Development Regulations, Duval County Comprehensive Emergency Management Plan (CEMP), Hurricane Preparedness Plan, Emergency Operations Plan, Florida Statutes, Florida Building Codes, City of Jacksonville Zoning Code, Hurricane Evacuation Traffic Management Plan, FEMA Comprehensive Plan, and the Northeast Florida Regional Council (NEFRC) Hurricane Evacuation Study 2013 and Duval County Post Disaster Redevelopment Plan.

This compilation of information is under continual review and revisions. Often programs, policies, and goals change, and these changes will be reflected in the LMS when it is updated. This assures that the information in the LMS is the most current and applicable to the efforts of the hazard mitigation initiatives. Additionally newly written and adopted plans will be reviewed when they become available and applicable policies and other items will be incorporated into the plan when deemed necessary. Currently, according to FEMA, the Cities of Atlantic Beach, Jacksonville Beach, and Neptune Beach and the Town of Baldwin are all active participants in the National Flood Program. This is an ongoing process to keep this section of the LMS updated and current with recent plans, studies, and technical reports, etc.

F. Incorporation of LMS into other Documents

Through the process described above, existing documents, such as the CEMP and the City of Jacksonville 2030 Comprehensive Plan, were reviewed during their update cycles to integrate language pertinent to the LMS. In doing this, the Advisory Committee was able to identify ways that existing documents can be strengthened, and identified any gaps in existing policies, implementation of those policies, enforcement, or conflicts between policies. In this way, the principles and goals of the LMS are able to be incorporated into existing documents by identifying sections of these overarching and related plans where the LMS can be incorporated in order to adequately address hazard mitigation issues.

Current mitigation initiatives include projects arising from the Community Rating System (CRS) plan and the

annual community outreach activity, which incorporated mitigation of repetitive loss and severe repetitive loss properties with \$1,000 to \$5,000 in damage claims for building and contents as submitted to the National Flood Insurance Program (NFIP). These mitigation projects are to elevate, acquire or relocate repetitive loss properties and most of them are located within the Repetitive Loss Areas identified by the Consolidated City of Jacksonville CRS Plan.

Table 2: LMS Jurisdictional Plan Incorporation

Local Mitigation Strategy Incorporation into Plans as of 2015 Matrix		
Jurisdiction	Incorporation of LMS into Comprehensive Plan	Incorporation into other Planning Document
Consolidated City of Jacksonville	X	X (Consolidated City of Jacksonville/Duval County Comprehensive Emergency Management Plan-CEMP and Post Disaster Redevelopment Plan-PDRP)
City of Jacksonville Beach	X	
City of Atlantic Beach	X	
City of Neptune Beach	X	
Town of Baldwin	X	

G. NEW STRATEGIES FOR MITIGATION AND RESILIENCE

Duval County’s strategic approach to mitigation is part of a larger resiliency initiative aligned with the most current practices to transform the future of our city into a stronger and safer community. These efforts will address the physical, social, and economic challenges that 21st century cities are increasingly facing.

Duval County supports the adoption and incorporation of a view of resilience that includes not just the acute shocks that are typically identified and analyzed in a Local Mitigation Strategy – hurricanes, fires, floods, etc. – but also the chronic stresses that weaken the fabric of a city on a day to day or cyclical basis. Examples of these stresses include urban blight; homelessness; insufficient public transportation systems; or endemic violence. By addressing both the shocks and the stresses, a community becomes more able to respond to adverse events, and is overall better able to deliver basic functions in both good times and bad, to all populations.

This document reflects the view of “community resilience” as *the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow despite the chronic stresses and acute shocks they experience.*

Duval County and 100 Resilient Cities – Pioneered by the Rockefeller Foundation:

In December 2013, the Rockefeller Foundation selected the City of Jacksonville from among 300 international applicants, as one of the first 100 Resilient Cities. 100 Resilient Cities - pioneered by the Rockefeller Foundation (100RC) -- is dedicated to helping cities around the world become more resilient to the physical, social and economic challenges that are a growing part of the 21st century. 100RC supports the adoption and incorporation of a view of resilience that includes not just the *shocks* – earthquakes, fires, floods, etc. – but also the *stresses* that weaken the fabric of a city on a day to day or cyclical basis. Examples of these stresses

include high unemployment; an overtaxed or inefficient public transportation system; endemic violence; or chronic food and water shortages. By addressing both the shocks and the stresses, a city becomes more able to respond to adverse events, and is overall better able to deliver basic functions in both good times and bad, to all populations.

Cities in the 100RC network are provided with the resources necessary to develop a roadmap to resilience along four main pathways:

1. Financial and logistical guidance for establishing an innovative new position in city government, a Chief Resilience Officer, who will lead the city's resilience efforts;
2. Expert support for development of a robust resilience strategy;
3. Access to solutions, service providers, and partners from the private, public and NGO sectors who can help them develop and implement their resilience strategies; and
4. Membership of a global network of member cities who can learn from and help each other.

Through these actions, 100RC aims not only to help individual cities become more resilient, but will facilitate the building of a global practice of resilience among governments, NGOs, the private sector, and individual citizens.

The City of Jacksonville began working with 100RC in December of 2013. 100 RC as pioneered by the Rockefeller Foundation is financially supported by The Rockefeller Foundation and managed as a sponsored project by Rockefeller Philanthropy Advisors (RPA), an independent 501(c)(3) nonprofit organization that provides governance and operational infrastructure to its sponsored projects.

The Local Mitigation Strategy and the Resilience Strategy:

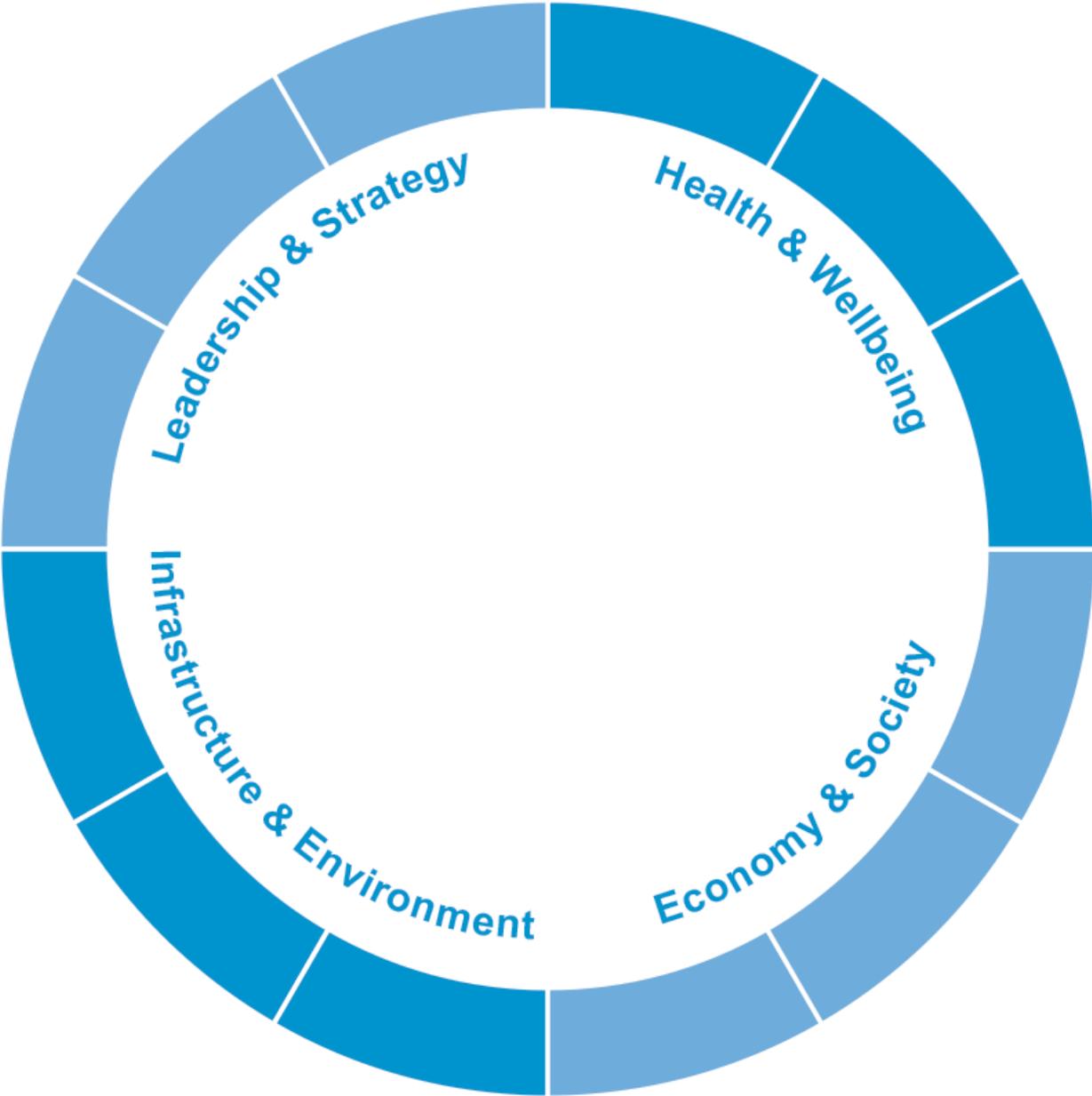
As part of the deliverables of 100RC, Duval County will create a Resilience Strategy. This document is expected to crosscut all facets of emergency management, including mitigation. The two strategies will work in concert with one another. Mitigation measures and projects in the Local Mitigation Strategy may have indirect or direct positive and negative consequences on multiple drivers in the City Resilience Framework. Likewise, initiatives explored and developed through the Resilience Strategy may impact mitigation, or they may consider mitigation activities as part of the success of the resilience initiative.

Mitigation and resilience are very similar: both are ensuring that the people impacted can persevere when faced with hazards. Mitigation seeks to improve the risk and vulnerability of the people, property, and environment when confronted by a hazard. Resilience seeks to improve the ability to withstand the effects of those hazards.

Duval County and the City Resilience Framework:

Duval County's future mitigation and resilience strategy will utilize the City Resilience Framework (CRF), a unique framework developed by the global engineering firm Arup with support from the Rockefeller Foundation; it is based on extensive and validated research. It provides a lens for understanding the complexity of communities and the drivers that contribute to their overall resilience. By analyzing these drivers we will continue to assess the extent of resilience in our county, identify critical areas of weakness, and to design actions and programs to improve the community's resilience. The CRF also provides a common language that enables communities across the globe to share knowledge and expertise.

Figure 3: City Resilience Framework Dimensions



The CRF is built on four essential dimensions of urban resilience: Health & Wellbeing, Economy & Society, Infrastructure & Environment, and Leadership & Strategy. Each dimension contains three “drivers,” which reflect the actions cities can take to improve their resilience.

These 12 drivers form the core of the City Resilience Framework (CRF), and when taken together they represent a city's resilience to a wide range of shocks and stresses.

Figure 4: City Resilience Framework Drivers – Health & Wellbeing



Figure 5: City Resilience Framework Drivers – Economy & Society

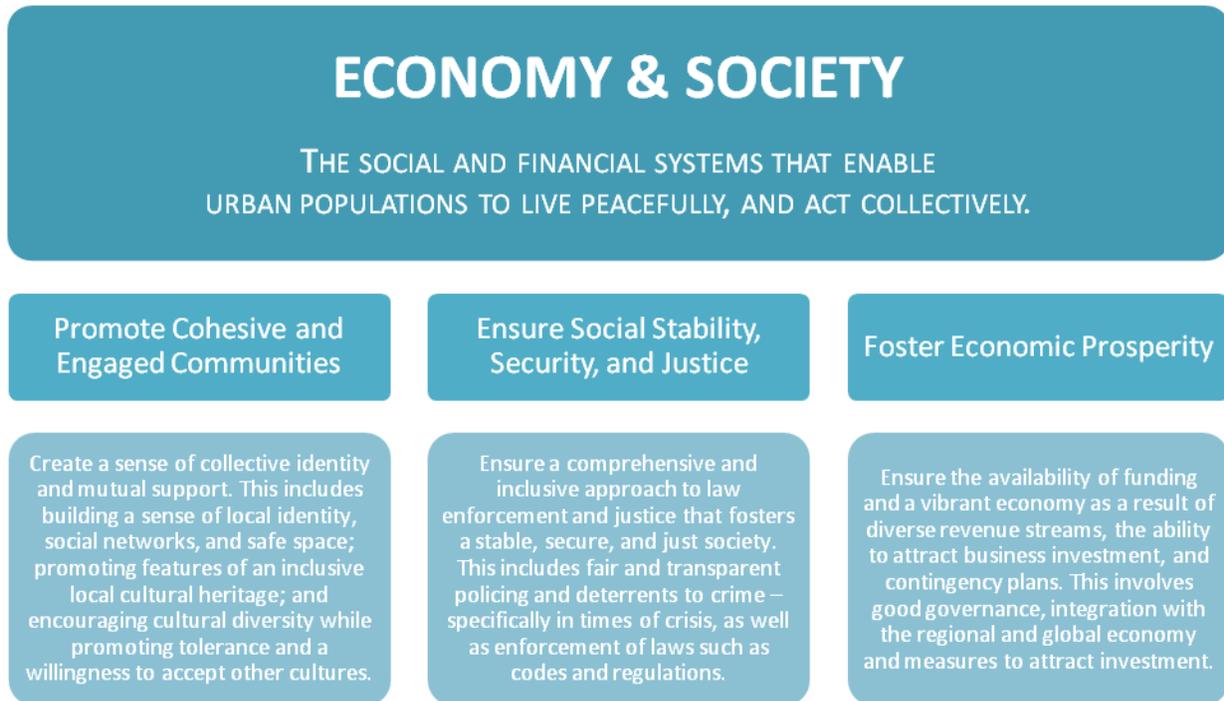


Figure 6: City Resilience Framework Drivers – Infrastructure & Environment

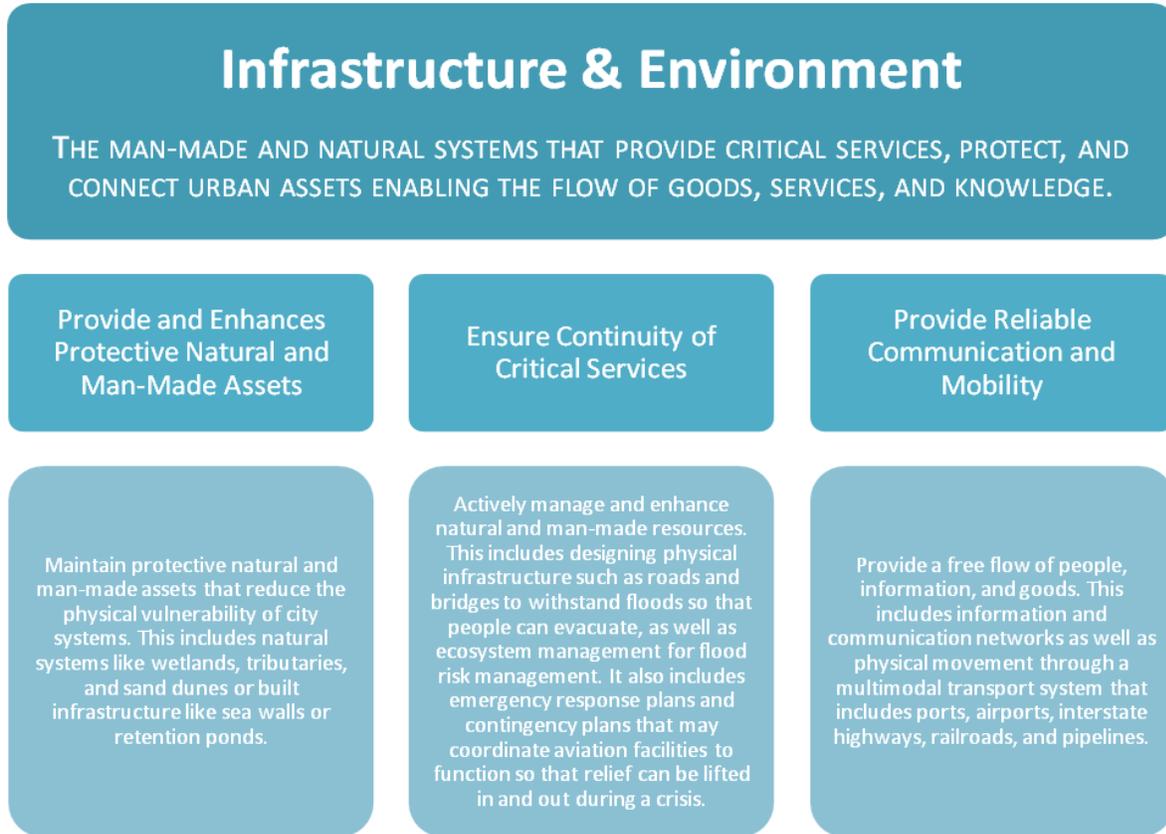
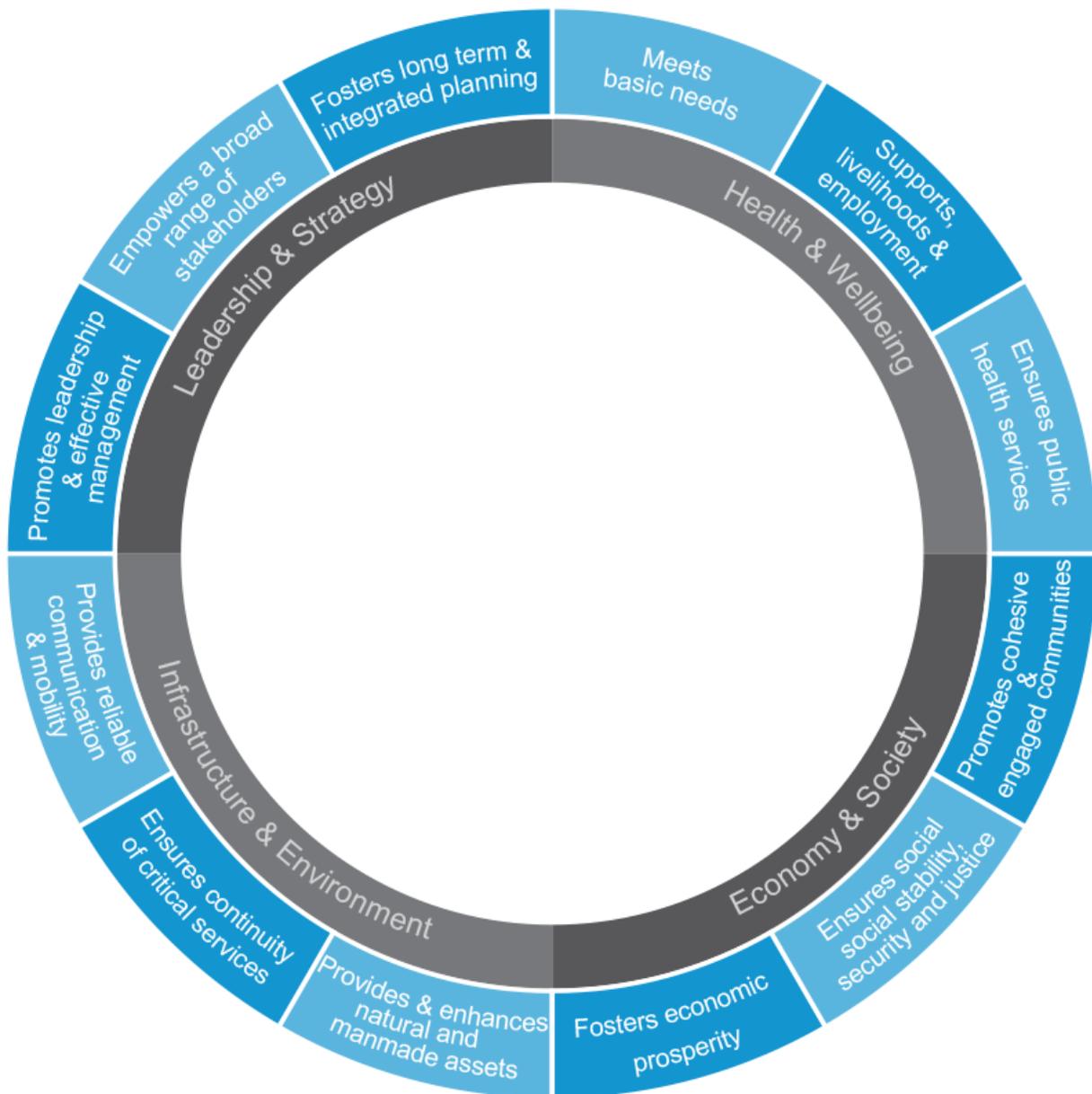


Figure 7: City Resilience Framework Drivers – Leadership & Strategy



Figure 8: City Resilience Framework Holistic Overview



The 12 drivers are all connected and offer a holistic picture of the city. Combined, they constitute the City Resilience Framework. When combining the CRF with mitigation projects, the projects that have the most impact on multiple dimensions and drivers of the CRF are those that are more likely to be successful when viewed through the lens of the city’s growth, advancement, and resilience. Mitigation, therefore, becomes a tool by which the City of Jacksonville is made more resilient.

This innovative approach to mitigation is expected to not only benefit the governance of the City of Jacksonville, but it will also benefit the health of the vulnerable populations and the residents' wellbeing; it will benefit the economic might and societal community; it will benefit the aging infrastructure and fragile environment of the City of Jacksonville; it will benefit the appointed and elected leadership and the strategic direction the City must navigate in the 21st century.

H. Conflict Resolution

Realizing that conflict is inherent in political interaction and inevitable in policy making and resource allocation decisions, and recognizing the diversity of perspective represented by its members, the Local Mitigation Strategy Advisory Committee agreed to resolve all conflicts in policy, procedures and issues based on the following group values:

1. The guiding principles, goals and objectives adopted by the Advisory Committee will guide all decisions.
2. All decisions will be ultimately resolved by democratic rule.
3. All Advisory Committee representatives will have equal input into the process.
4. Each Advisory Committee member will acknowledge and respect differing points of view.
5. Decisions on resource allocation will be based on project criteria to be established by the Advisory Committee.
6. Each Advisory Committee member recognizes the importance of showing community consensus to potential funders/grantors.

The conflict resolution process adopted by the Advisory Committee will be a three level process, utilizing a combination of personal and intergroup communication skills, and a model based on the "Regional Dispute Resolution Process", established by the Florida Legislature as part of the 1993 Environmental Land Management Study (ELMS) legislation to facilitate intergovernmental problem-solving. This model is currently used by the Northeast Florida Regional Council and offers a reasonable approach to solving public problem. It provides a forum to cooperatively resolve issues and differences between local governments and private interests in a timely, informal and a cost-effective manner. This process was amended in 2009 to make it mandatory to use the Regional Council for mediation in some cases involving planning and growth management. The Advisory Committee will use this approach in an effort to voluntarily resolve disputes, and will use the Regional Planning Council process when required by statute or when deemed necessary by the Advisory Committee (Source: Northeast Florida Regional Council document, Conflict Resolution -- Clay County LMS, and SB360er Section 3 amendments to Section 163.177, Florida Statutes).

Level I: *Communication/Cooperation* - Emphasis on personal communication and listening skills, focusing on over-all project goals and objectives.

Level II: *Consensus-Building/Facilitation* - Formal intergroup process to achieve mutual consensus. The process is based on a settlement meeting at which disagreeing parties explain their interests, explore options and seek a mutually acceptable agreement. Most issues are expected to be resolved at this level, but if a solution is not reached additional settlement meetings can be held. Disputes and conflicts that cannot be resolved at this level can be escalated to mediation.

Level III: *Mediation* - Formal technique using a trained, neutral third party to guide the dispute resolution process. If a solution is not reached following this procedure, the issue will be resolved through democratic rule with a 2/3 majority vote of the Working Group.

The over-all goal of the conflict resolution process is to emphasize direct communication as a means of controlling outcomes and quality, saving time and money, and reaching mutually beneficial solutions.

I. Evaluation Process

The Local Mitigation Strategy (LMS) is not a static document, but is subject to redefinition and alteration over time, although this process for evaluating and updating the LMS has remained consistent over the life of the plan. Structured periodic assessments of the ability of the LMS to meet its goals will be conducted with broad input from all stakeholders and will assist policy-makers and the public in learning whether mitigation activities and policies are reducing future damages and whether such benefits match or exceed the costs. Evaluation mechanisms may include:

- Broad-based, structured self-assessments of progress in implementing the Strategy;
- Periodic surveys of the customers of mitigation programs, through concise, easily understood survey instruments;
- Review of annual mitigation expenditures in public and private sector projects and programs, and
- Assessment of the ability of the Strategy process to maximize benefits and enhance resources.

Evaluation

The Evaluation Procedures and Review Process adopted by the Advisory Committee are incorporated in the Local Mitigation draft ordinance and implemented under the Local Mitigation Strategy. The Duval County LMS Advisory Committee bases its evaluation of the Local Mitigation Strategy on the following criteria:

- Supports LMS goals and objectives;
- Maintains opportunity for participation from all stakeholders;
- Considers all relevant new or intensified hazards, which may affect local vulnerabilities to population, property and/or environment;
- Incorporates new technologies and information that may enhance or improve the mitigation effort;
- Demonstrates far-reaching, cost-effective use of limited resources, develops new resources, and encourages coalition-building and partnerships to maximize resources; and,
- Encourages individual, family and private sector participation and involvement.

Recommended Components of the Evaluation Process

- Designated responsible agency- *(The Local Mitigation Strategy Advisory Committee was designated by the Mayor's Emergency Preparedness Planning Council on September 24, 1998 as the official mitigation advisory group for Duval County and will continue to perform this function throughout the planning process.)*
- Ongoing communication
- Notification of funding cycles/solicitation of projects
- Collection of projects; coordination of potential funding sources
- Plan/project analysis

- Plan/projects forwarded for approval
- Approval process monitored
- Projects recycled
- Planning, study, revision

Annual Evaluation Procedures

Both *Duval Prepares* and the Mayor's Security and Emergency Preparedness Planning Council meet quarterly to review grant cycles and post-disaster grant opportunities. Subcommittees of *Duval Prepares*; Risk Assessment, Business Sustainability, and Public Information; meet routinely between quarterly meetings. At least one meeting is held for each subcommittee annually; although, subcommittees may choose to meet more often as needed.

J. Review and Maintenance

The Local Mitigation Strategy will be reviewed a minimum of every five years by the Advisory Committee, and changes and updates must be approved by the SEPPC. Review and maintenance of the 2015 LMS Plan Update will continue to be implemented by the Working Group with assistance from the Emergency Preparedness Division. Review of the LMS will include the hazard identification and vulnerability element, the guiding principles element, the goals and objectives element, and mitigation initiatives element. Other elements will be reviewed as determined by the Working Group or the Emergency Preparedness Division and **Duval Prepares** as necessary.

Monitoring of the Plan

Monitoring of the 2015 LMS Update resides with the Division of Emergency Preparedness, City of Jacksonville, on behalf of the LMS Working Group and the LMS Advisory Group. The implementation of the Local Mitigation Strategy is a multi-faceted initiative among local government, business, industry, and county jurisdiction residents. Each of these entities can ensure mitigation is undertaken effectively to reduce the potential for property loss or personal injury as a result of a disaster. Duval County currently utilizes comprehensive land use planning, capital improvements planning, and building codes to guide and control development in the County. In the future, the Consolidated City of Jacksonville will develop a City Resilience Framework as part of its partner with the 100 RC Initiatives. Upon adoption of the Local Mitigation Strategy Update, these existing mechanisms will have hazard mitigation strategies integrated into them. The 2015 Local Mitigation Strategy set forth six guiding principles, and six goals, with multiple objectives, for the county and jurisdictions as achievable benchmarks. Several of the goals required action through enhanced regulations, building code revisions, ordinance review and updates, and infrastructure improvements to reduce vulnerability to specific hazards.

Through the 2015 LMS Update, the *Duval Prepares*, LMS Advisory Committee, continue to review the plan and current mitigation initiatives on an annual basis. The quarterly meeting held in August has been accepted as the LMS maintenance meeting. Mitigation projects are removed as they are completed, rather than wait to the end of the five-year review period.

K. Continued Public Participation

The *Duval Prepares* Partnership is always seeking to involve more businesses, non-profits, and citizens in disaster preparedness and hazard mitigation planning. Future review, evaluation, maintenance and updates of the LMS will involve the public by continuing to post notices of the Advisory Committee meetings, seeking out new ways to educate, inform and involve the public, and making the LMS available through the *Duval Prepares* webpage on the City of Jacksonville Emergency Preparedness website. Any opportunity that arises to provide the public with information on hazard mitigation and the mitigation strategy via seminars, outreach, or workshops will be incorporated through the *Duval Prepares* scope of work.

L. Current Description of the Jurisdiction(s)

Geographic Information

The analysis of potential hazards is the basic component of any community's comprehensive emergency management plan. A comprehensive understanding of the community's geography, demographics, and land use trends is essential to be able to minimize the possible loss of life, human suffering, and damage to public and private property associated with major natural or man-made incidents. The information developed can provide Duval County's emergency managers with a tool, which can be used to identify those hazards that require an organized response to properly manage related activities, so that needed priorities and actions can be established.

The hazards analysis involves not only knowledge of the kinds of hazards to which the Consolidated City of Jacksonville/Duval County is subjected, but also specific estimates of people and property at risk from a particular hazard. When this measure of vulnerability, reflecting a worst-case situation, is combined with available hazard information, the community can estimate the frequency and extent of damage and the areas and persons affected. This combination of factors is the key to determining if present capabilities are adequate for mitigating, preparing for, and responding to an emergency, and if found inadequate, identifying procedures needed to upgrade these capabilities.

Geographic Characteristics

The Consolidated City of Jacksonville/Duval County is located in the northeast corner of the State of Florida, approximately ten miles from the State of Georgia. The Consolidated City of Jacksonville/Duval County comprises 850.27 square miles (i.e., 544,175 acres). It measures approximately 40 miles from east to west at its widest extent, and 33 miles from south to north (Source: Jacksonville Planning and Development Department, JPDD). The highest elevation in the City of Jacksonville/Duval County is 40 feet above sea level (Source: USGS, 2015). This elevation is found in the extreme southwest corner of the county. From that point, the land surfaces gently slope eastward toward the ocean. The county is characterized by low level coastal plains, interrupted by a series of ancient marine terraces. These terraces, or ridges, have been modified by stream erosion.

The major geographical feature of the county is the St. Johns River, which splits the county into 2 unequal parts. The St. Johns, its tributaries, and the Nassau River control drainage in the western, northern, and central portions of the county. The eastern part of the County is dominated by numerous brackish streams that empty into Pablo Creek (the Intracoastal Waterway) or directly into the Atlantic Ocean. Of that acreage,

47,535 acres of the Consolidated City of Jacksonville/Duval County's area, or almost 9%, is inland water (JPDD).

A considerable amount of the Consolidated City of Jacksonville/Duval County is comprised of freshwater marshes and swamps along with salt marshes. The freshwater wetlands are found in conjunction with the creeks and stream valleys in the southeastern, western, and northern portions of the county and in isolated pockets in the western sector. Salt marshes are found in the St. Johns and Nassau River valleys in northeast Duval County.

Existing Land Use Characteristics

Duval County has developed over the past 200 years from a crossing at the St. Johns River on the Kings Road from Georgia to St. Augustine into a sprawling, diversified community. Urban development originated in 1822 when the site of Jacksonville was first surveyed and formally organized. Duval County was created in the same year, with Jacksonville designated as the county seat. The settlement was originally established to service the traffic crossing the river, but soon became a center of river-borne traffic into the state's interior.

Developments spreading along the St. Johns, such as Chaseville, New Berlin, Mayport, and Mandarin, were linked by the river. The advent of railroads into this area spurred further development, especially with the crossing of the St. Johns. The Consolidated City of Jacksonville/Duval County became a tourist destination in the late 1800's, as well as a terminus for tourists proceeding up river to interior resorts, such as Green Cove Springs and Switzerland. A railroad line was built to Pablo Beach (now Jacksonville Beach), establishing a new corridor of development from the South Jacksonville area to the beach.

As Jacksonville became a railroad and water traffic hub, commercial and industrial development spread along these avenues of commerce. Major commercial and industrial activity is now found radiating from the original center of Jacksonville along major railroads and highways as well as northward along the St. Johns towards the Atlantic Ocean.

Residential development often followed this commercial and industrial growth, but not entirely unique to our area, major residential satellite developments grew up in remote areas of the county. Areas such as Arlington, Mandarin, Ortega and the Beaches grew, attracting supporting commercial uses, and have grown to where today these and numerous other once-outlying areas now make up the unified urban fabric of Duval County (Source: Consolidated City of Jacksonville/Duval County CEMP, 2012, pgs. 36).

Surface Water System

Headwaters of the St. Johns River are located in a marsh area west of Fort Pierce in St. Lucie County, more than 300 miles from the river's mouth at Mayport. Over these 300 miles, the drop in elevation is only about 25 feet. Of this 25 foot drop in elevation, approximately 20 feet occur during the river's first 90 miles. For this reason, the river has the appearance of a vast lake often with indiscernible flow.

Tidal conditions are clearly evident near the St. John's River's mouth in Duval County. The drainage area of this vast river encompasses 8,850 square miles (USGS, Water Quality Watch), well beyond the borders of Duval County. Due to the extremely flat terrain, high evapo-transpiration rates, and variable freshwater flows, these tidal variations are also experienced as far upriver as Lake George, 115 miles from the river's

mouth. Tidal effects have been recorded as far as 161 miles upstream at Lake Monroe under combined conditions of extreme drought and high tide conditions. From Lake George north to the Atlantic, the river's flow normally reverses with the change in the tide.

The average discharge of the St. Johns River at its mouth is estimated at 8,300 cubic feet per second (cfs). Reversal of flow by tidal action causes upstream and downstream flow at Jacksonville to reach 130,000 cfs. At the St. Johns River entrance, flood tides (incoming tides) with average velocities of 1.9 knots and ebb tides (outgoing tides) with average velocities of 2.3 knots occur. This changing direction of flow in the St. Johns River occurs throughout the county area. However, at Mandarin Point, essentially opposite Orange Park (Clay County), average flood tide and ebb tide velocities are diminished to 0.6 and 0.7 knots, respectively.

The capacity of the main stem of the St. Johns River to store water is tremendous owing to: (1) the great width of channel in the reach between Palatka and Jacksonville, (2) low hydraulic gradients, flood plain which in places is more than ten miles wide. Storm water is held in storage for long periods before being discharged to the sea.

Flood Plain Areas

Extensive flood plain areas exist in the Consolidated City of Jacksonville/Duval County due to the slight elevations of land above sea level and the relatively flat topographic relief of the land surface. Flood plain areas exist around the St. Johns River and its tributaries as well as around the coastal lagoon and salt marsh system.

In addition to flood plains surrounding large water bodies and their tributaries, there are large areas within the county's interior which experience periodic flooding. These flood prone areas are generally the result of flat, poorly drained land where accumulated rainfall runs in a sheet flow or ponds on the surface.

The Consolidated City of Jacksonville/Duval County experiences its most severe flooding when heavy rainfall is accompanied by a rise in sea level due to a storm surge or wind and wave set-up. Hurricanes and prolonged or severe northeasters are the predominant causes of such flooding which can be greatly exaggerated when occurring during one or more periods of high tide. However, even in less severe events such as tropical storms or localized thunderstorms, rainfall alone can, and has, caused flooding. Significant events that demonstrate the vulnerability to this hazard are the declared disasters for Tropical Storm Fay (2008) and Tropical Storm Debby (June 2012). Of significance to Duval County, although it was not a declared disaster, was Tropical Storm Beryl (May 2012) which immediately preceded Tropical Debby. This event doubled the impact to county infrastructure and residents, generating a double blow from two storms systems with a high volume of rain and wind. As Duval County has significant percentages of older housing not built to current building codes, coupled with housing built before the FEMA flood maps were drawn, and an extensive tree canopy, even a severe thunderstorm and its rainfall will create havoc for certain areas throughout Duval County.

Flood Hazard Areas

Major flood hazard areas exist along the Intracoastal Waterway and adjoining creeks and salt marshes. Inland to the west, a flood zone of similar size and shape exists from just above McCormick Road south of Fort Caroline to past Beach Boulevard. Although large portions of land east of the Intracoastal Waterway are outside of the 100-year flood zone, the entire Beaches area is susceptible to flooding from coastal storms

due to the nature of barrier islands acting as overwash plains for storm surges. Low-lying areas adjacent to water bodies or areas of high surface runoff are generally at risk. Most of the areas along these waterways are developed in residential uses.

The majority of the land bounded by Southside Boulevard on the west, Hodges Boulevard to the east, J. Turner Butler Boulevard to the south, and Beach Boulevard on the north, is within the flood hazard area. Much of this area is wetlands. An extensive 100-year flood hazard area exists south of J. Turner Butler Boulevard, west of Southside Boulevard and northeast of U.S. 1.

Another large flood hazard area exists between Hood and Losco Roads in Mandarin. Perhaps the largest continuous flood hazard area occurs in the relatively undeveloped southeast corner of the Consolidated City of Jacksonville/Duval County. The large wetland area drains southwestward toward Durbin Creek and northeastward toward Pablo Creek. Pablo Creek has an extensive flood plain area that drains much of the land surrounding the University of North Florida, from Mill Dam Branch to Cedar Swamp Creek.

Julington Creek forms a major flood plain area in conjunction with its tributaries. Several low areas along the St. Johns River in the Southeast District would be flooded by a 100-year flood. The northern part of Duval County is heavily influenced by the St. Johns River, Nassau River, and Atlantic Ocean, being heavily dissected by many tributaries and branching creeks along which flood hazard zones exist. Aside from the highest uplands and barrier island ridges, a majority of all land east of Dames Point falls within the 100-Year Flood Hazard Zone.

The Nassau River and Intracoastal Waterway are surrounded by extensive marsh lands which are all at risk of flooding. Thomas Creek's flood plain borders the county boundary on the northwest. Flood hazard zones of irregular size and shape are scattered over the entire district.

The Cedar River, Sawmill Creek, and Ribault River comprise the main flood plain area in northwest Duval County. Isolated patches of flood hazard area can be found; however, most of western Duval County is of relatively high elevation.

Southwest Duval County contains some of the highest elevations in the county, yet there are extensive flood hazard zones west of Yellow Water Creek. McGirts Creek and the Ortega River form a major flood plain area that extends from Old Plank Road southeast to the Clay County line then curves toward the northeast where it meets the Cedar River and then enters the St. Johns River.

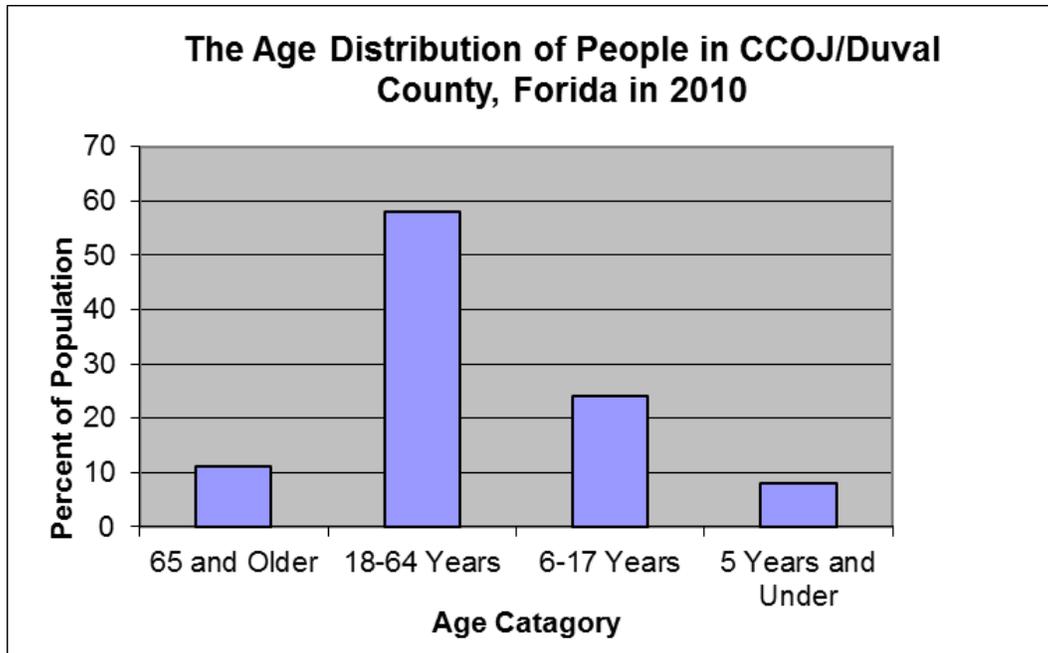
M. Demographics

The population of the Consolidated City of Jacksonville/Duval County is distributed primarily along the St. Johns River radiating out from the downtown area. In the last ten to fifteen years, the area between Southside Boulevard and the beaches has been developed with residential land uses averaging three to four dwelling units to the acre. The beaches are nearly built out and with a combined total of close to 50,000 people.

The overall distribution of population by planning district can be seen on the following table. The age distribution chart that follows shows that by far the majority of the population is less than 65 years old. The population of the Consolidated City of Jacksonville/Duval County in 2013 was 885,855; 456,116 (52%)

females and 429,546 (48%) males. 23% of the population were under 18 years and 12.4% were 65 years and older.

Figure 9: Age Distribution of People in Duval County



Source: U.S. Census Bureau, 2010, American Community Survey / Consolidated City of Jacksonville/Duval County CEMP 2012, pg. 39

Table 3: Duval County Population Density & Distribution

Linear by Planning District									
	1980	1990	2000	2006	2011	2016	2021	2026	2031
Urban Core	56,295	46,622	42,635	43,569	46,636	49,708	52,702	55,495	57,989
Arlington	110,286	147,927	186,072	209,557	224,310	239,088	253,487	266,921	278,919
Southeast	95,753	146,175	195,721	229,088	245,215	261,371	277,112	291,798	304,914
Southwest	102,861	122,527	133,867	161,790	173,180	184,589	195,706	206,078	215,341
Northwest	142,317	132,584	128,848	139,069	148,860	158,667	168,223	177,138	185,100
North	33,408	39,395	48,474	67,025	71,744	76,470	81,076	85,373	89,210
Beaches & Baldwin	30,083	37,741	43,262	41,094	43,987	46,884	49,708	52,343	54,695
County Totals	571,003	672,971	778,879	891,192	953,932	1,016,778	1,078,014	1,135,147	1,186,169

Source: U.S. Census Bureau 2010, Florida Office of Vital Statistics, City of Jacksonville Planning and Development

Source: Consolidated City of Jacksonville/Duval County CEMP 2012, pg. 40

Table 4: Demographic Description of Duval County's Population

Characteristic	Estimate	Percent	U.S. avg.
Total population	864,263	N/A	N/A
Male	419,425	48.5	49%
Female	444,838	51.5	51%
Median age (years)	37.2	N/A	37%
Under 5 years	59,501	6.9	7%
18 years and over	598,166	69	76%
65 years and over	96,169	11	13%
White	521,552	60	74%
Black or African American	247,774	29	13%
Hispanic or Latino (of any race)	62,063	.07	16%
American Indian and Alaska Native	2,569	.002	1%
Asian	35,556	.04	5%
Native Hawaiian and Other Pacific Islander			.2%
Some other race	12,946	.014	5%
Two or more races	20,767	.024	3%
Social characteristics			
Population 25 years and over	567,682	76	N/A
High school graduate or higher	N/A	85	84%
Bachelor's degree or higher	N/A	24	28%
Civilian veterans (civilian pop. 18 yrs. and over)			9%
Disability status (population 5 years and over)			12%
Foreign born			13%
Speak a language other than English at home (population 5 years and over)			21%
Economic Characteristics			
In labor force (population 16 years and over)	458,286	68.1	64%
Mean travel time to work in minutes (workers 16 years and over)	23.4	N/A	25%
Median household income (in 2004 inflation-adjusted dollars)	49,463	N/A	50,046
Median family income (in 2004 inflation-adjusted dollars)	60,114	N/A	60,609
Per capita income (in 2004 inflation-adjusted dollars)	25,854	N/A	26,059
Families below poverty level	N/A	10.4	11%
Individuals below poverty level	N/A	14.2	15%
Housing Characteristics			
Average household size	2.47	N/A	2.63
Average family size	3.04	N/A	3.23
Total housing units	383,560	N/A	N/A
Occupied housing units	342,450	89	97%

Characteristic	Estimate	Percent	U.S. avg.
Housing Characteristics Continued			
Owner-occupied housing units	211,077	55	65%
Renter-occupied housing units	131,373	34	33%
Vacant housing units	53,284	14	13%
Owner-occupied homes	211,077	N/A	N/A
Median value (dollars)	175,900	N/A	187,500
Median of selected monthly owner costs	N/A	N/A	N/A
With a mortgage (dollars)	1,410	N/A	1,496
Not mortgaged (dollars)	408	N/A	431
Source: U.S. Census Bureau, 2010, American Community Survey			

Source: Consolidated City of Jacksonville/ Duval County CEMP 2012 page 42-43

Jurisdictional Demographic Data

The estimated population of Duval County for 2015 is 885,558 (United States Census Bureau, 2013 Population Estimates, American Fact Finder). The growth rate for the County overall remains approximately 1.9% since 2000. The City of Jacksonville Urban Core district, which had previously experienced population decline over the previous two census periods (17% loss in 1980-90 and 9% loss in 1990-00), has increased in population since 2000. The Beaches area remains stable due to its existing high density and near built-out status. Separate population counts for Jacksonville, the beach communities and Baldwin are shown in Table 5.

Table 5: Population of Duval County by Municipalities

<i>Municipality</i>	<i>2013 Estimates</i>
Atlantic Beach	12,895
Baldwin	1,430
City of Jacksonville	842,583
Jacksonville Beach	21,823
Neptune Beach	7,124

SOURCE: US Census American Factfinder, July 2013

The Florida Housing Data Clearinghouse projects that Duval County will have approximately 1,066,100 residents by the year 2040, making it the sixth largest county in population in Florida. Of this total projected population for 2040, more than 45,000 are anticipated to be living in other municipalities, mainly the beach communities (Source: Florida Housing Data Clearinghouse Population Projection by Age for 2000- 2040). In short, there will be a larger number of people with the potential to experience hurricane or tropical storm events every year for the foreseeable future. This population growth will impact disaster planning and

capabilities, particularly evacuation routes for the larger population in the beaches communities. This coastal population may increase during the next five years dependent upon an aircraft carrier proposed to be stationed at Naval Station Mayport in the northeastern corner of Duval County. The additional Navy and civilian personnel that would support an aircraft carrier could be close to 5,000.

The economic downturn impacted every aspect of Jacksonville’s economic profile. As an example, in 2007, the City of Jacksonville permitted 9,422 residential units. The total construction value of these units was \$1,163,008,658 (Source: City of Jacksonville Planning and Development Annual Statistical Package, 2007). In 2011, the City permitted 957 residential units for a value of \$133,291,560 (Source: City of Jacksonville Planning and Development Annual Statistical Package, 2011) for a decrease of 39.3%.

Table 6: Duval County Population Projection Table

Population Projections								
* In 2040, Duval County is projected to have a population of 1066100, ranking it # 6 of Florida's 67 counties.								
Projected Total Population, Duval County, 2010-2040								
Place	2010	2013	2015	2020	2025	2030	2035	2040
Duval County	864263	876077	890700	934098	972502	1005801	1038503	1066100
Notes: Not Available. Sources: University of Florida Bureau of Economic and Business Research, Population Projections; U.S. Census Bureau, 2010 Decennial Census.								

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Source: Florida Housing Data Clearinghouse, population projections/<http://flhousingdata.shimberg.ufl.edu/a/profiles?action=results&nid=1500>

N. NFIP Participation

Local Government Status in the National Flood Insurance Program

The Consolidated City of Jacksonville is a participant in the National Flood Insurance Program (NFIP). The Consolidated City of Jacksonville/Duval County participates in the Community Rating System (CRS), which allows communities to have a discount on the premium rates paid by their citizens for flood insurance. Communities are classified as Class 1 (most premium reduction allowed) through Class 10 (no reduction allowed). Communities not participating are classified as Class 10. Jacksonville currently possesses a CRS rating of 6 (Source: JPPD, 2014).

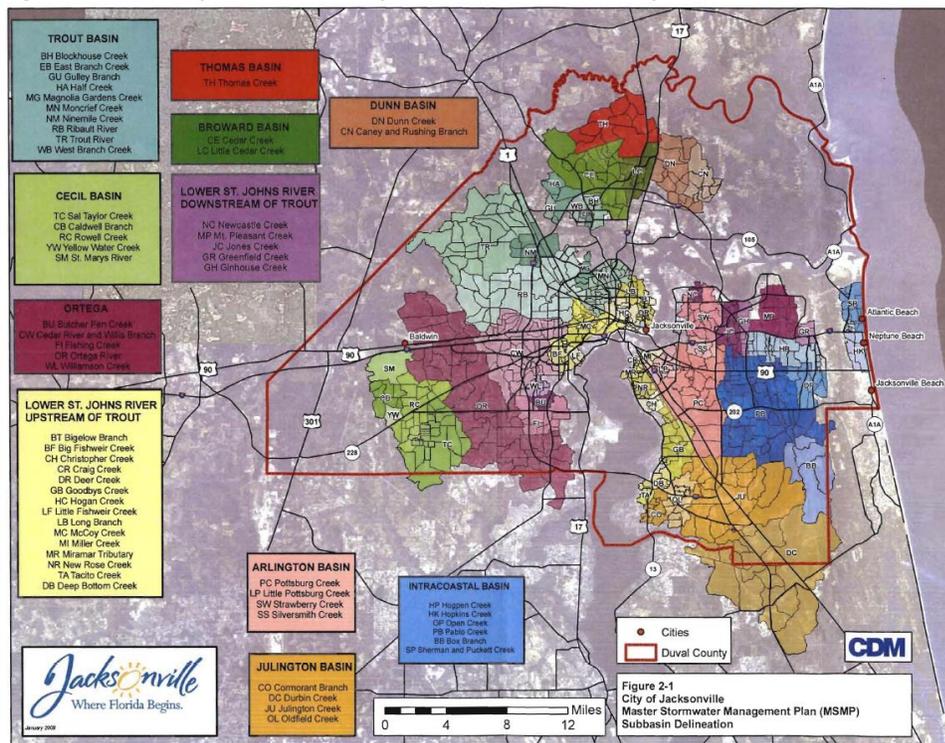
A certified Floodplain Manager in the Planning and Development Department coordinates the Consolidated City of Jacksonville/Duval County’s participation. Portions of the Consolidated City of Jacksonville/Duval County are in a special hazard flood zone. The significance of this program is that citizens would not be able to buy flood insurance if their local jurisdictional government does not participate in the NFIP.

The Consolidated City of Jacksonville/Duval County citizens may receive flood zone determinations or Community Rating System information from the Development Management Group office within the Planning and Development Department. The City of Atlantic Beach, the City of Jacksonville Beach, the City of Neptune Beach and the Town of Baldwin also participate in the NFIP as Class 8 communities. As much of the development now in place along the Consolidated City of Jacksonville/Duval County’s coast and rivers was developed prior to adoption of NFIP standards and rating zones, it is anticipated that should a major

hurricane strike our area, many structures, both private and public, would have to be rebuilt or replaced by structures meeting NFIP and the current edition of the Florida State Building Code standards. To support federal mitigation efforts that are associated with the NFIP, the Consolidated City of Jacksonville/Duval County participates in the Federal Unified Hazard Mitigation Assistance Program and hosts local workshops to educate residents on flood damage reduction techniques.

The CRS has identified repetitive loss areas within the Consolidated City of Jacksonville, as follows. Within these areas, are 231 repetitive loss (RL) properties (CRS Report, 2011). A general description of RL structures follows this section.

Figure 10: Description of the Repetitive Loss Areas Map



Source: Planning and Development Department, Development Services, Master Stormwater Plan, Duval County, furnished January 2015

Repetitive Loss (RL) Areas of Jacksonville:

a. North Side

- Sandra Lane RL Area

This area on the north side of Jacksonville has been “built out” for many years with residential development, with a few commercial locations. A rural cross section with minimal grades appears to slow the travel of runoff that travels to Ribault River. This buildup allows water to rise that can affect private property.

b. South Side

- Bedford Road RL Area

Forest/ open land account for half of the land use of the drainage basin. Low density and wetlands are the next common land uses. Class A and D soils joined with a high ground water table develops a high runoff potential. Properties were developed according to regulations which would be less acceptable today. Lower finished floor elevations near floodways, minimal drainage infrastructure, and low flow potentials of outfalls to Little Pottsburg Creek allow storm water to build and flood private property. This RL area is located in an area designated Doctors Branch Restricted Basin by the City of Jacksonville and proposed development pre/ post discharge is limited to ½ cfs per acre.

- Caddell Drive RL Area

This location is mostly medium density residential properties nearing the build-out levels of development. The remaining amounts of forest/ open land are being converted to medium density residential and commercial development. The combined conditions of large storm events and aged drainage infrastructure allows a buildup of stormwater that affects private property. This area drains into the St Johns River that is tidal but has a large storage potential.

- Hickson Road RL Area

This area consists of forest/ open land account for half of the land use of the drainage basin. Low density and wetlands are the next common land uses. Class A and D soils joined with a high ground water table develops a high runoff potential. Properties were developed according to regulations which now would be less acceptable. Lower finished floor elevations near floodways, minimal drainage infrastructure, and low flow potentials of outfalls to Little Pottsburg Creek allow storm water to build and flood private property. This RL area is located in an area designated Doctors Branch Restricted Basin by the City of Jacksonville and proposed development pre/ post discharge is limited to ½ cfs per acre.

- Martha Ann Drive RL Area

This area consists of forest/ open land account for half of the land use of the drainage basin. Low density and wetlands are the next common land uses. Class A and D soils joined with a high ground water table develops a high runoff potential. Properties were developed according to regulations which now would be less acceptable. Lower finished floor elevations near floodways, minimal drainage infrastructure, and low flow potentials of outfalls to Little Pottsburg Creek allow storm water to build and flood private property. This RL area is located in an area designated Doctors Branch Restricted Basin by the City of Jacksonville and proposed development pre/ post discharge is limited to ½ cfs per acre.

- San Marco RL Area

The land use for this basin is medium density residential and commercial. This area has been an established built-out location for many years. The commercial improvements creating large runoff events coupled with dated infrastructure slows the runoff which builds in the roadway and impacts private property. This location drains directly into the St. Johns River which affects the drainage system with tidal influence.

- Short Road RL Area

This area includes medium density residential development on large properties. This type of construction leaves a large portion of properties as open land. Some roadways are private dirt roads with no drainage infrastructure, and are not maintained by the City of Jacksonville. There is also a large section of wetlands along the upper portions of Julington Creek. These wetlands have vast storage capacity, but development has encroached in some locations.

c. West Side

- Bakersfield Drive RL Area

The predominant land uses in the drainage basin are forest/ open land, medium density residential development, and commercial / light industrial development. Future development is primarily forest/ open land being converted to medium density residential commercial/ light industrial development. Some homes were built on low banks of this portion of Wills Branch, which is tidally influenced. During heavy storms, water overflows the banks when Cedar River/ Wills Branch cannot carry the volume of runoff. The channel in this area has been straightened and dredged by the ACOE. The ACOE will continue regular maintenance in this channel. This area is located in an area designated as Cedar Creek/ Wills Branch Restricted Basin by the City of Jacksonville and proposed development must use a volumetric calculation for pre/ post runoff.

- Machelle Drive RL Area

This land in this basin is primarily open forest. The remainder is medium density residential, with most development south of RL area. Land use will continue in a like manner with further in-fill through time. Drainage issues in the area are the undersized structures in the secondary stormwater management system. The runoff drains into the upper reaches of McGirts Creek.

- West Fourth Street RL Area

This area is highly developed with half residential and parks, and half commercial/ industrial. The sub-basin is "built-out". The site utilizes street paving to transport water into roadside ditches that have minimal grades. This area outfall into Upper McCoys Creek which is a series of undersized bridges and culverts with many being severely overtopped.

Repetitive Loss Data for Duval County:

The jurisdictions in Duval County which participate in the NFIP include the City of Jacksonville (CRS rating 6); City of Jacksonville Beach (CRS Rating 8); City of Atlantic Beach (CRS Rating 8); City of Neptune Beach (CRS Rating 8); and Town of Baldwin (CRS Rating 10). While the Hurricane Evacuation Study did not specifically break out the City of Jacksonville structures, the number of repetitive loss structures for Jacksonville is 231, according to CRS data of 2011 furnished by the JPPD. The number of structures with a RL status is not static. The total number of structures will increase over time based on flooding and damages claimed by individual property owners.

Table 7: Description of Repetitive Loss Structures in Duval County

Community Name	Repetitive loss Structures	SF	2-4 Family	Other Res	Condo Assoc.	Non-Res.
Duval County	289	255	4	7	1	22
Atlantic Beach	8	5	3			
Jacksonville Beach	25	14	4		1	6
Neptune Beach	2	1	1			
Town of Baldwin	0					

Source: FEMA, CRS Data Base, 2012. Hurricane Evacuation Study, 2013, Vol. II, pg. II-55

City of Jacksonville Comprehensive Plan Coastal Conservation Management Element Policy 7.3.2 states that the City shall continue to participate in the National Flood Insurance Program. Jacksonville Beach Comprehensive Plan Coastal Management Element Policy CM.3.1.2 states that the City's Floodplain Management and Stormwater Ordinance shall comply with the minimum building elevations of the FEMA Flood Insurance Rate Maps and the building requirements of the National Flood Insurance Program. Neptune Beach Comprehensive Plan Policy E.1.5.3 states that the City will enforce the requirements of the Federal Flood Insurance Program and consider increasing those requirements, if appropriate. City of Atlantic Beach Section 8-3 of the Code of Ordinances states that flood load and flood resistant construction requirements are adopted to in part meet the requirements of the NFIP for community participation. The Town of Baldwin Code of Ordinances Section 22-233 states that a purpose of the Floodplain Management Ordinance is to meet the requirements of the National Flood Insurance Program for community participation.

Continued NFIP Participation Methods:

All Duval County jurisdictions participate in Community Rating System and National Flood Insurance Program activities. All Duval County jurisdictions will continue their commitment to the NFIP by continuing to:

- Enforce the ordinances which regulate new development and substantial improvements in the special flood hazard areas.
 - Inform the community by the Emergency Preparedness Guide and open public meetings
 - Community outreach
- Maintain elevation certificates on file for all new construction in the SFHAS or for substantial improvements to properties in the SFHA.
- Use best available flood map data for issuing construction permits.
 - Updated mapping provided to each jurisdiction
- Maintain public records and make them available for review
 - Community outreach

- Continue to promote NFIP through the annual Emergency Preparedness Guide
- Maintain records pertaining to LOMAS and LOMRS
- Provide information related to flood hazards, flood maps, etc., to the public upon request.
- Continue Community outreach efforts for compliance with the community rating system program.
 - Integrate new NFIP information and mapping into already existing strong community presentations.
- Continue to promote flood insurance to property owners
 - Continue outreach presentations to the community
- Continue to identify/acquire land in the SFHA open space/preservation
- Promote hazard flood mitigation to the public
 - LMS posted on the county website
 - Grant information posted on County Website
- Continue draining maintenance and drainage system improvement projects
 - Encourage more drainage projects through-out the county in all LMS meetings
- Continue floodplain management activities and target a Class 5 Rating
- Participate in the Northeast Florida CRS User Group through the Regional Planning Council

Section II – Guiding Principles and Goals

A. Guiding Principles

During the planning process, the Duval County LMS Advisory Committee developed a set of community values or Guiding Principles that serve as a vision for hazard mitigation in Duval County. This set of values guided the Advisory Committee Group 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.

The set of Guiding Principles that were affirmed by the Advisory Committee are as follows:

1. *Hazard mitigation should prevent future losses by reducing the risk to people and property;*
2. *Hazard mitigation should emphasize both pre and post disaster efforts for decreasing the vulnerability of existing and new construction to loss;*
3. *Hazard mitigation should emphasize prevention of repetitive losses from hazards;*
4. *Hazard mitigation efforts should strengthen and utilize land use guides to comprehensive planning, regional and local area plans, zoning codes, development standards and incentives to protect vulnerable properties and vulnerable areas;*
5. *Hazard mitigation efforts should strive to protect the public and private sectors by reducing their economic vulnerability and increasing their recovery capabilities; and*
6. *Hazard mitigation should promote personal awareness and responsibility, with an emphasis on education and training for property owners, families and individuals, which should be communicated to the public in a simple, easy to understand format.*

B. Goals & Objectives

The following goals and their associated objectives stemmed directly from the values that were created by the Advisory Committee:

GOAL 1: *Minimize future losses from disasters by reducing the risk to people and property.*

Objective 1.1

Protection of populations and properties in Duval County susceptible to economic or physical loss from natural and man-made disasters shall be consistent with the standards established in the Local Mitigation Strategy and other planning documents.

Objective 1.2

Encourage higher standards of maintenance to existing drainage systems and retention ponds, and monitor cumulative development impacts with a macroscopic view.

Objective 1.3

Work with the National Weather Service to enhance communication and coordination before and during severe weather events.

GOAL 2: *Emphasize pre- and post-disaster planning to decrease vulnerability of existing and new construction to loss.*

Objective 2.1

Identify and prioritize vulnerable properties by using topographic and storm surge maps, traffic analysis and evacuation modeling, economic and environmental impact analysis.

Objective 2.2

Review evacuation time estimates taking into consideration the impact of railroad and bridge openings on travel times.

Objective 2.3

Encourage structure retrofit programs to address identified flood, wind, and evacuation vulnerabilities based on income level.

Objective 2.4

Where feasible, purchase land in known vulnerable areas to prevent placing people and infrastructure in harm's way.

Objective 2.5

Identify post-storm redevelopment options in vulnerable coastal areas, taking into consideration short and long-term environmental, economic and structural issues.

Objective 2.6

Identify vulnerable existing public and private critical facilities and encourage pre-disaster retrofit.

GOAL 3: *Prevent flood-related repetitive losses from natural disasters through regulation and education.*

Objective 3.1

Develop and support public and private projects and programs to retrofit, relocate or acquire properties susceptible to repetitive flooding.

Objective 3.2

Require systematic maintenance programs for storm water management systems.

Objective 3.3

Encourage only low-density residential development in repetitive flood loss areas consistent with other plans for residential development.

GOAL 4: *Strengthen and utilize comprehensive planning, regional and local area plans, zoning codes, development standards and incentives to protect vulnerable properties and vulnerable areas, and support development in less vulnerable areas.*

Objective 4.1

Monitor floodplain regulations and enforcement to assess effectiveness.

Objective 4.2

Develop and support economic incentive programs for both public and private sectors promoting benefits of structural retrofitting.

Objective 4.3

Discourage variances and exceptions in flood hazard areas as identified by Flood Insurance Rate Maps, storm surge, and historical flooding.

Objective 4.4

Promote the Florida Building Code standards requiring new developments and construction to meet applicable wind load standards for proximity to coast.

Objective 4.5

Promote regulations for new structures in 100-year flood areas to be elevated in conformance with or exceeding current Florida Building Code.

Objective 4.6

Encourage locations of critical facilities (schools, hospitals, etc.) to be away from the proximity of identified hazardous material facilities.

Objective 4.7

Enact development standards in wildland urban interface areas, such as setbacks, forest maintenance, access of response vehicles and construction materials.

Objective 4.8

Strengthen existing land use regulations and policies through enhancement of review procedures, and enforcement.

Objective 4.9

Review and consider policies to assure more permeable area in development, by limiting construction of paved surfaces and decreasing run-off.

Objective 4.10

Promote and support incentives to encourage higher standards of protection to structures and facilities from hazards.

Objective 4.11

By pre-storm planning, identify and implement a system to rebuild and protect the dunes system, with crossovers, restoration and revalidation.

GOAL 5: *Strive to protect the public and private sector by reducing their economic vulnerability and increasing their recovery capabilities.*

Objective 5.1

Encourage disaster planning training through collaborative programs with appropriate government agencies and the private sector.

Objective 5.2

Analyze the factors involved in small business decision making regarding preparing for disasters and integrating hazard mitigation into their management practices.

Objective 5.3

Promote mitigation guidelines for businesses to raise awareness about local hazards, assist in vulnerability assessment, aid in the identification of financial and technical assistance available, and facilitate hazard mitigation implementation to include continuity of operations.

GOAL 6: *Hazard Mitigation should promote personal awareness and responsibility, with an emphasis on education and training for property owners, families and individuals, which should be communicated to the public in a simple, easy to understand format.*

Objective 6.1

Promote disaster preparedness education and awareness programs, targeting specific benefits to homeowners, families and individuals.

Objective 6.2

Promote disaster preparedness education and awareness programs, targeting specific benefits to public and private sector.

Objective 6.3

Encourage public information programs for hazard mitigation, emphasizing its direct benefits to citizens, including public officials and private businesses.

Objective 6.4

Identify and coordinate hazard mitigation public information programs and events such as contests and festivals with public and private partners.

Objective 6.5

Identify and seek multiple funding sources that will support hazard mitigation awareness and training program.

Objective 6.6

Educate and promote elected officials, builders and potential homeowners, the economic and safety benefits of designing mitigation features into new construction.

C. Policies, Ordinances, and Programs

The following tables contain information on policies, ordinances and programs of Duval County and its associated jurisdictions, agencies, and local United States Coast Guard for maritime mitigation planning. Mitigation related items were identified and evaluated by the Advisory Committee. The information was

collected and categorized into 13 major issue areas. The policies, ordinances and programs were evaluated by assessing their effectiveness in terms of hazard mitigation. Table 8 provides information on the plans, programs, studies, and reports reviewed by the Advisory Committee and incorporated into the Local Mitigation Strategy. These policies, ordinances and programs were reviewed and confirmed for the purposes of the 2015 LMS Update.

The policies, ordinances, and programs referenced in Table 8 identifies several different local planning documents that contain goals, objectives, policies, and in some cases action items. These documents include Comprehensive Plan, Ordinance Code, Land Development Regulation, Emergency Operation Plan, Comprehensive Emergency Management Plan, and Post Disaster Redevelopment Plan. These documents are managed and maintained by various City departments and updated on varying schedules depending on the document.

According to Rule Chapter 73C-49, Florida Administrative Code, at least every seven years, local governments with Comprehensive Plans are responsible for determining whether the need exists to amend the plan to reflect changes in state requirements since the last time the plan was updated. This applies to all municipalities participating in the Duval County Local Mitigation Strategy Process. All municipalities represented will have to determine if the Comprehensive Plan for the jurisdiction needs to be updated between 2016 and 2018, based on the current schedule. It is during that update that policies related to hazard mitigation can be reviewed and updated. Comprehensive Plans can be updated during any time by local jurisdictions with approval at the local and state levels.

City of Jacksonville Comprehensive Plan Policy 7.5.7 of the Coastal Management Element states that Emergency Management shall propose amendments to the 2030 Comprehensive Plan that reflect recommendations in any interagency hazard mitigation reports or other reports prepared pursuant to Section 406 of the Disaster Relief Act of 1974.

Other plans such as the Comprehensive Emergency Management Plan and Post Disaster Redevelopment Plan are reviewed and updated as needed every 5 years, and it is at this time that hazard mitigation goals, and policies can be updated to maintain consistency with the updated LMS. Land Development Codes are updated as needed by the appropriate codifiers. The appropriate Building and/or Planning Department for each municipality are responsible for ensuring that Land Development Codes and Zoning Codes are adhered to.

Atlantic Beach Coastal Management Element Policy D.1.2.2 states that the City will be a partner in the Duval County LMS process and maintain consistency with the LMS. Objective A.1.8 is supported by a Policy for the City to participate in LMS Planning, and Policies D.2.3.1 and D.2.3.2 support the implementation of hazard mitigation policies from the LMS. Jacksonville Beach Coastal Management Policy CM.5.2.2 states that the City shall assist the County with the development of the LMS. The Comprehensive Emergency Management Plan identifies that the Emergency Preparedness Division for the City of Jacksonville will spearhead County Mitigation Advisory Committee efforts. All municipalities are represented and actively participate on the LMS Advisory Committee and regularly send representatives to meetings.

Representatives from various departments and divisions of the City of Jacksonville, City of Jacksonville Beach, City of Atlantic Beach, City of Neptune Beach, and the Town of Baldwin actively participate in LMS meetings. Sign in sheets for LMS meetings show active participation by all jurisdictions with in the

County with respect to regular quarterly meetings, update meetings, and special meetings.

The City of Jacksonville Emergency Preparedness Division is responsible for overseeing the review and updates to the Comprehensive Emergency Management Plan and the Local Mitigation Strategy. This is completed in coordination with partner agencies and other stakeholders. Municipal Planning and Development Departments are generally responsible for maintaining and updating Comprehensive Plan and other related land use and community planning documents.

USCG Maritime Mitigation Plans:

The below table provides a description of the various standing Area and Port level committees that provide contingency planning and response support for pre-incident planning and response mitigation within the maritime domain.

A brief description of the committees:

1. **Harbor Safety Committee** – led by the local Marine Exchange, this committee provides professional maritime expertise and recommendations to the U.S. Coast Guard in regard to navigation safety and maritime response planning issues. This group meets quarterly. Recent topics include the development of Regulated Navigation Areas within the port, maritime firefighting procedures, and towing vessel safety issues.
2. **Area Maritime Security Committee** – Co-chaired by the U.S. Coast Guard Captain of the Port and the Jacksonville Port Authority and developed post 9-11, this group provides insight and guidance into the development of risk reduction strategies in NE and East Central Florida Ports. This includes development and management of the Area Maritime Security Plan, conducting annual Security Risk Analysis and Mitigation Planning, and coordinating multiple federal, state, and local agency resources for post-incident response management.
3. **Area Planning Committee** – Chaired and led by the U.S. Coast Guard and FL Dept of Environmental Protection, this committee provides subject matter expertise and guidance into the development of the Area Contingency Plan for Oil and Hazardous Material Response. This comprehensive plan provides detailed information on pre-identified high risk environmental risk areas, critical wildlife habitats, pre-determined priority protection strategies, resources, and incident management organization. This committee also aligns closely with the Local Emergency Planning Committees (LEPCs) in Duval County to ensure alignment of plans and integration of resources in addition to pre-incident training/collaboration opportunities.

Most committees meet on a semiannual or quarterly basis. The meeting membership, schedule, agenda development, and final delivery of products are typically the responsibility of the appropriate U.S. Coast Guard Sector Jacksonville representatives who also act as the Executive Secretary for the committees.

All of the below Contingency Plans can be found on U.S. Coast Guard Sector Jacksonville's Homeport Website: <https://homeport.uscg.mil/jacksonville>

Table 8: USCG Maritime Plans

Committee	Hazard Type	Applicable Contingency Plan(s)	Hyperlink to Contingency Plan
Harbor Safety Committee (HSC)	Heavy Weather (Hurricane/Tropical Storm)	Port Heavy Weather Plan for NE and East Central Florida	https://homeport.uscg.mil/jacksonville
	Marine Firefighting	Area Contingency Plan for NE and East Central Florida (ACP)	https://homeport.uscg.mil/jacksonville
	Vessel Sinking (Marine Casualty)	Salvage Response Plan for NE and East Central Florida	https://homeport.uscg.mil/jacksonville
	Port Closure or Port Business Interruption	NE and East Central Florida Marine Transportation System Recovery Plan	https://homeport.uscg.mil/jacksonville
	Oil Discharge/Spill		https://homeport.uscg.mil/jacksonville
	Transportation Security Incident (TSI)	Area Contingency Plan for NE and East Central Florida	https://homeport.uscg.mil/jacksonville
	Hazardous Material Discharge/Incident Response	Area Contingency Plan for NE and East Central Florida (ACP)	https://homeport.uscg.mil/jacksonville
Area Maritime Security Committee (AMSC)	Transportation Security Incident	NE and East Central Florida Area Maritime Security Plan (AMSP)	https://homeport.uscg.mil/jacksonville
	Port Closure or Port Business Interruption	NE and East Central Florida Marine Transportation System Recovery Plan	https://homeport.uscg.mil/jacksonville
Area Planning Committee (APC) (2 committees – NE and East Central Florida)	Heavy Weather	Port Heavy Weather Plan for NE and East Central Florida	https://homeport.uscg.mil/jacksonville
	Marine Firefighting	Area Contingency Plan for NE and East Central Florida (ACP)	https://homeport.uscg.mil/jacksonville
	Oil Spill	Area Contingency Plan for NE and East Central Florida (ACP)	https://homeport.uscg.mil/jacksonville
	Hazardous Material Discharge/Incident Response	Area Contingency Plan for NE and East Central Florida (ACP)	https://homeport.uscg.mil/jacksonville

The Area Maritime Security Plan (AMSP) will require registration in Homeport and the completion of a Non-Disclosure Agreement (NDA) prior to receiving access to the contingency plan. All other plans can be found on the open-source side of homeport and do not require registration.

Table 9: Mitigation Policies

Category	Policy/ Objective	Source	Notes
Land Use/ Zoning / Development Controls/ Incentives	Future Land Use Goal that states the City shall manage growth and redevelopment in a manner that among other things provides for reasonable public safety and security from hazardous conditions associated with coastal locations.	AB 2020 Comp Plan - CM Goal A.1	Supported by associated objectives and policies, including post-disaster redevelopment.
Decrease Vulnerability	The City shall maximize, to the extent feasible, provisions and opportunities for the protection of life and property from the effects of hurricanes and other natural disasters.	AB 2020 Comp Plan - CM Goal D.2	Supported with objectives to address hurricane evacuation, redevelopment within the CHHA, and hazard mitigation.
Land Use/ Zoning / Development Controls/ Incentives	The City shall encourage innovative land development approaches and concepts in the event of post-disaster redevelopment, which will have the effect of reducing dependence upon automobile travel, conserving valuable natural resources and environmentally sensitive areas, and preventing property damage as well as threats to human safety and security.	AB 2020 Comp Plan - CM Objective A.1.8	Supported by associated policies encouraging the use of innovative land development practices, participating in LMS planning, development in the CHHA, and increasing population provisions.

Category	Policy/ Objective	Source	Notes
Reduce Risk	The City shall limit public expenditures that subsidize development within the CHHA except for the maintenance, restoration, or enhancement of natural resources, and the provision for appropriate public access to and use of natural resources.	AB 2020 Comp Plan - CM Objective D.1.1	Supported with a policy to implement a Storm Water Master Plan, and a policy to limit new public construction in the CHHA to improvements that do not increase residential density.
Decrease Vulnerability	Hurricane Evacuation policies that support maintaining a comprehensive hurricane evacuation management plan that incorporates measures deemed necessary to maintain or reduce the City's evacuation clearance times.	AB 2020 Comp Plan - CM Policies D.2.1.1, D.2.1.2, D.2.1.3, D2.1.4, and D.2.1.5	Policies address public shelters, Level of Service Standards, density increases, intergovernmental coordination, and consistency with County plans.
Decrease Vulnerability	Redevelopment policies that support redevelopment activities in the CHHA being guided by redevelopment provisions set forth in the LDR which serve the purpose of reducing the vulnerability of people, property and natural resources to damage from coastal storms.	AB 2020 Comp Plan - CM Policies D.2.2.1, D.2.2.2, D.2.2.3, D.2.2.4 and D.2.2.5	Policies address coordinating with the City's Hurricane Plan, implementing moratoriums as needed, re-entry criteria, redevelopment standards, and the definition of the CHHA.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Hazard Mitigation policies that supporting seeking appropriate means of reducing the potential for loss of life and property through provisions within the LDR, including implementation of hazard mitigation policies from the LMS.	AB 2020 Comp Plan - CM Policies D.2.3.1 and D.2.3.2	Policies that require that all new residential development within the CHHA access impacts to hurricane evacuation times and shelter provision.
Land Use/ Zoning/ Development Controls/ Incentives	The City shall rigorously enforce its floodplain management regulations to conform with or exceed the requirements of FEMA.	AB 2020 Comp Plan - CM Policy D 1.2.1	Enforce floodplain regulations.
Land Use/ Zoning/ Development Controls/ Incentives	The City shall continue to be a partner in the Duval County LMS and participate in Duval County emergency preparedness operations. The City shall review new Land Development Regulations for consistency with the LMS prior to adoption.	AB 2020 Comp Plan - CM Policy D.1.2.2	City will maintain consistency with the LMS.
Decrease Vulnerability	Adequate stormwater management and provision for drainage shall be provided to afford reasonable protection from flooding and to prevent degradation in the quality of receiving surface water and ground water.	AB 2020 Comp Plan - Infrastructure Goal C.2	Supported by associated objectives and policies for protection of natural drainage features, stormwater management and drainage facilities.

Category	Policy/ Objective	Source	Notes
Land Use/ Zoning / Development Controls/ Incentives	Provisions pertain to all development within any flood hazard area.	AB Code of Ordinances Chapter 8 - Flood Hazard Areas	Purpose is to establish minimum requirements to safeguard the public health, safety, and general welfare and minimize public and private losses due to flooding.
Land Use/ Zoning / Development Controls/ Incentives	Relates to the alteration of sand dunes and mangrove stands.	AB Code of Ordinances Section 8-62 - CHHA	Sets limitations on sites in CHHA (Zone V)
Increase Recovery Capabilities of Business and Industry	Business & Industry Preparedness Training.	American Red Cross	Training opportunities for businesses to help them become better prepared for emergencies.
Increase Recovery Capabilities of business and industry	Disaster coordinators and plans for major employers.	Association of Contingency Planners	Local chapter promotes professional disaster planning for businesses.
Prevent Repetitive Flooding	The LDR will include provisions for the regulation of land, subdivisions, and areas subject to seasonal or periodic flooding.	Baldwin 2025 Com Plan - FLUE Policy L.1.1.6	Updated in 2011 EAR.
Land Use/ Zoning/ Development Controls/ Incentives	Protect the natural functions of the 100-year floodplain so that the flood water storage capacity is maintained.	Baldwin 2025 Comp Plan - Conservation Objective C.1.2.3	Updated in the 2011 EAR with supporting policies.
Decrease Vulnerability	The Town shall restrict hazardous waste sites from locating in or around the town.	Baldwin 2025 Comp Plan - Conservation Objective C.1.7	Updated in the 2011 EAR and supported by associated policies.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	No development shall be allowed within 50 feet of a potable drinking well, except structure required for water supply. Only residential development may be permitted within 500 feet of any potable drinking well.	Baldwin 2025 Comp Plan - FLUE Policy L.1.1.11	Updated in the 2011 EAR.
Land Use/ Zoning/ Development Controls/ Incentives	Land Development Regulations shall contain provisions for open space and stormwater management and these provisions shall be maintained.	Baldwin 2025 Comp Plan - FLUE Policy L.1.1.9	Included in Land Development Regulations (6.05.00.04) and updated in the 2011 EAR
Reduce Risk	Baldwin shall review the Landscape Section of the LRD to assure that they are consistent with the principles of "Firewise".	Baldwin 2025 Comp Plan - FLUE Policy L.1.9.4	Added per the 2011 EAR.
Reduce Risk	Adequate stormwater drainage will be provided to afford reasonable protection from flooding; protect life, property and the natural environment; work to improve existing drainage problems and seek funding.	Baldwin 2025 Comp Plan - Water Goal U.3, Objectives and Policies	Supported by associated objectives and policies updated in the 2011 EAR.
Reduce Risk	All development in the Town shall be connected to the centralized sanitary sewer system.	Baldwin 2025 Comp Plan - Water Policy U.1.3.1	Updated in the 2011 EAR.
Land Use/ Zoning/ Development Controls/ Incentives	Floodplain Management Ordinance.	Baldwin Code of Ordinances Land Development Code Article VIII Chapter 22 Section 22-231 Floodplains	The provisions of this article shall apply to all development that is wholly within or partially within any flood hazard area.

Category	Policy/ Objective	Source	Notes
Land Use/ Zoning / Development Controls/ Incentives	Flood Resistant Development.	Baldwin Code of Ordinances Land Development Code Article VIII Division 3 Section 22-384-409	Code being implemented.
Land Use/ Zoning / Development Controls/ Incentives	All electric, telephone, cable television, other communication lines, and gas distribution lines shall be placed underground within easements or dedicated public rights-of-way.	Baldwin Code of Ordinances Land Development Code Article XI Development Standards 3 Division 5 Section 22-522(a)	This regulation serves both aesthetic and mitigation purposes, and is being implemented.
Land Use/ Zoning/ Development Controls/ Incentives	Regulates stormwater performance and design standards; use natural systems to “maximum extent practicable”.	Baldwin Code of Ordinances Land Development Regulations Article XI Division 6 Stormwater Management	Implemented as development proposals are submitted for review.
Decrease Vulnerability	Head of Consolidated City of Jacksonville Emergency Preparedness Organization shall be the Mayor, who shall be responsible (with EOC support) for those actions necessary to reduce the vulnerability of the people and the City to damage and loss of life and property.	COJ 2012 CEMP – Basic Plan	The CEMP establishes the framework of preparedness for all hazards and addresses the four phases of emergency management, preparedness, response, recovery and mitigation.
Decrease Vulnerability	Schedule of disaster/emergency exercises.	COJ 2012 CEMP - Exercises	The purpose of the exercise process is to provide an opportunity for the CCOJ/Duval County, with private organizations and other governmental agencies, to learn roles and responsibilities in a disaster.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Procedures for hurricane evacuations.	COJ 2012 CEMP - Hurricane Evacuation Plan	Procedures tested through training and exercises.
Education/Awareness/ Training/ Communication	Plans that detail participating agencies and their roles and responsibilities in the four phases of an emergency or disaster.	COJ 2012 CEMP – Interagency Coordinating Procedures	ICPs cover a variety of topics including debris management, damage assessment, evacuation, search and rescue, etc. A full list can be found on Page 13 of the CEMP.
Education/Awareness/ Training/ Communication	Mitigation Opportunities overseen by the Duval Prepares Partnership.	COJ 2012 CEMP - Mitigation Opportunities	Voluntary organization that communicates mitigation opportunities through educational outreach programs.
Education/Awareness/ Training/ Communication	EPD will coordinate education and training in mitigation-related issues concerning any actions that may save lives and property.	COJ 2012 CEMP - Public Awareness and Education	Information is communicated to the public throughout the year about hazards, vulnerabilities and disaster preparedness. Public education promotions and on-site presentations are conducted annually.
Decrease Vulnerability	Training Activities for preparedness, recovery, mitigation and response.	COJ 2012 CEMP - Training	The Planner for Training and Exercise is also responsible for emergency preparedness training.
Reduce Risk	Examples of long-term redevelopment actions focus on economic resumption, land use planning, infrastructure reconstruction, structural and facility repair, environmental restoration, historic and cultural site preservation and restoration and hazard mitigation	COJ 2012 Post Disaster Redevelopment Plan - Section 3.1.2	Completed in 2012 with coordination from various local, state and federal agencies and organizations.

Category	Policy/ Objective	Source	Notes
Reduce Risk	The PDRP emphasizes seizing opportunities for hazard mitigation.	COJ 2012 Post Disaster Redevelopment Plan - Section 5.3.1.1	Include mitigation in post-disaster decisions, planning, and redevelopment.
Reduce Risk	Establish and coordinate damage assessment reports and mitigation opportunities for historic structures and sites.	COJ 2012 Post Disaster Redevelopment Plan - Section 6.2 Objective 2.1.5	Under Goal 2.1 to preserve and protect historic properties.
Reduce Risk	Using hazard mitigation measures when assessing recovery needs prior to issuing permits post disaster.	COJ 2012 Post Disaster Redevelopment Plan - Section 6.2 Objective 5.3.8	Under Goal 5.3 to support means that expedite housing recovery.
Reduce Risk	Damage assessment inspectors should be cross trained to identify hazard mitigation opportunities.	COJ 2012 Post Disaster Redevelopment Plan - Section 6.2 Objective 5.4.4	Under Goal 5.4 to identify protocols for habitability evaluations
Reduce Risk	Identify critical infrastructure mitigation project sites; encourage requiring damaged structures to be restored using hazard mitigation measures to reduce vulnerability.	COJ 2012 Post Disaster Redevelopment Plan - Section 6.2 Objective 6.6.2 and 6.6.7	Under Goal 6.6 to support long term infrastructure and facility repairs and restoration.
Land Use/ Zoning/ Development Controls/ Incentives	To ensure that development within the coastal area is compatible with the coastal area's natural character.	COJ 2030 Comp Plan - CCM Goal 11, Objective 11.1	Supported with associated policies.
Decrease Vulnerability	The City shall make every reasonable effort to ensure the public safety, health and welfare of people and property from the effects of coastal storms and hurricane damage.	COJ 2030 Comp Plan - CCM Goal 7, Objective 7.1, and Policy 7.1.1	Evacuation times have been established. Goal and objective supported by associated policies.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	New or expanding boat facilities shall provide adequate protection against storm surges, winds, hurricanes, petroleum, chemicals, or other hazardous material spills.	COJ 2030 Comp Plan - CCM Objective 10.3	Being implemented through boat facilities citing criteria & state and federal regulations that address spills/hazardous materials. Supported by associated policies.
Decrease Vulnerability	All boat facilities must ensure protection of water quality consistent with the Boat Facilities Siting Plan requirements and the other water quality requirements.	COJ 2030 Comp Plan - CCM Objective 10.4	Being Implemented through a State permitting process with SJRWMD and FDEP.
Reduce Risk	The City shall reduce the potential for contamination of water and natural resources as a result of chemical spills, and will continue to implement the hazardous waste management program.	COJ 2030 Comp Plan - CCM Objective 2.5 and 2.6	Supported by associated policies.
Reduce Risk	The City shall protect the hydrological and ecological benefits of flood plain areas, such as water quality, fish and wildlife habitat, and prevention of downstream flooding.	COJ 2030 Comp Plan - CCM Objective 2.7	Supported by associated policies to prevent local flooding hazards.
Decrease Vulnerability	City shall encourage the continuance of federally authorized Jacksonville Beach, beach restoration projects.	COJ 2030 Comp Plan - CCM Objective 6.2	All policies under this objective are either being implemented or part of ongoing programs. Objective supported by associated policies.

Category	Policy/ Objective	Source	Notes
Reduce Risk	City shall continue to ensure access to beaches, coastal shoreline, and the St. John's River and its tributaries available to public.	COJ 2030 Comp Plan - CCM Objective 6.5	All policies under this objective are either being implemented or are part of ongoing programs.
Decrease Vulnerability	Calls for implementation of the Basin Management Action Plan and restoration of the health of the River and its tributaries.	COJ 2030 Comp Plan - CCM Objective 6.6	Being implemented. The City continues to coordinate with FDEP and SJRWMD to implement the TMDL program.
Reduce Risk	Adequate shelter space shall meet standards for populations in Hurricane Evacuation Zones at risk under Category 3 storm event; the City should assist in providing shelter and transportation for special needs population.	COJ 2030 Comp Plan - CCM Objective 7.2 & Policies 7.2.1 and 7.2.6	Being implemented. Shelter criteria and standards under constant review with American Red Cross and Duval County School Board.
Decrease Vulnerability	Limit public expenditures that subsidize growth by ensuring that building and development activities are carried out in a manner which minimizes danger to life and property from natural disasters and restricting intensity of development within CHHA.	COJ 2030 Comp Plan - CCM Objective 7.3	Successfully implemented under existing policies; existing codes, FEMA requirements and FDEP regulations adequate for compliance. Supported by associated policies.
Reduce Risk	Limit development and density within CHHA; direct it outside the CHHA; mitigate impact of natural hazards in area.	COJ 2030 Comp Plan - CCM Objective 7.4	Being implemented; policy in place that promotes clustering; further defined facilities prohibited in CHHA.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Within 60 days of occurrence of major destructive storm, City shall prepare post-disaster plan to reduce or eliminate exposure of human life and property to natural hazards.	COJ 2030 Comp Plan - CCM Objective 7.5	A Post Disaster Redevelopment Plan has been drafted and adopted by the City. Objective supported by associated policies.
Reduce Risk	The City will continue to update the Master Stormwater Management Plan to ensure that the necessary stormwater system is in place.	COJ 2030 Comp Plan - CCM Policy 2.3.3	Takes place within the 22 targeted septic tank phase out areas. For pollution control.
Reduce Risk	The City shall limit public expenditures in the CHHA, to those improvements which restore or enhance natural resources or which maintain existing public facilities and services at their existing levels.	COJ 2030 Comp Plan - CIE Objective 1.4 Policy 1.4.4	Excluding public recreation expenditures.
Decrease vulnerability	The City must utilize Level of Service (LOS) standards for Mass Transit, Traffic Circulation, Drainage, Sanitary Sewer, Solid Waste, Potable Water, Recreation and Open Space and Schools when reviewing the impacts of new development.	COJ 2030 Comp Plan - CIE Policy 1.1.5	Specific standards for each concurrency area can be found within the Capital Improvement Element (CIE) of the Comp Plan.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Maintain, enhance and conserve natural and environmental resources, especially coastal resources, and ensure that all development and redevelopment within the coastal areas is consistent with the CCM Element including the Hurricane Evacuation Plan.	COJ 2030 Comp Plan - FLUE Objective 1.5	Supported by associated policies.
Reduce Risk	Regulation of the type and density/intensity of development in the CHHA in order to protect the public health, safety and welfare, and the natural environment.	COJ 2030 Comp Plan - FLUE Policy 4.1.1	Regulation of CHHA development.
Decrease Vulnerability	The City shall maintain a method for financing the operation and management of stormwater facilities; funding shall be used to reduce existing flooding.	COJ 2030 Comp Plan - Infrastructure Policy 1.4.1	Flood reduction policies.
Decrease Vulnerability	Public Works shall deny permits to any new development that fills a flood plain without compensation for the fill by excavating an equal volume or improvement to the drainage system.	COJ 2030 Comp Plan - Infrastructure Policy 1.5.2	Flood reduction policies.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	The City shall delineate for all new or expanded roadway facilities planned for construction within four miles of the Atlantic Ocean, the facility's role in the hurricane evacuation plan for the beaches communities.	COJ 2030 Comp Plan - Transportation Policy 3.1.1	Coordination of roadway planning with the current Hurricane Evacuation Plan.
Decrease Vulnerability	City shall establish construction standards that minimize the impacts of man-made structures on beach or dune systems.	COJ 2030 Comp Plan, CCM Objective 6.3	Implemented and regularly updated as need requires. Building codes have been adopted that include hurricane wind force standards (100 mph winds).
Decrease Vulnerability	Facilities designated as a hurricane evacuation route will be clearly identified as such with proper signage. Improvements to primary hurricane evacuation routes shall be maintained at elevations above the Category 3 or Category 4 storm surge.	COJ 2030 Comp Plan, TE Policy 3.1.2	A portion of this policy is new from the 2009 EAR-based amendments.
Prevent Repetitive Flooding	City Floodplain Management Ordinance.	COJ Code of Ordinances Chapter 652 - Floodplain Management	The provisions of this Chapter shall apply to all development that is wholly within or partially within any flood hazard area.
Land Use/ Zoning / Development Controls/ Incentives	Strict regulation of standards for development.	COJ Code of Ordinances Chapter 654 – Subdivisions	On-going
Land Use/ Zoning / Development Controls/ Incentives	Strict regulation of exceptions and variances.	COJ Code of Ordinances Chapter 656 - Zoning Code	On-going

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	To create and maintain a local disaster preparedness agency in the City and to authorize cooperation with the federal and state governments, other local disaster preparedness agencies, and other local groups and individuals.	COJ Code of Ordinances Chapter 674 - Disaster Preparedness and Mayor's Executive order 96-201	Disaster preparedness and civil emergency. Establishes Security & Emergency Preparedness Planning Council (SEPPC) and specifies disaster preparedness, response & recovery procedures.
Reduce Risk	Stormwater Management Plan.	COJ Code Of Ordinances Chapter 754 - Master Stormwater Management Utility Code	To improve the public health, safety and welfare by providing for the safe and efficient capture and conveyance of stormwater runoff and the correction of stormwater problems.
Education/Awareness/ Training/ Communication	Public education and awareness for disaster preparedness	COJ Emergency Preparedness Programs	On-going Programs
Land Use/ Zoning/ Development Controls/ Incentives	NFIP/CRS/FIRM's standards and requirements for flood insurance policies, community discounts.	COJ FEMA Program	City passed FEMA audit/Application submitted for CRS
Land Use/Zoning/ Development Controls/ Incentives	Recommends protection of environmentally sensitive and unique features with Special Management Area activities (natural drainage systems)	COJ Growth Management Task Force Report – Final Recommendations: Issue Six p.61	5 areas created by COJ Comp Plan for conservation. One area (Timucuan Preserve) protected under Federal program Public Law 100-249 (1988). Another under F.S. Ch.258 (Aquatic Preserve) Third area (Julington-Durbin Creek Peninsula) acquired by COJ, State and SJRWMD. Conservation easement over portion of 4th area (Cedar Swamp) was acquired by COJ, State and SJRWMD

Category	Policy/ Objective	Source	Notes
Reduce Risk	Evaluate potential sensitive natural areas for protection.	COJ Growth Management Task Force Report – p. 30	Conservation dedications encouraged where possible with land use changes.
Increase Recovery Capabilities	Promote more “Supply side” economic development opportunities.	COJ Growth Management Task Force Report – p. 58	Encourages diversification with 2 initiatives.
Land Use/ Zoning / Development Controls/ Incentives	Encourage infill development and improve and maintain sound infrastructure conditions (roads, drainage, water and sewer).	COJ Growth Management Task Force Report - p.53	Incentives for infill housing investments in specified area adopted; mixed use districts being established; Springfield Zoning Overlay Study completed; funding for septic tank replacement complete.
Reduce Risk	Promote implementation of on-going stormwater management program and create dedicated funding source (long-term funding for drainage projects).	COJ Growth Management Task Force Report – p.55, 59;	Funding for drainage improvements.
Decrease Vulnerability	Master transportation plan should address area wide integrated, multi-modal transportation approach that includes roadway prioritization and linkages of transportation facilities for ultimate build out of City.	COJ Growth Management Task Force Report (Transportation Section)– p. 5	Broad transportation master planning process funded initiated 1998.
Reduce Risk	Recommends underground utilities where possible.	COJ Growth Management Task Force Report p.17	Recommended for both aesthetic reasons and would serve a mitigation function.

Category	Policy/ Objective	Source	Notes
Education/Awareness/ Training/ Communication	Enhanced procedures and routes to facilitate expedient evacuation.	COJ Hurricane Evacuation Traffic Management Plan (EPD)	Plan has been approved.
Land Use/ Zoning / Development Controls/ Incentives	Regulates development/building process.	COJ Land Development Regulations	Referred to as the "Red Book"
Reduce Risk	Industrial wastewater facilities must provide information to describe practices to be followed to ensure adequate wastewater treatment during emergencies such as power loss and equipment of the proposed/permitted facility.	FDEP Industrial Wastewater Permit Application Form	Permit issuance is dependent upon satisfaction of all conditions in the application (Compliance and enforcement are a routine part of the Department's activities).
Decrease Vulnerability	Management of federal disaster related policies and programs; National Mitigation Strategy guides federal policy.	Federal Emergency Management Agency (FEMA)	County meeting state and federal requirements.
Reduce Risk	Wetland projects must not cause adverse flooding to on-site or off-site property.	Florida Administrative Code 62-330.200(2)(c) which adopts 40C-4.301(1)(b) (FDEP)	This requirement is evaluated and addressed during review of the permit application (Compliance and enforcement are a routine part of the Department's activities).

Category	Policy/ Objective	Source	Notes
Reduce Risk	Solid waste disposal sites are prohibited from being located in the 100-year floodplain where it will restrict the flow of the 100-year flood, reduce the temporary water shortage capacity of the floodplain unless compensating storage is provided, or result in a washout of solid waste.	Florida Administrative Code 62-701.340(4)(b) (FDEP)	This requirement is evaluated and addressed during review of the permit application, (Compliance and enforcement are a routine part of the Department's activities).
Decrease Vulnerability	Emergency provisions for damage of existing coastal structures & protection of public infrastructure and private structures.	Florida Administrative Code Ch. 62B-33.0051 Coastal Armoring (FDEP)	Ongoing.
Decrease Vulnerability	Public drinking water supply wells shall be located on ground least subject to localized flooding.	Florida Administrative Code Chapter 62-555.312(5) (FDEP)	This is addressed during permit application review, (Compliance and enforcement are a routine part of the Department's activities).
Decrease Vulnerability	Firewise Community Program.	Florida Forest Service	Educates homeowners and community professionals about creating defensible space around their homes, helping to protect them from the dangers of wildfire.
Reduce Risk	(1) Wetland projects shall not be harmful to the water resources or contrary to the public interest, (2) Wetland permits shall not be issued for projects that are harmful to the water resources, or are contrary to the public's interest.	Florida Statute 373.414 & Florida Administrative Code 62-330.200(2)(c) which adopts 40C-4.302 (FDEP)	On-going; during review process.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Creation of the State Division of Emergency Management and their responsibilities.	Florida Statute Chapter 252 - Florida Division of Emergency Management	The Division of Emergency Management plans for and responds to both natural and man-made disasters. These range from floods and hurricanes to incidents involving hazardous materials or nuclear power.
Reduce Risk	It is the intent of the Legislature that local government comprehensive plans restrict development activities where such activities would damage or destroy coastal resources, and that such plans protect human life and limit public expenditures in areas that are subject to destruction by natural disaster.	Florida Statutes 163.3178 Coastal Management	Supported by Florida Statute Chapter 163.3177 requiring that Comprehensive Plans include a Coastal Management Element.
Reduce Risk	Florida Forest Service will identify activities required to minimize threat of wildlife in areas of new development or adjacent to wild lands.	Florida Statutes Chapter 590.02(6)	The Florida Forest Service shall undertake privatization alternatives for fire prevention activities including constructing fire lines and conducting prescribed burns and, where appropriate, entering into agreements or contracts with the private sector to perform such activities.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Permitted hazardous waste facilities must meet all siting requirements of both rules before permit will be issued. Florida Statute 403 requires specific setback distances from residences, hospitals, nursing homes, day care facilities, schools, and churches. 40 CFR 264 location standards restrict hazardous waste treatment, storage or disposal facilities in seismic fault areas, 100 year floodplains and salt dome formations.	Florida Statutes, 403.7211, and 40 CFR 264.18 (FDEP)	Permits are not issued unless all conditions for siting are met, (Compliance and enforcement are a routine part of the Department's activities).
Land Use/ Zoning / Development Controls/ Incentives	Regulates building code for construction in coastal areas.	Florida Statutes, Ch. 161.053	Establishes Coastal Construction Control Lines.
Decrease Vulnerability	The vulnerability of the people and property of Jacksonville Beach to coastal hazards such as hurricane damage and coastal flooding shall be minimized.	JB 2030 Comp Plan - CM Goal CM.3 and Objective CM.3.1	Supported by policies aimed to restrict development with in CHHA and curtailing public funding in this area.
Decrease Vulnerability	The City's hurricane evacuation time for a Category 3 storm shall be less than 12 hours.	JB 2030 Comp Plan - CM Objective CM.3.2	Supported by policies aimed to keep evacuation times below 12 hours.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	The City shall provide immediate response to post-disaster emergency situations. Priority shall be given to ensure public health, safety and welfare.	JB 2030 Comp Plan - CM Objective CM.3.3	Supporting policies include Local Peacetime Emergency Plan, evacuation re-entry, Recovery Task Force Development, repair and clean up actions, coastal zone requirements, and contingency fund.
Reduce Risk	Construction seaward of the CCCL shall be strongly discouraged.	JB 2030 Comp Plan - CM Policy CM.1.3.1	Development in strict compliance with existing regulations.
Decrease Vulnerability	New sanitary sewer facilities shall be flood proofed & designed to insure that raw sewage will not leak from them during flooding and storm events.	JB 2030 Comp Plan - CM Policy CM.3.1.4	On-going
Land Use/ Zoning/ Development Controls/ Incentives	Undeveloped lands within Coastal High Hazard Area shall be designated "conservation-protected areas" on Future Land Use Map, and CHHA shall be shown on city zoning map.	JB 2030 Comp Plan - CM Policy CM.3.1.7	On-going
Land Use/ Zoning / Development Controls/ Incentives	Land use amendments shall not be approved in Category 3 Hurricane Vulnerability Zones unless they (1) reflect existing conditions, (2) are for lower density or (3) the developer pays impact fee for all road improvements.	JB 2030 Comp Plan - CM Policy CM.3.2.2	On-going

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Future improvements to Emergency Evacuation Route roads shall include remedies to reduce or eliminate hindrances likely to result from flooding.	JB 2030 Comp Plan - CM Policy CM.3.2.3	All evacuation routes in Jacksonville Beach are under control of JTA and/or FDOT.
Education/Awareness/ Training/ Communication	The City shall assist the County with the development of the LMS.	JB 2030 Comp Plan - CM Policy CM.5.1.4	A JB representative will be present on the LMS advisory committee.
Decrease Vulnerability	City will join with adjacent local communities to coordinate local input into future beach renourishment projects performed by USCOE (also Intergovernmental Coordination).	JB 2030 Comp Plan - CM Policy CM.5.2.2	On-going; cyclical US COE contract.
Reduce Risk	Identify and recommend to the State and SJRWMD floodplains that would warrant acquisition under CARL program.	JB 2030 Comp Plan - Conservation Pol.1.3.1	On-going, various grant program applications, i.e. Preservation 2000, SWIM, & CARL.
Reduce Risk	Future land development shall protect the natural functions of floodplains.	JB 2030 Comp Plan - FLUE Policy LU.1.4.7	Reduce development in floodplains.
Decrease Vulnerability	Work with MPO (now the TPO) and FDOT on identifying and finding solutions to deficiencies on State maintained road (Evacuation Routes).	JB 2030 Comp Plan - Traffic Circulation Pol. 1.2.4	On-going
Decrease Vulnerability	All buildings must be built to withstand various wind loads.	JB Code of Ordinances - Buildings and Building Regulations	Chapter 7

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Calls for evacuation of entire city for Category 3, 4, or 5 hurricanes.	JB Emergency Operations Plan	As needed; Now superseded by new Storm Surge evacuation Zone maps.
Decrease Vulnerability	Outlines emergency procedures – Hurricane SOP calls for identification and initiation of long term mitigation strategies based on City Comprehensive Plan.	JB Emergency Operations Plan	Post-disaster, on-going.
Land Use/ Zoning / Development Controls/ Incentives	Regulations for building and development in flood hazard areas – standards for variances.	JB Land Development Regulations Section 34-467	On-going
Land Use/ Zoning / Development Controls/ Incentives	Flood Hazard area development code restricts use and density.	JB Land Development Regulations Section 34-467	On-going
Land Use/ Zoning / Development Controls/ Incentives	For any structure damaged by more than 50% of its assessed value, the entire structure must be brought into compliance with current codes.	JB Zoning Code	On-going
Decrease Vulnerability	The city will restrict further new development or redevelopment that would destroy or otherwise damage coastal resources; discourage development in the CHHA; cooperate and participate with all applicable agencies on hurricane preparedness planning; and prepare a post-disaster redevelopment plan.	NB 2010 Comp Plan - Coastal Resources Goal E.01, Objectives E.01.04, E.01.05, and E.01.06	Supported with associated policies.

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	The City shall coordinate future land uses and coastal area population densities with appropriate regional hurricane plans.	NB 2010 Comp Plan - FLUE Objective A.01.06 and Policy A.01.06.01, 02, and 03	Policy A.01.06.03 specifies that the city will update its hurricane evacuation plan every 5 years.
Land Use/ Zoning/ Development Controls/ Incentives	The City shall restrict any further new development or redevelopment that would destroy or otherwise damage coastal resources; discourage further urban development and shall limit public expenditures that subsidize development in CHHA; cooperate and participate with county hurricane evacuation times; and prepare a post-disaster redevelopment plan.	NB 2010 Comp Plan - Goal E.01 Coastal Resources, Objectives E 01.04, E.01.05, E.01.06, and E.01.10	Supported by policies related to hurricane evacuation, post-disaster redevelopment and intergovernmental coordination.
Land Use/ Zoning / Development Controls/ Incentives	Through a PDRP, direct population concentrations away from defined CHHA.	NB 2010 Comp Plan - Objective E.01.10	Control redevelopment activities within storm-damaged areas.
Reduce Risk	Stormwater drainage regulations will provide for efficient system to protect life, property and natural environment at a cost consistent with the public welfare; protect and maintain natural groundwater aquifer recharge areas.	NB 2010 Comp Plan - Policies and Objectives D.01.01.01, D.03.01, D.04, E.01.02, E.02.02, H.01.01	

Category	Policy/ Objective	Source	Notes
Land Use/ Zoning/ Development Controls/ Incentives	Eliminate septic tanks as centralized service is made available, as requested by residents, or because of septic tank failures.	NB 2010 Comp Plan - Policy D.01.03.01	Supported by additional policies.
Decrease Vulnerability	Stormwater Drainage Regulations in the City's LDR will provide for an efficient storm drainage system in order to protect life, property and the natural environment.	NB 2010 Comp Plan Goal D.03, Objective D.03.01	Supported by associated policies to prevent local flooding hazards.
Land Use/ Zoning/ Development Controls/ Incentives	Establish processes among the various governmental agencies to achieve coordination of all development activities; preservation of the quality of life; and efficient use of available resources.	NB 2010 Comp Plan Goal G.01	Supported by associated objectives and policies for intergovernmental coordination.
Decrease Vulnerability	Land development regulations shall contain provisions for regulations for areas subject to seasonal and periodic flooding.	NB 2010 Comp Plan Policy A.01.01.05	
Land Use/ Zoning / Development Controls/ Incentives	The City shall establish policies which will restrict development and redevelopment activities within the 100-year flood plain. Floodplain LDRs shall establish minimum first floor levels above the FEMA 100-year floodplain elevation.	NB 2010 Comp Plan Policy E.02.02.08	

Category	Policy/ Objective	Source	Notes
Reduce Risk	Minimize capital investment that subsidizes development in high-hazard coastal areas.	NB 2010 Comp Plan, Obj. H.01.02	Supported by associated policies.
Decrease Vulnerability	City adopted the latest edition of the Florida Building Code.	NB Code of Ordinances Section 8-26	
Decrease Vulnerability	Hurricane evacuation procedures for community and city government; protection of public health and welfare, critical records & facilities during evacuation, response and recovery.	NB Hurricane Preparedness Plan	Plan anticipates 4 day operation of government without outside assistance; reviewed each April.
Decrease Vulnerability	Establishes pre-approved local wind load standards for single family wood frame construction.	NEFBA Wind Standards for Single Family Dwellings	Promotes pre-engineered local standards for specific types of construction; under-used.
Reduce Risk	Updated SLOSH model of potential storm surge and flooding from hurricanes of five different intensities.	NEFRC Storm Surge Atlas, December 2010	Updated in 2010 with new data.
Increase Recovery Capabilities of Business and Industry	Resources for training businesses in disaster planning.	U.S. Chamber of Commerce	Resources to agencies and organizations and tools for planning and training for business.

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Section III - Hazard Identification & Vulnerability Analysis

A. Identifying Hazards

Since the inception of the Disaster Mitigation Act of 2000, the science, collaboration and planning for the implementation of an effective mitigation program in Duval County has grown exponentially. During the past 14 years, the Consolidated City of Jacksonville/Duval County, in cooperation with the jurisdictions, partners, and stakeholders in public and private entities, elected and appointed officials, and representatives of organizations, professions and disciplines closely linked to the planning and strategies that comprise mitigation and resilience into the “whole community” approach espoused by FEMA for an effective mitigation program through the cycle of preparedness, response, recovery and mitigation. FEMA defines natural hazards as natural events that threaten lives, property, and other assets.

Therefore, identification of consequences in emergency management planning stress the identification of consequences in emergency management planning on *vulnerability* (the expected severity of the event), *probability* (the frequency of past events) and *risk* (equal to the vulnerability as compared to the probability of future events).

The process for the update of the 2015 Local Mitigation Strategy is contained in Appendix C. To ensure the development of a functional document that will facilitate hazard mitigation activities in Duval County, the LMS Advisory Committee (also known as *Duval Prepares*) members who are subject matter experts, practitioners or representatives of municipalities, convened to examine a county-wide Hazard Identification and Vulnerability Assessment (HIVA) that considered natural and man-made/technological hazards. This assessment built upon the initial LMS adopted in 1998, which was ratified in the subsequent 2005 and 2010 updates. This comprehensive process provides planning assumptions for pre-disaster statistical basis for post-disaster planning and recovery by identifying local hazards and hazard areas, defining all areas of vulnerability, both geographic and demographic, and assessing the capacity of the community to mitigate the effects of those hazards. In addition, this assessment addresses the probability of occurrence of each hazard.

Planning Assumptions:

The planning assumptions established by the committee members for the basis for prioritizing hazards, vulnerabilities, and risks, are as follows:

- The committee examined the ten most significant hazards to the County, based on the (a) probability of occurrence, (b) severity of the hazard, (c) percent of population affected, and (d) frequency of occurrence. See Table 15, pg. 115.
- Hazard identification was accomplished by examining the county’s geography, population estimates and demographics, land use, and development patterns. This assessment assisted the committee in determining hazards and ranking them.
- As ratified in the 2010 LMS Update, thunderstorms and tornadoes were combined into one hazard.

- All information not attributed in the LMS to a specific source is sourced with the Duval County Comprehensive Emergency Management Plan (CEMP), updated in 2012 and currently in the midst of its five-plan planning cycle. The CEMP will be updated to reflect the adoption of any new hazards identified in the 2015 LMS Update.
- The committee adopted one new hazard, called adaptation to climate change, based on the Florida Department of Emergency Management's adoption of the 2013 State of Florida Enhanced Hazard Mitigation Plan. Further, staff reviewed documents furnished by the Regional Community Institute of Northeast Florida, Inc., a subsidiary of the North Florida Regional Planning Council, which has examined this issue and its potential impacts to North Florida and Duval County.
- Historically, numerous natural and man-made disaster events have impacted the Consolidated City of Jacksonville/Duval County. However, while historic data can provide significant knowledge of disaster types, extent of impact and frequency of occurrence, neither past frequency nor the historical absence of particular events can accurately predict the likelihood of future events or their magnitude. Assumptions are made concerning the parameters and definitions of magnitude. Historical record, if available, is provided in this section. See Table 15, page 115.
- The risk assessment was conducted with an all-hazards approach, and a few hazards were considered to be significant enough to address in the final document. For the purposes of this analysis, and to ensure compliance and cohesion among the baseline documents used for emergency management planning, the following hazards are eliminated from further discussion in this update:
 1. Sinkhole/Landslide
 2. Dams/Levee Failure
 3. Tsunami
 4. Earthquake
 5. Volcano

These hazards are eliminated from further review due to (a) extreme low probability of occurrence, (b) no recorded history or data of the hazard taking place within the Consolidated City of Jacksonville/Duval County jurisdictions, (c) difficulty in prediction and/or (d) unlikelihood of effective mitigation.

- Further, as the hazards are discussed in this section, two natural hazards are addressed through non-infrastructure based mitigation strategies, as follows:
 1. Extreme Temperature < 28 degrees or > 98 degrees
 2. Drought

The impacts of these hazards are addressed through the alert notification systems used by county emergency management and the National Weather Service to provide warnings to the populations affected by this hazard

- FEMA defines technological hazards as hazardous materials incidents, inclusive of power plant failures. Two man-made and technological hazards are included in this analysis after the *Duval Prepares* advisory body concluded the vulnerability, risk and probability of these hazards remain a

concern for Duval County. Subject matter experts available to the County provided assessments from the military, Florida Department of Health, the Jacksonville Department of Environmental Compliance, and JEA, the entity responsible for the electrical, water and sewer utility serving 99 percent of the county.

The man-made and technological hazards that are identified are as follows:

- Terrorism (expanded to include Cyber-Terrorism, Active Shooter/Lone Offender, and Biological Disease Outbreak)
- Hazardous Materials Accidents

Natural Hazards:

The description of the hurricane hazard to Duval County and its jurisdictions has been based upon the information available through the 2013 Florida Statewide Regional Hurricane Evacuation Program (hereafter referred to as the Hurricane Evacuation Study). The National Weather Service Jacksonville updated the natural hazard analysis using a 64-year period rate of return for the following hazards:

- Hurricane Wind
- Hurricane Storm Surge
- Flooding
- Wildfire
- Extreme Temperatures
- Drought

B. Geography and Relationship to Hazards

The geography of Duval County and its jurisdictions was discussed in Section I of the LMS Update, pgs.24-25. The business, commercial, and industrial development in the county led to the expansion of job opportunities. The economic growth stimulated the residential growth. Satellite developments grew up and continue to expand in remote areas of the county. Areas include Arlington, Mandarin, Ortega, the communities west of the Intracoastal Waterway, and the Beaches. The population growth in these areas, which were once remote and isolated, today makes up the unified urban fabric of Duval County. The population is now located in significant segments of floodplain, coastal plains, and other areas vulnerable to the hazards identified in this section.

Transportation Network

The Consolidated City of Jacksonville/Duval County is well-connected to its region, the state and nation by several interstate and other federal highways, an international airport, two municipal airports, extensive rail service provided by three major railroads (Norfolk Southern, Florida East Coast, and CSX) and a major port for ocean and river traffic at JAXPORT.

The Consolidated City of Jacksonville/Duval County contains approximately 152 miles of highways, 403 miles of arterial roads, and 465 miles of collector streets (JPPD, 2015). In recent years, the I-295 Beltway connecting roads have been completed, enabling adjoining St. Johns and Clay counties improved access to and through Duval County. The transportation network is the primary conduit for daily life activities of Duval County and would be impacted by the natural and man-made/technological hazards for which the county has the most susceptibility. In the case of a tropical cyclone/hurricane, evacuation times would be impacted by the rate of road clearance and ensuing gridlock at the peak of evacuation.

C. Land Use and Development Patterns in the Jurisdictions of Duval County

More than 885,855 persons are estimated to live in Duval County as of 2013 (Source: U.S. Census Bureau, American Fact Finder, 2013 Population Estimates). The pattern of development has left large and scattered undeveloped areas within the county. While some areas contain farms and large lot residential uses, large parts of the county, notably the southwest portion, is largely untouched, mostly held in large tracts of land devoted to tree farming. Economic downturns during the mid-2000s suppressed land use development throughout the County. As the economy improves beyond 2015, more development will be proposed towards areas with a significant concentration of conservation land, rural residential, agriculture, and marshland, subject to storm surge and tidal waters. Development to the north and east towards the Intracoastal Waterway, and to the south, will resurge as the economy continues to stabilize. The following is a description of the most distinctive transportation, land use, and development patterns geographic features within Duval County that contribute to the hazards with the most probability of risk and vulnerability:

The following list summarizes the existing land use of the Consolidated City of Jacksonville/Duval County:

Table 10: Generalized Future Land Uses in Duval County

Table IC-17. Generalized Future Land Uses, 2010			
Code	Land Use Category	Acres	%
AG	Agriculture	127,727	23.17
COM	Commercial / Office	32,876	5.96
CONS	Conservation	27,293	4.95
IND	Industrial	22,818	4.14
MU	Mixed-Use	33,178	6.02
PUB	Public	54,982	9.97
REC	Recreation / Open Space	9,552	1.73
RL	Residential Low Density	18,370	3.33
RM	Residential Medium Density	174,355	31.63
RH	Residential High Density	178	0.03
UNK	Unknown	0	0.0
WAT	Water Bodies	49,885	9.05
Total		551,214	100

Source: Duval County, Baldwin, Atlantic Beach, Neptune Beach, Jacksonville Beach

Source: Hurricane Evacuation Study 2013

In October 2014, the JPPD reported in the Evaluation and Appraisal Report (EAR) the extension of the planning timeframe to year 2030 and renamed the plan the 2030 Comprehensive Plan. As reported in the 2010 LMS Update, the concurrency review process has been eliminated for Duval County and Jacksonville for land use development. It appears the period of economic uncertainty experienced by the United States, and all counties in Florida, is primarily over and economic recovery is rebounding. With that resurgence, several new large mixed-use developments are being reviewed by the Planning and Development Department for the northside and the southside of Jacksonville.

The JPPD also updated the Future Land Use Categories for the Consolidated City of Jacksonville, which is reflected on the Future Land Use Map (FLUM - Figure 11).

The City of Jacksonville Beach is the largest in land area of the three beach communities in Duval County, occupying more than 22 square miles. It has 3.8 miles of beach, which suffers erosion mainly from northeasters and seasonal tropical storms. Approximately 68% of the city's land area is developed, and wetlands along the Intracoastal Waterway comprise approximately 25% of the land area. Current residential use of developed land is 32.1%. Estimates projected the population at more than 23,000 by the year 2015 (Source: 2030 Comprehensive Plan, City of Jacksonville Beach).

The City of Atlantic Beach is approximately 3.75 square miles in area, with about two miles fronting the Atlantic Ocean. Three physiographic regions cover the city; coastal, upland and wetlands. Development in the city has traditionally been oriented toward the coastal area, which is almost fully developed with low and medium density residential land uses. The wetland zone is unsuited for development and remains open, while the upland zone is undergoing development with a wide range of land use types. The city is nearly built out with less than 10 percent of the incorporated land area currently undeveloped (Source: City of Atlantic Beach 2020 Comprehensive Land Use Plan - Coastal Management/Conservation Element).

The City of Neptune Beach encompasses an area of approximately 2.5 square miles and is predominantly residential (more than 37%). It is bounded by City of Atlantic Beach to the north and City of Jacksonville Beach to the south. It has more than one mile of beachfront and about 275 acres of marshland between the developed section on its western edge and the Intracoastal Waterway (Source: 2010 Comprehensive Plan, Neptune Beach). The City Public Works Department reported that the City primarily has infill development and redevelopment since the City is mostly built out. All new development must adhere to the new flood plain ordinance and the new stormwater ordinance (ord. # 2013-02, City of Neptune Beach).

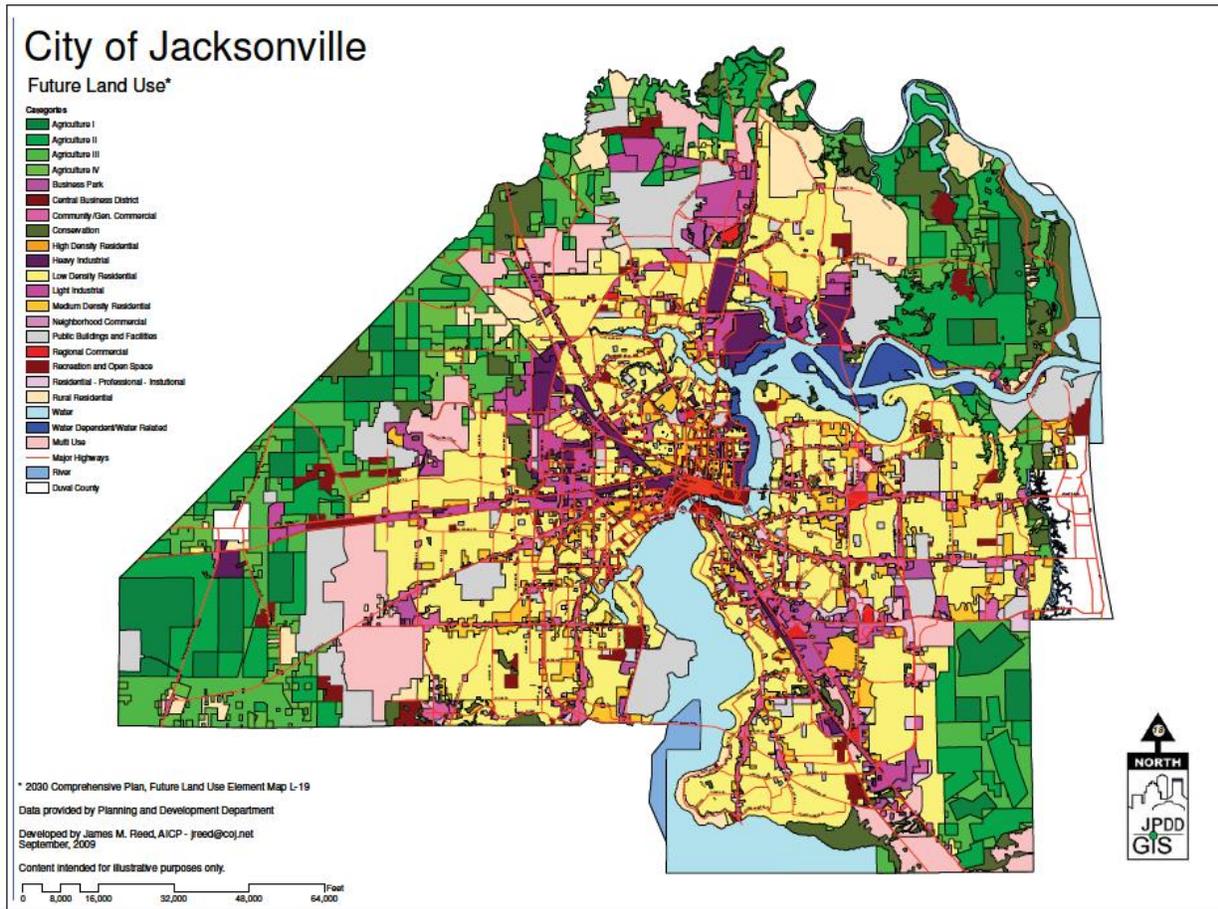
As a result of oceanfront development and attendant seawall construction, inlet improvements and similar projects, the stability of the beaches has been jeopardized along the shoreline of Duval County. Approximately 10.1 miles of shoreline in the county, which includes all three beach municipalities and a portion of Little Talbot Island north of the mouth of the St. Johns River near the Fort George Inlet, is considered critically eroded. Area is part of a Federal and State beach restoration project, which is continually maintained (Source: Florida Department of Environmental Protection, Beaches and Coastal Systems).

The Town of Baldwin is located within 1,275 acres and developed land is chiefly residential (29%). However, large industrial facilities, a central rail facility, and major rail and highway transportation corridors are in close proximity. More than 60% of total land use in Baldwin is undeveloped, leaving large areas in and around Baldwin in agricultural use. Through inter-local agreements, water, sewer and police services from within the town are provided beyond the town limits. (Source: Town of Baldwin Comprehensive Plan).

Future land use plans and economic incentives are encouraging development in the north and northwest quadrants of the county. Additional industry has developed around the Jacksonville International Airport and more is expected. On the west side of Jacksonville, the City of Jacksonville Office of Economic Opportunity (OEC), the successor agency to the Jacksonville Economic Development Commission (JEDC), was tasked to continue the redevelopment master plan for the former Naval Air Station Cecil Field for civilian and commercial usage. Since the conveyance of approximately 8,300 acres, the OEC continued to promote the site as a prime location for companies in the manufacturing, industrial-related and distribution industries, as

well as other uses including support retail and office space along the main roads. Educational and recreational resources have been located on the property. In 2014, the OEC advised the complex is 90 percent occupied, with major employers now constructing new facilities around the complex. Vacant, developable land is limited in the Beach communities. Jacksonville Beach and Neptune Beach are both approaching build-out and their boundaries cannot be extended (Source: 2010 Comprehensive Land Use Plan, Neptune Beach; 2030 Plan-Jacksonville Beach).

Figure 11: Duval County Future Land Use Map



Source: City of Jacksonville 2030 Comprehensive Plan, Future Land Use Element, Updated May 2014. Data prepared 2009 by City Planning and Development Department

D. Hazards Update

Hazards Matrix

Listed below are narratives and matrices addressing hazards that were ranked by the LMS Working Group for the 2015 LMS Update. During the fall of 2014, The LMS Advisory Committee initiated the process to re-examine hazards and their impacts upon the Consolidated City of Jacksonville/Duval County and its jurisdictions. These narratives and matrices will show the intent to estimate the vulnerability, probability and risk associated with each hazard (Table 15 on page 115) provides a summary of the identified hazards. In consultation with the Northeast Florida Regional Council, the Duval County 2015 LMS Update defines these

vulnerabilities, probabilities and risks as an ordinal series of measurements of “low” (expected to occur every 500 years); “moderate-low” (expected to occur every 100 years); “moderate” (expected to occur every 50 years), “moderately high” (expected to occur every 25 years) and “high” (expected to occur every 10 years or more frequently).

According to the Consolidated City of Jacksonville/Duval County Comprehensive Emergency Management Plan (CEMP), no specific emergency sequence can be isolated as the model for which to plan because each emergency related to the hazard could have different consequences, both in nature and degree. Therefore the parameters for planning for hazard parameters are based upon knowledge of the potential consequences, timing and release characteristics for a spectrum of emergencies including major natural and man-made incidents (Source: 2012 CEMP, pg. 30). Therefore, identification of consequences in emergency management planning focus on *vulnerability* (the expected severity of the event), *probability* (the frequency of past events) and *risk* (equal to the vulnerability as compared to the probability of future events).

Thunderstorms/Tornadoes Hazard

a. Background/Frequency of Severe Thunderstorms

A thunderstorm is a local storm produced by a cumulonimbus cloud and accompanied by lightning and thunder. According to the National Weather Service Jacksonville, Duval County experienced 337 severe thunderstorm events from 1950 through 2014 averaging 5.7 events per year. Eight injuries have been associated with these events, but no deaths. In May 1997, a downburst associated with a severe thunderstorm produced wind gusts as high as 106 mph at NAS Jacksonville causing \$2 million (1997 dollars) in damages, but no injuries or deaths. The entire population of Duval County is at risk, however not every event results in death, injury or property damage (Source: National Weather Service Jacksonville Storms Event Database, 2015).

b. Facility Vulnerability, Probability and Risk with Thunderstorms

All of Duval County is vulnerable to the effects of severe thunderstorms, including flooding, power outages, lightning-generated fires, and widespread storm-generated debris. Localized flooding, in particular, creates a common inconvenience and occasionally results in severe flooding. Severe flooding and wind damage from severe thunderstorms have initiated Presidential Declarations for natural disaster. The kinds of facilities in each jurisdiction of Duval County impacted by thunderstorms and severe wind events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites.

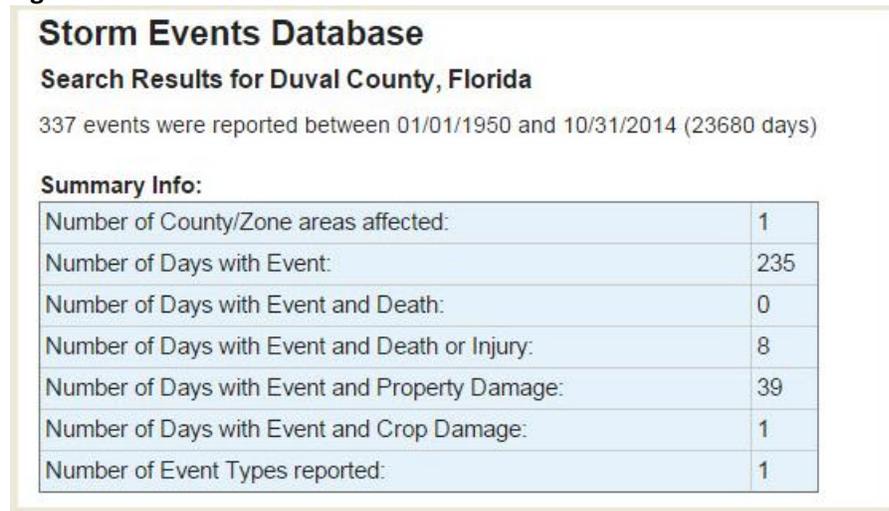
The vulnerability of the County’s extensive tree canopy to destruction by high wind is significant. The vulnerability of this urban forest in turn directly affects the electrical distribution grid of the city, particularly in areas away from downtown Jacksonville. The uprooting of old-growth trees pulls down electric and other utility lines, at the same time blocking the roads over which repair crews must travel to restore services. Also, trees are the major contributor to storm-generated debris, contributing to the largest dollar volume item in clean-up costs. The trees themselves are both economic and aesthetic assets, which must be counted not only as part of the costs of damage but also as a loss of quality of life to any community. Duval County has an especially extensive tree canopy, which is highly vulnerable. (Source: City of Jacksonville debris management records from 2004 hurricane season, 2008 Tropical Storm Fay, and 2012 Tropical Storm Debby submittals to the FEMA Public Assistance Program).

During the 2004 Hurricane Season, Duval County was included in four presidential disaster declarations; Hurricane Charley and Tropical Storm Bonnie (FEMA-1539-DR-FL), Hurricane Frances (FEMA-1545-DR-FL), Hurricane Ivan (FEMA-1551-DR-FL), and Hurricane Jeanne (FEMA-1561-DR-FL). While no hurricane directly hit Duval County, its location within the wind field of each event caused enough damage for the county to be designated Tier One for FEMA post disaster grants. In subsequent years, Duval County received disaster declarations for TS Fay in 2008 (FEMA-1785-DR-FL) and TS Debby (FEMA-4068-DR-FL) in 2012.

The kinds of facilities in each jurisdiction of Duval County impacted by thunderstorm events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites.

Impact of Thunderstorms

Figure 12: Severe Thunderstorm Data



Source: National Weather Service Jacksonville, 2015

According to the National Weather Service Jacksonville, Duval County experienced 337 severe thunderstorm events from 1950 through 2014 averaging 5.7 events per year. Eight injuries have been associated with these events, but no deaths. One incident of crop damage was reported. In May 1997, a downburst associated with a severe thunderstorm produced wind gusts as high as 106 mph at NAS Jacksonville causing \$2 million (1997 dollars) in damages, but no injuries or deaths. The entire population of Duval County is at risk, however not every event results in death, injury or property damage (Source: National Weather Service Jacksonville Storms Event Database, 2015). According to the National Climatic Data Center, sixteen lightning events have occurred in Duval County since the last LMS update. On June 11, 2010, lightning struck three homes in the same neighborhood within minutes of each other causing major damage to one of the homes. Then, during August of 2012 there were two separate lightning events that caused structure fires. The last event recorded was October 14, 2014.

In averaging the number of 337 events over a period of 64 years of data, there is a 5.18 percent probability that a future thunderstorm event could create a scenario that would lead to injuries, death, and property damages in the range of \$5,000 to \$12 million-plus in Duval County (the largest disaster of record was the 2008 thunderstorm which contributed to the loss of two cranes at Jacksonville Port Authority’s Blount Island facility). The entire population of Duval County is at risk for this hazard based on past occurrence.

c. Background/Frequency of Tornadoes

According to the 2013 State Enhanced Hazard Mitigation Plan, a tornado is defined as a violent windstorm characterized by a twisting, funnel-shaped cloud. A tornado's wind speed normally ranges from 40 to more than 300 mph. Waterspouts are weak tornadoes that form over warm water and are most common along the Gulf Coast and the southeastern states. Waterspouts occasionally move inland, becoming tornadoes and causing damage and injuries.

Florida has two tornado seasons. The summer tornado season runs from June until September and has the highest frequencies of storm generation, with usual intensities of EF0 or EF1 on the Enhanced Fujita Scale. This includes those tornadoes associated with land-falling tropical cyclones. The deadly spring season, from February through April, is characterized by more powerful tornadoes because of the presence of the jet stream. When the jet stream digs south into Florida and is accompanied by a strong cold front and a strong squall line of thunderstorms, the jet stream's high-level winds of 100 to 200 mph often strengthen a thunderstorm into what meteorologists call a "supercell" or "mesocyclone." These powerful storms can move at speeds of 30 to 50 mph, produce dangerous downburst winds, large hail, and usually the most deadly tornadoes.

Unlike hurricanes, which produce wind speeds of similar values over relatively widespread areas (when compared to tornadoes), the maximum winds in tornadoes are often confined to extremely small areas and vary tremendously over very short distances, even within the funnel itself. The Enhanced Fujita Tornado Scale, (or the "EF Scale"), is the definitive scale for estimating wind speeds within tornadoes based upon the damage done to buildings and structures since 2007. The EF Scale is used extensively by the NWS in investigating tornadoes (tornadoes are now assigned an EF Scale number), and by engineers in correlating damage to buildings and techniques with different wind speeds caused by tornadoes. Though the Enhanced Fujita scale itself ranges up to EF28 for the damage indicators, the strongest tornadoes max out in the EF5 range (262 to 317 mph).

Tornadoes develop under three scenarios: (1) along a squall line ahead of an advancing cold front moving from the north; (2) in connection with thunderstorm squall lines during hot, humid weather; and (3) in the outer portion of a tropical cyclone. Because the temperature contrast between air masses is generally less pronounced in the state, tornadoes are typically less severe in Florida than in other parts of the country. The most common and usually the least destructive tornadoes in Florida are warm season ones. The cool season tornadoes are sometimes very destructive; they account for a disproportional large share of the tornado fatalities in Florida. They are typically caused by large-scale weather disturbances and sometimes occur in groups of six or more along fast-moving squall lines. This type of tornado usually occurs around the perimeter of the leading edge of the storm and sometimes results in the outbreak of several tornadoes. They generally move in an easterly direction.

All of Duval County is vulnerable to the impacts of tornado-induced damages, due to the frequency and unpredictable pattern of tornadoes. The probability of occurrence is low; however, the damage potential is high due to population concentrations, and the location of mobile home and manufactured housing throughout the county. According to the Northeast Florida Regional Council, mobile homes make up 11,013 units out of 329,778 units, or 3.33% of Duval County housing. These structures are more vulnerable to high winds than other structures. Federal law, passed after Hurricane Andrew of 1992, requires that mobile homes must now be constructed with two inch by six-inch lumber, have tie-downs and be able to withstand winds of 110 miles per hour on the coast and 100 miles per hour inland. However, approximately 90 percent

of the 849,000 Florida mobile homes (source: Census of Housing, U.S. Census Bureau, revised October 31, 2011), were built before that law was enacted. Those mobile homes built after 1976 were built to withstand 90 mile per hour winds; those built before 1976 had no wind requirements (Source: The Tornado Project). The total number of non-compliant residential structures in Duval County is not known. Building inspections are done within the local municipal jurisdictions. Building regulations vary in policy, permitting procedures and enforcement.

The costs associated with a tornado event are not considered high, and the population impacts depend upon the location and intensity of the tornado, so the level of vulnerability is considered to be low.

Hurricane-related tornadoes are not usually accompanied by hail or lightning, the usual warning signs of tornadoes. All of the county and its population are equally susceptible to this hazard. The Consolidated City of Jacksonville/Duval County protects citizens via the implementation of the Severe Weather Hazard Specific Plan, the Tornado Hazard Specific Plan and the Alert Warning Notifications Systems utilized by the Division of Emergency Preparedness (NAWAS, IPAWS, Code Red®, all print and electronic media, social media such as Facebook and Twitter, and the City's mobile application for smartphones and tablets, and the City of Jacksonville alert program, JaxReady ©).

Historically, tornadoes have resulted in the greatest loss of life of any natural hazard. Property damage due to tornadoes is in the tens of millions of dollars annually (Source: FEMA). After the Joplin Missouri 2011 EF5 tornado, Florida no longer ranked first of all states in the number of tornado-related deaths. Storms in Duval County, including the Town of Baldwin, City of Atlantic Beach, City of Neptune Beach, City of Jacksonville Beach and City of Jacksonville, have traditionally not been as deadly as in other parts of the state. In February 2007, central Florida experienced several tornadoes in what is now known as the Groundhog Day Tornado Outbreak. The series of tornadoes killed 21 people, injured 76 persons, and incurred damages in excess of \$200 Million. This outbreak was the second deadliest in the state, preceded by the 41 deaths experienced in 1998 (FEMA and Tornado History Project descriptions retrieved online January 28, 2015).

The National Oceanic and Atmospheric Agency (NOAA) National Weather Service updated the classification of tornadoes in 2007, using the Enhanced Fujita Scale (EF) which measures the path length and width, links damage to wind speed, and takes into consideration the quality of construction and standardized different kinds of structures. Both the Fujita Scale and the Enhanced Fujita Scale rank F0 tornadoes as the least damaging to life and property, while F5 tornadoes are the most damaging. A F1 tornado is weak to moderate, causing damage ranging from minor structural and tree damage to overturned mobile homes and moved automobiles. Wind speed in an F1 tornado could reach up to 112 miles per hour. An F2 tornado is considered significant, tearing roofs from houses, demolishing mobile homes, uprooting trees and generating light object missiles. Wind speeds from an F3 tornado could reach up to 206 miles per hour, tearing off roofs and walls from structures, overturning trains, and uprooting most trees in the path. Well-constructed homes are leveled in a devastating F4 tornado. Structures can be blown off foundations some distance, cars are thrown and large missiles are generated. Winds in an F5 tornado can reach 318 miles per hour, demolish or lift frame structures, debark trees and badly damage steel reinforced concrete structures. Evidence of this level of storm might be found only in some manner of ground swirl pattern, rather than through engineering studies (Source: "The Fujita Scale of Tornado Intensity", The Tornado History Project, retrieved 2015).

On August 1, 2013, Duval County experienced a rare EF2 tornado that touched down in the vicinity of East Arlington and travelled a path of 1.93 miles with its widest path at 100 yards. No deaths or injuries were reported, although 11 residences were condemned, four public schools and Jacksonville University

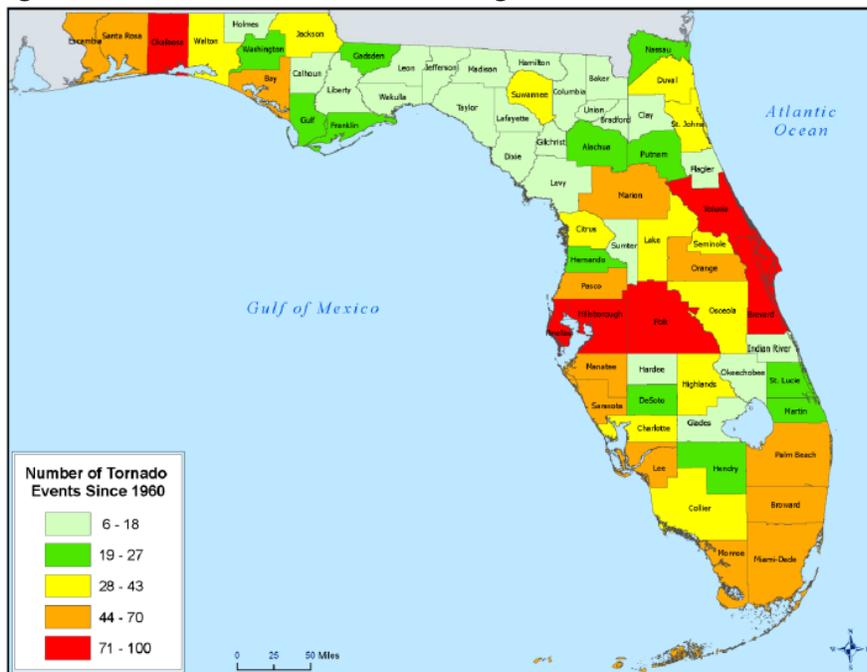
experienced building damage, and 38 structures had minor to major damage, for damage estimates of approximately \$ 1 million.

The dollar value of the incident was greatly reduced, because the damages were to residential and educational properties. No businesses were affected. The electric utility reported that mitigation initiatives in burying the power lines in this newer section of Arlington averted more significant damage to the power grid. No deaths were reported. (source: Duval County EOC After-Action Report, September 23, 2013). This was the first tornado that created residential damage since a tornado was spawned during 2004 Tropical Storm Bonnie that preceded Hurricane Charley’s wind impacts in Duval County (Source: Duval County Emergency Management Incident Action Plans [IAPs] and the F2 Arlington Tornado After Action Report).

d. Facility Vulnerability, Probability and Risk with Tornadoes

All of Duval County is vulnerable to tornadoes, with the potential for damage increasing with increased population density (Source: Consolidated City of Jacksonville/Duval County CEMP 2012, pg. 32). Populations and properties most vulnerable to this hazard are mobile home and manufactured housing residents. The kinds of facilities in each jurisdiction of Duval County impacted by tornado events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites. The financial impact from tornado events could range from hundreds of thousands of dollars to one million dollars-plus, depending on the location, severity, and duration of the event. Due to the low probability associated with the tornado hazard, there are no formal tornado safe rooms identified in Duval County according to the City of Jacksonville Public Buildings Division and the Risk Management Office of the Duval County Public Schools. Mitigation for impacts is achieved through a robust community education and outreach program as to the risks and preventive measures that all residents can practice to avoid injury and death.

Figure 13: Florida Tornado Hazard Ranking



Source: State of Florida 2013 Hazard Mitigation Plan, pg. 3.89

The map confirms that Duval County is vulnerable to the tornado hazard, as described in the State of Florida 2013 Enhanced Hazard Mitigation Plan. According to the State, Duval County is rated as a low to moderate risk for number of events as compared to other Florida counties.

Residents living in mobile homes/manufactured housing are more vulnerable to the tornado hazard due to the less solid construction of their homes. Mobile home and manufactured housing are located throughout Duval County, with highest concentrations towards the west. In recent years, the majority of mobile home developments in the eastern part of the county and within the beaches municipalities have been converted to other land uses.

Impacts from Tornado

Figure 14: Tornado Data

Storm Events Database

Search Results for Duval County, Florida

65 events were reported between 01/01/1950 and 10/31/2014 (23680 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	57
Number of Days with Event and Death:	1
Number of Days with Event and Death or Injury:	6
Number of Days with Event and Property Damage:	41
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

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

Source: National Weather Service Storms Event Database

The National Climatic Data Center reported 57 events over a 64-year period, from 1950 through 2014. One death has been recorded and six injuries attributed to the events. In averaging the number of 57 events over 64-years, there is an 8.77 percent probability that a future tornado event could create a scenario that would lead to injuries, death, and property damages in the range of \$25,000 to \$2.5 million-plus in Duval County. The entire population of Duval County is at risk for this hazard.

Hurricane Hazard (Winds with Tropical Cyclones)

a. Background/Frequency Winds with Tropical Cyclones/Hurricanes

Hurricanes, the most dangerous and destructive storms on earth, are defined as tropical cyclones that consist of high velocity winds blowing counter-clockwise around a moving low-pressure center. Hurricanes are commonly classified according to wind velocity, using what is known as the Saffir-Simpson Hurricane Scale (1 through 5).

The winds will impact all construction in the county, inclusive of residential, commercial, hospitals, education and public infrastructure. In addition, mobile homes and unsafe structures throughout the county will be

vulnerable to winds emanating from all categories of hurricanes. In 2012, the NWS National Hurricane Center updated the storm definitions to account for variations at Category 4 and stronger hurricane winds (Source: National Hurricane Center, www.nhc.noaa.gov, retrieved January 2015).

Table 11: Saffir-Simpson Hurricane Wind Scale, 2012 Update¹

SCALE NUMBER (CATEGORY)	SUSTAINED WINDS (MPH)	DAMAGE
1	74 - 95	Very dangerous winds will produce <i>some</i> damage Minor damage to home exteriors Tree branches, uprooting smaller trees Extensive power line damage, power outages
2	96-110	Extremely dangerous winds will cause <i>extensive</i> damage Major damage to home exteriors Uprooting of small trees and blocked roads Guaranteed power outages for long periods of time (days to weeks)
3 MAJOR	111 - 129	Devastating damage will occur Extensive damage to home exteriors Many trees uprooted and many roads blocked Extremely limited availability of water and electricity
4 MAJOR	130 -156	Catastrophic damage will occur Loss of roof structure and/or some exterior walls Most trees uprooted and most power lines down Isolated residential due to debris pile up Power outages lasting for weeks to months
5 Major	157 or higher	Catastrophic damage will occur High percentage of homes will be destroyed Fallen trees and power lines isolate residential areas Power outages lasting for weeks to months Most areas will be uninhabitable

Source: FEMA, <http://www.ready.gov/hurricanes>; retrieved January 28, 2015

Wind is the second ranked of the lethal components of a hurricane's destructive force, yet may affect far more persons than storm surge. Strong winds can be a very dangerous element of a hurricane, reaching up to more than one hundred miles inland. The impact of the wind on structures, plus wind borne debris, can result in injury or death for those far from the coast. Gale force winds and tornadoes associated with hurricanes are very hazardous to mobile homes. High winds often lead to downed power lines and trees thus inhibiting mobility during and after the storm. The Emergency Operations Center (EOC) coordinates the response for hurricanes. The details of this plan can be found in the Duval County Hurricane Hazard Specific Plan.

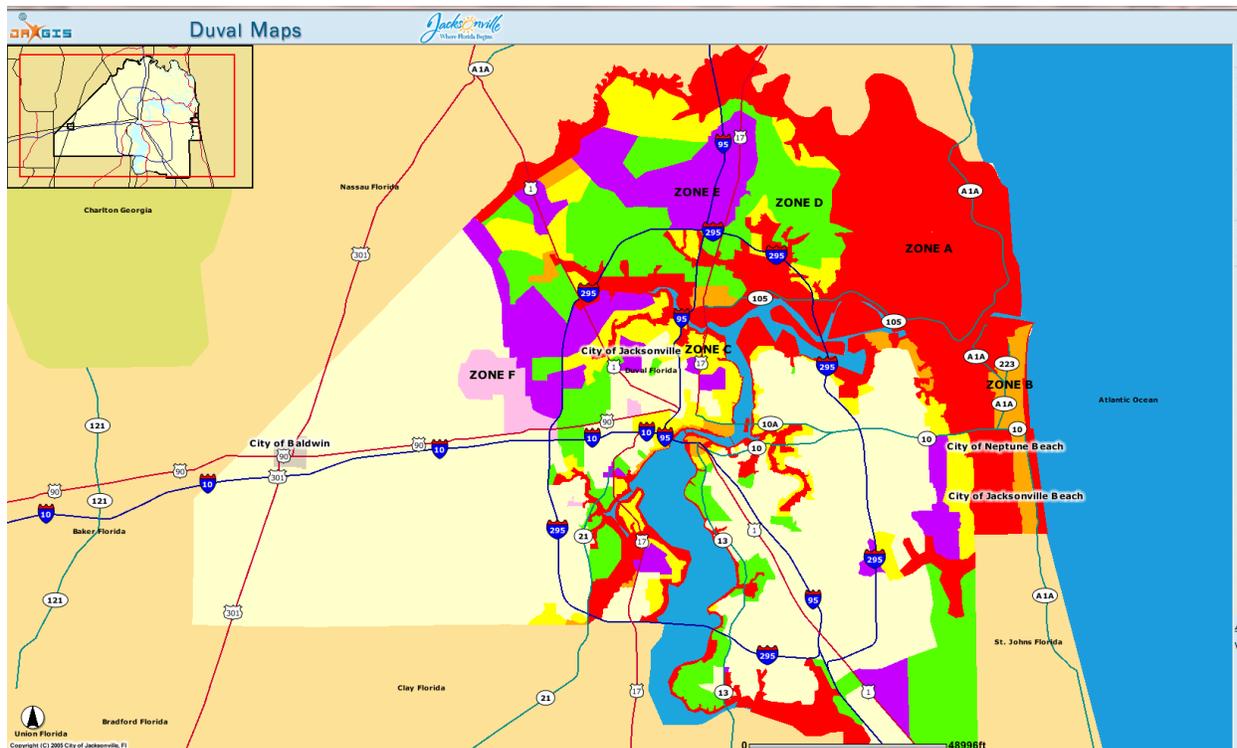
Unlike the effects of the storm surge, the high winds associated with a hurricane will have an impact on

¹ Whenever the severity or intensity of a hurricane is referenced throughout the LMS, the classification scale used is the Saffir-Simpson scale, even if not directly referenced (2012 CEMP, pg. 21).

inland as well as coastal areas. Therefore, inland areas must plan for the impacts of high winds (downed trees and power lines) on their road system and, perhaps more importantly, on the health and welfare of their citizens living in mobile homes or in substandard homes which may not be resistant to these high winds.

In recent decades, hurricanes have not been a major risk factor in Jacksonville. The city has not been struck by a full-scale hurricane since 1964, when Hurricane Dora made landfall in the area; the only hurricane to make a direct hit on Duval County in the twentieth century. The percentage of people in the area who have actually experienced a hurricane has diminished as time and migration have made Dora's impact a memory for a decreasing portion of the population.² Recent events, such as Hurricane Katrina in 2005 and Hurricane Sandy in 2012, have made impression that disaster mitigation is necessary. The Hurricane Evacuation Zone Map for Duval County was updated in 2014, taking into consideration the Hurricane Evacuation Study and National Weather Service data on wind, storm surge, and flooding.

Figure 15: Duval County Hurricane Evacuation Zones



Source: JAXGIS, maps.coj.net; retrieved January 27, 2015

The National Weather Service Jacksonville reported from 1851 to 2014 (163 year period), 111 hurricanes have passed within 65 nautical miles of Jacksonville, an average of approximately one hurricane every 1.5 years. During this same time period, 26 major hurricanes (Category 3 or higher) passing near Jacksonville have averaged one every 6.2 years.

A greater concern with a hurricane hitting Duval County is the severity of the wind. As was shown in Dade

County with Hurricane Andrew, wind damage from a strong hurricane can cause widespread devastation far beyond the coastal areas. There is little in Duval County except distance from the coastline to mitigate wind effects; therefore, wind damage, including that from tornadoes spawned by a hurricane, is likely to be as significant a risk factor as storm-caused flooding, perhaps an even greater one. The vulnerability of mobile homes and homes built during a period in which construction codes were significantly less sufficient to insure the integrity of buildings against sustained high winds are two significant wind-risk factors in hurricanes. The extensive tree canopy in Duval County will create large amounts of brush and wood debris even following a strong tropical storm /weak hurricane event.

Raw frequency counts do not themselves provide a specific probability in a given year for the occurrence of a hurricane. Such events do not space themselves evenly over time, and global climatological patterns give rise to periods of more frequent and severe hurricanes, as well as periods in which such storms are less frequent or less severe on average. The 1970s and 1980s were periods of lesser hurricane activity for the southern Atlantic and the Caribbean, and the last decade has been a period of greater activity.

Duval County will be impacted by a hurricane in the future, although the probability of a hurricane hitting the county directly is low in any given year. Based on historical data, the conclusion also can be made that any hurricane striking the area is likely to be a Category 1 or 2; however, Duval County is still vulnerable to more severe hurricanes.

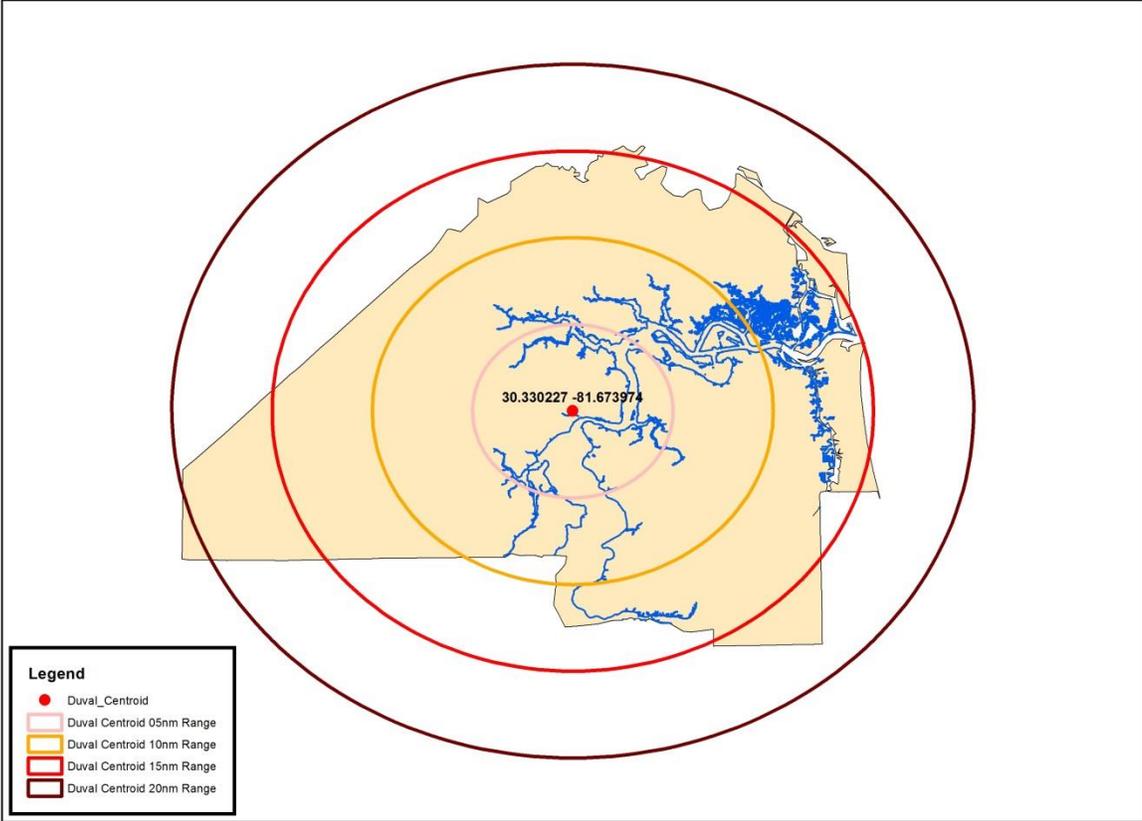
b. Vulnerability, Probability and Risk with Tropical Cyclone/Hurricane Wind Speeds

All of the Consolidated City of Jacksonville/Duval County is at risk from high winds; however, the threat is exacerbated by the large number of residents who reside in our coastal areas. The Florida Building Code of 2010 eliminated the wind speed velocity zones formerly established to categorize wind speed across the county. The Building Code currently requires strength design and higher wind load factors (Source: Changes to the Wind Speed Maps and Wind Design-2010 Florida Building Codes). The 2010 Building Code has been adopted by the jurisdictions in Duval County. This is one of the strongest building codes in the United States. The kinds of facilities in each jurisdiction of Duval County impacted by hurricane wind hazard events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites.

The National Weather Service (NWS) Jacksonville provided updates for the estimated frequencies of tropical cyclone/hurricane hazards (winds and storm surge) using their ARC Mapping/GIS systems. System improvements since the 2010 LMS Update enable them to draw more precise shape files. Therefore, the new data is based on a 65 nautical mile (nm) configuration as opposed to the 80 nm configuration formerly used. The NWS used a reference point for Duval County at Latitude 30.330227 Longitude - 81.673974, placing the center of county just west of downtown Jacksonville near McCoy's Creek. The NWS drew a series of range rings in Nautical Miles (nm) around the centroid until they best approximated the Duval County boundary. The range ring is about 15 nm from the centroid.

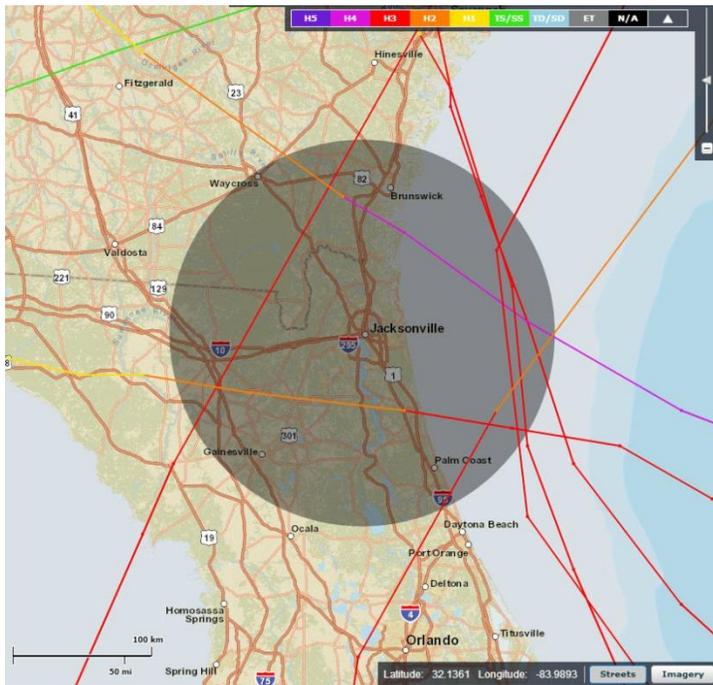
NWS staff researched events passing within 65 nm of Duval County. They added the distance from the centroid to the range ring (15 nm) + the search buffer around the county (65nm) to create a centroid buffer (points of reference within a boundary for measurement purposes). A 15nm range ring distance + 65nm area of interest = 80nm was used to search all storms with 65nm of Duval County. NWS used the Coastal Services Center Hurricane Tracks page for the period of 1851 to 2013 and searched the storm events where the center line/best track passed within 80nm of 30.330227 -81.673974, or approximately within 65nm of the Duval County boundaries.

Figure 16: Duval County Centroid Buffer



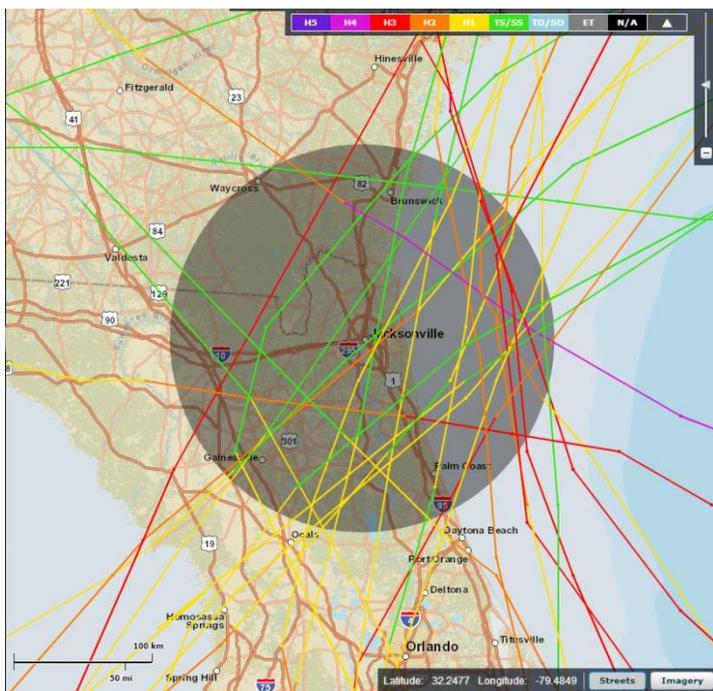
Source: National Weather Service Jacksonville, January 2015

Figure 17: All Major Hurricanes within 65 nm of Duval County 1851-2013



Source: NWS Jacksonville, 2015

Figure 18: All Hurricanes within 65 nm of Duval County 1851-2013



Source: NWS Jacksonville, 2015

Impact from Tropical Cyclone Winds to Duval County

Figure 19: Hurricane Wind Data

Storm Events Database

Search Results for Duval County, Florida

Event Types: Hurricane (Typhoon)

Duval county contains the following zones:

'Duval'

2 events were reported between 01/01/1950 and 10/31/2014 (23680 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	2
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:	2
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

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

Source: NOAA National Climatic Data Center

The National Climatic Data Center reported 2 events in Duval County, which would include Hurricane Dora in 1964 and Hurricane Floyd in 1999. No deaths or injuries have been attributed to hurricanes in the county. A range of \$300,000 to \$1,300,000 in property damages were recorded, although there are newspaper reports that attribute \$2 million dollars in property damages resulting from Hurricane Dora in 1964. Tropical Storm Fay 2008 generated \$24 million in public assistance funding to restore public infrastructure after a significant tropical storm.

Based on a rate of 1.5 storms per year (CAT 1 strength) or 6.2 storms per year (CAT 3 strength or stronger) over a 163-year period, there is a 5 five percent probability that a future hurricane event of CAT 1 to CAT 3 strength will create a scenario that could lead to injuries, potential deaths and property damages in the county. Because of the high level of risk and vulnerability of Duval County as a coastal Florida community with exposure to tropical cyclonic winds, this is rated as a hazard with a high degree of probability of occurrence. Based on historical experience, Duval County can expect tropical storm to CAT 2 conditions during a tropical cyclone event every 1 to 2 years.

Significant segments of population in Duval County are vulnerable to the effects of wind from tropical cyclone. Areas with the highest level of risk include coastal barrier islands, particularly in the coastal municipalities of the cities of Atlantic Beach, Jacksonville Beach and Neptune Beach. In addition, the Mayport Naval Air Station also has significant exposure. Based on the recently updated storm surge data, and also due to planned bridge closures at onset of tropical storm force winds (40 mph) and the anticipated inundation of low-lying roads, most all land east of the Intracoastal Waterway is included in the Evacuation Zone A and B, for a Category 2 or higher rated hurricane event.

Further, vulnerable populations such as the elderly, people with special needs, and children under the age of five are most susceptible to the impacts of wind from tropical cyclone and require additional assistance in times of evacuation. These populations are dispersed throughout the county. Additionally, in-land communities with residents who live in low-lying or flood-prone areas, mobile or manufactured housing, and structures built to older, less robust building code standards, are also vulnerable to the winds emanating from hurricanes and tropical cyclones.

Storm Surge (Associated with Hurricane/Tropical Cyclone Hazard)

a. Background/Frequency of Storm Surge

Storm surge is considered the most destructive of the forces related to hurricanes, according to NOAA National Weather Service. It is a phenomenon that occurs when the winds and forward motion associated with a hurricane pile water up in front, as it moves toward shore. Storm surge heights, wind speed, fetch length, pressure and associated waves, are dependent upon the configuration of the continental shelf (narrow or wide) and the depth of the ocean bottom (bathymetry). These as well as other factors can affect storm surge height and wave height. A narrow shelf, or one that drops steeply from the shoreline and subsequently produces deep water in close proximity to the shoreline, tends to produce a lower surge but higher and more powerful storm waves. This is the situation along most of the Atlantic Ocean side of the state, which is the source of impact for Duval County.

The surge is caused by the frictional forces of hurricane winds on the surface which, when over a large body of water such as the Atlantic Ocean, results in a high dome of wind-driven water. This surge of water contains immense, destructive power. At times, the effects of the moving water can be likened to a bulldozer clearing everything in its path. Debris propelled by the storm surge can act as a battering ram destroying objects in its path.

The flooding hazard associated with storm surge and wind-driven water emanating from a Category 1 or Category 2 hurricane can destroy or heavily damage beachfront homes and commercial establishments, piers, seawalls, boardwalks, etc. Storm surge and wind from Category 3 or higher storms are expected to cause massive destruction on coastal barrier islands, particularly in coastal municipalities including the cities of Atlantic Beach, Jacksonville Beach and Neptune Beach. In addition, the Mayport Naval Air Station would be expected to sustain significant destruction.

The 2013 Hurricane Evacuation Study identified populations vulnerable to the effects of hurricanes and analyzed the behavioral patterns of those people. New data that incorporates the storm's angle of approach, direction and intensity, as well as the risks of isolation of elevated areas due to flooded or destroyed roads, indicate much larger areas of impact from all levels of storm surge and wind-driven water than what was previously recorded. Therefore, more extensive evacuation clearance time for hurricanes will be required. Based on the recent storm surge data, and also due to planned bridge closures at onset of tropical storm force winds (40 mph) and the anticipated inundation of low-lying roads, most all land east of the Intracoastal Waterway is included in the Evacuation Zone A and B, for a Category 2 or higher rated hurricane event.

In addition to residents living in low-lying or flood-prone areas, residents who live in mobile homes and structures built to older, less robust building code standards are also vulnerable to hurricanes and tropical storms. According to the Northeast Florida Regional Council, mobile homes make up 11,013 units out of 329,778 units, or 3.33% of Duval County housing; these structures are more vulnerable to high winds than

other structures. Federal law, passed after Hurricane Andrew of 1992, requires that mobile homes must now be constructed with two inch by six-inch lumber, have tie-downs and be able to withstand winds of 110 miles per hour on the coast and 100 miles per hour inland. However, approximately 90 percent of the 849,000 Florida mobile homes (source: Census of Housing, U.S. Census Bureau, revised October 31, 2011), were built before that law was enacted. Those mobile homes built after 1976 were built to withstand 90 mile per hour winds; those built before 1976 had no wind requirements (Source: The Tornado Project).

More than 50 years ago, Hurricane Dora in 1964 produced significant tidal effects, and caused the highest recorded flooding of the St. Johns River in the twentieth century. High levels of rainfall during the storm and in the four day period following Hurricane Dora, with abnormally high tides sustained by strong offshore winds of long duration combined to produce the river flooding.

Impact from Storm Surge to Duval County

Figure 20: Storm Surge Data

Storm Events Database

Search Results for Duval County, Florida

Event Types: [Storm Surge/Tide](#)

Duval county contains the following zones:

'Duval'

2 events were reported between 01/01/1950 and 10/31/2014 (23680 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	2
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:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

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

Source: NOAA National Climatic Data Center

The National Climatic Data Center reported 2 events in Duval County in the past 64 years. The last event was August 26, 2011 where high astronomical tides combined with high surf from a tropical system, produced elevated tides of 1 to 2 feet during the times of high tide. No deaths or injuries have been attributed to storm surge and no events occurring since August 26, 2011. No dollar estimates in property damage are available, although newspaper reports attribute \$2 million dollars in property damages resulting from Hurricane Dora in 1964. Tropical Storm Fay 2008 damage assessment reported \$24 million in public assistance funding to restore public infrastructure after a significant tropical storm.

There is a five percent probability that a future storm surge event will create a scenario that could lead to injuries, potential deaths and property damages in the county.

Significant segments of population in Duval County are vulnerable to the effects of storm surge. Areas with the highest level of risk include coastal barrier islands, particularly in the coastal municipalities of the cities of Atlantic Beach, Jacksonville Beach and Neptune Beach. In addition, the Mayport Naval Air Station also has

significant exposure. Based on the recently updated storm surge data, and also due to planned bridge closures at onset of tropical storm force winds (40 mph) and the anticipated inundation of low-lying roads, most all land east of the Intracoastal Waterway is included in the Evacuation Zone A and B, for a Category 2 or higher rated hurricane event.

In addition, in-land communities with residents who live in low-lying or flood-prone areas, mobile or manufactured housing, and structures built to older, less robust building code standards, are also vulnerable to the storm surge derived from hurricanes and tropical storms.

Table 12: Potential Storm Height Tide

Table 3 Potential Storm Tide Height (s) by County
(In Feet above NAVD88)

* Storm Strength	Clay	Duval	Flagler	Nassau	Putnam	St. Johns
Category 1	Up to 3.6'	Up to 6.6'	Up to 6.3'	Up to 6.8'	Up to 4.3'	Up to 6.5'
Category 2	Up to 5.6'	Up to 11.0'	Up to 12.6'	Up to 12.2'	Up to 6.7'	Up to 11.9'
Category 3	Up to 9.5'	Up to 19.9'	Up to 18.8'	Up to 16.7'	Up to 9.3'	Up to 19.9'
Category 4	Up to 13.5'	Up to 22.2'	Up to 24.2'	Up to 21.2'	Up to 12.4'	Up to 24.9'
Category 5	Up to 16.3'	Up to 28.2'	Up to 27.3'	Up to 27.7'	Up to 14.4'	Up to 29.6'

*Based on the category of storm on the Saffir-Simpson Hurricane Wind Scale
** Surge heights represent the maximum values from SLOSH MOMs

The 2013 Hurricane Evacuation Study provided maps in the Storm Tide Atlas to depict SLOSH-modeled surge depth and extent of flood inundation for hurricanes with five different intensities. As indicated in the graph above, surge depth was modeled using the Maximum of Maximums (MOMs) representing the total flooding from the five categories of storm intensity of the Saffir/Simpson Hurricane Wind Scale (source: Hurricane Evacuation Study, Vol. 9, pg. 11).

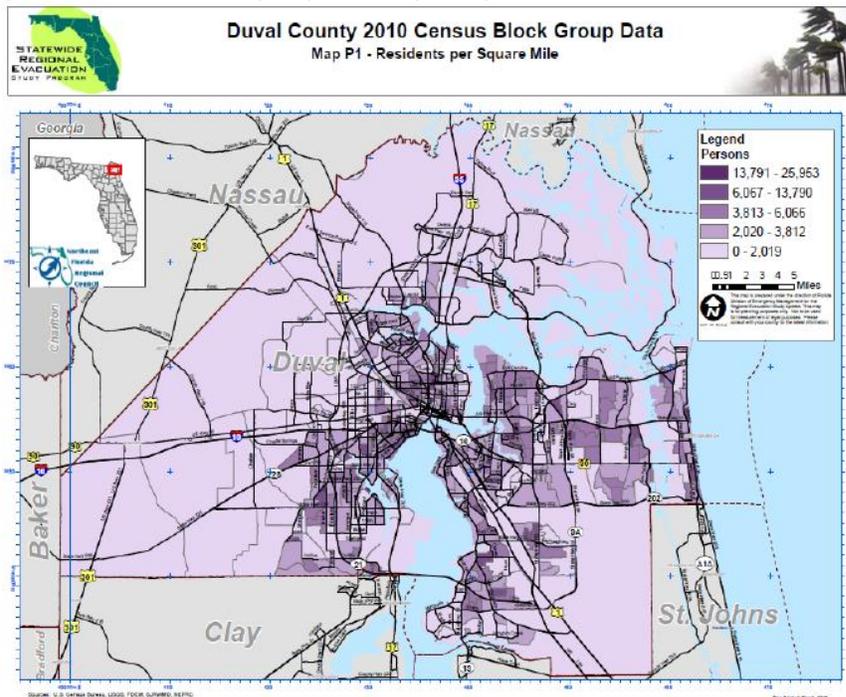
Secondary destructive forces resulting from storm surge include beach erosion and inlet formation. Studies have shown that the impact of storm surge can be expected along the entire St. Johns River and its tributaries within the borders of the Consolidated City of Jacksonville/Duval County. Storm surge and wind emanating from hurricanes can destroy or heavily damage beachfront homes and commercial establishments, piers, seawalls, boardwalks, etc. With a larger, higher intensity storm, it is expected to cause massive destruction on coastal barrier islands, and particularly in coastal municipalities including the cities of Atlantic Beach, Neptune Beach, and Jacksonville Beach. In addition, the Mayport Naval Station is expected to encounter such destruction. Based on past history, beach erosion, usually the result of the stress placed on the shore from the storm surge, is a problem in the Northeast region that is increasing due to impacts being categorized as climate change and subsequent risks that accompany this hazard. In the event of a hurricane either striking or passing near this coast, the potential of beach erosion that can undermine both houses and roads must be seriously considered. Effects of beach erosion on coastal roads should also be considered in relation to late evacuations, recovery from storms, and in planning future roadways. Inlet formation can be

caused by water flowing across the barrier island with enough force to break through the island. During such an occurrence, there is danger to life and property, as well as a potential for severe restrictions in mobility, due to breaks in the transportation system. If inlet formation were to occur, it would most likely be at storm-water outfalls and designed storm-water infrastructure. However, inlet formation could be a factor north of the mouth of the St. Johns River, where Highway A1A crosses undeveloped Little Talbot Island. The kinds of facilities in each jurisdiction of Duval County impacted by storm surge events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites.

b. Vulnerability, Probability and Risk for Storm Surge

Areas most at risk from storm surge are those located in Evacuation Zones A through E, as established through the 2014 Duval County evacuation zones update process, once the SLOSH modeling was made available through the 2013 Hurricane Evacuation Study. The areas that would flood first are Evacuation Zones A and B and a new category established at the discretion of the local government emergency management included fresh water flooding, Zone F. The COJ GIS Division estimates the expected numbers of people evacuating Zones A through E is approximately 722,000 persons (Source: Jacksonville JaxGIS, 2014).

Figure 21: Duval County Population per Square Mile



Although a total evacuation of 885,558 residents (2013 Census Bureau population projection for Duval County) and a variable number of visitors is achievable, the clearance times for a fast moving Category 4 or 5 hurricane could require evacuation start times which are beyond the current ability to accurately predict a storm’s actual landfall and intensity. The clearance time requirement worsens if the size of the storm, or its predicted landfall, requires the evacuation of adjacent counties. The problems that arise from merging the evacuees from Duval and neighboring counties may extend clearance times beyond reasonable limits. As a result, residents of the Consolidated City of Jacksonville/Duval County are discouraged from evacuating out

of the county unless they are utilizing air transportation, or evacuate very early. The threat from storm surge represents a serious hazard to barrier island communities and the entire eastern half of the county. In addition, flooding due to torrential rainfall (inundation) could pose a serious threat in portions of the Consolidated City of Jacksonville/Duval County.

Flooding

a. Background/Frequency of Flooding

Flooding is any high flow, overflow, or inundation by water which causes or threatens damage. All of the Consolidated City of Jacksonville/Duval County is vulnerable to damage from wind driven rain and flooding from rain, as well as riverine flooding and storm surge and flooding attributable to a hurricane. Of particular import, is the percentage of vulnerable population exposed to this hazard by living in housing built within the 100-year and 500-year floodplain before the FEMA flood maps were drawn to quantify this hazard. The 2012 Duval County Post Disaster Redevelopment Plan (PDRP) provided vulnerable population’s data for the year 2010 and made the following observation:

“...Of particular concern within Duval County’s population are those with special needs and limited resources for post-disaster recovery due to age, disability, being below poverty level, or speaking a language other than English. Resources and access to resources can be customized to these populations, to better assist them with their post-disaster recovery needs. The U.S. Census Bureau defines disability as a long-lasting sensory, physical, mental, or emotional condition or conditions that make it difficult for a person to do functional or participatory activities such as seeing, hearing, walking, climbing stairs, learning, remembering, concentrating, dressing, bathing, going outside the home, or working at a job.³ Table 12 provides an overview of the social vulnerability in Duval County” (Source: Duval County Post Disaster Redevelopment Plan, Section IV, pg. Section 4.3.2, pg. IV-12).

The entirety of the county population can experience impacts from flooding, including, but not limited to, interruption of life activities, increased commute and/or evacuation clearance times, impacts to personal property, and economic disruption. Vulnerable populations may be overrepresented in the impacts experienced, due to their susceptibilities.

Table 13: Social Vulnerabilities Demographics

Table 4.4: Social Vulnerability		
Social Vulnerability Category	% of Population	Population (2010)
Over 65 years old	11.4	96,169
Under 5 years old	6.9	59,501
Language other than English spoke at home	12.6	108,897
Disabled*	11.6	97,953
<i>Persons below poverty level</i>	<i>14.2</i>	<i>122,725</i>

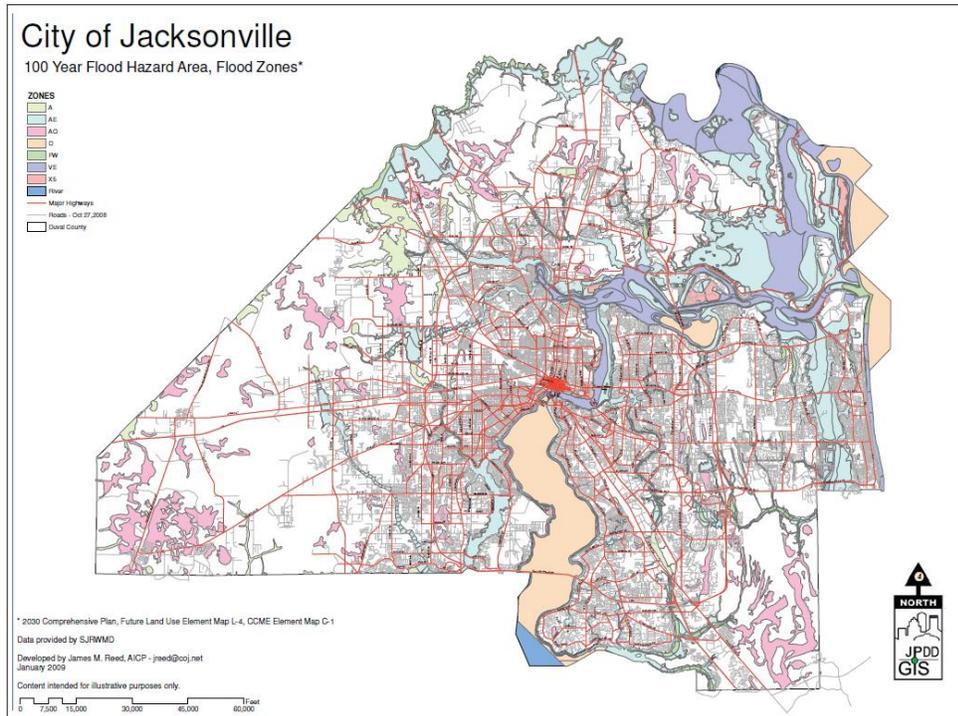
Source: U.S. Census Bureau Quick Facts (2010), *American Community Survey 1-Year Estimates (2010)

³U.S. Census Disability Status definition:
http://www.census.gov/acs/www/Downloads/2006/usedata/Subject_Definitions.pdf

This particular aspect of the vulnerable population’s interface with the flooding hazard is examined in order to provide sufficient estimates of the total population at risk in accordance with predicted flooding levels associated with storm surge. These areas and the population estimates provided in this section are also used for estimating evacuation clearance times in the transportation analysis. Clearance times from the 2013 Hurricane Evacuation Study have also been estimated in this section of the LMS on page 125.

Rains from hurricanes rank third in the order of a hurricane’s destructive force. During the average 24-hour period that it normally takes a hurricane to pass over an area, an average rainfall of between 5 and 10 inches may occur. Normally, this happens concurrently with the arrival of gale force winds. However, in Florida, there have been hurricane-related rainfalls ranging from 12 to 20 inches. These excessive rains that accompany hurricanes can cause excessive flooding in low lying areas that will need to evacuate. It is very important to consider roads which are rendered impassable during heavy rains and which may affect the evacuation of the vulnerable population. The details of this plan can be found in the Consolidated City of Jacksonville/Duval County Flood Hazard Specific Plan. The following series of maps depict the 100-year floodplain and the major drainage basins in Duval County to highlight the probability of flooding’s impact upon all inhabitants. The Coastal High Hazard Area (CHHA) is outlined, with a description of the Legislative developments within the past decade to better define the CHHA. It is adopted in the COJ 2030 Comprehensive Plan.

Figure 22: 100-Year Floodplain Map



Source: City of Jacksonville 2030 Comprehensive Plan, Future Land Use Element, Updated May 2014.

Figure 23: Duval County Major Drainage Basins

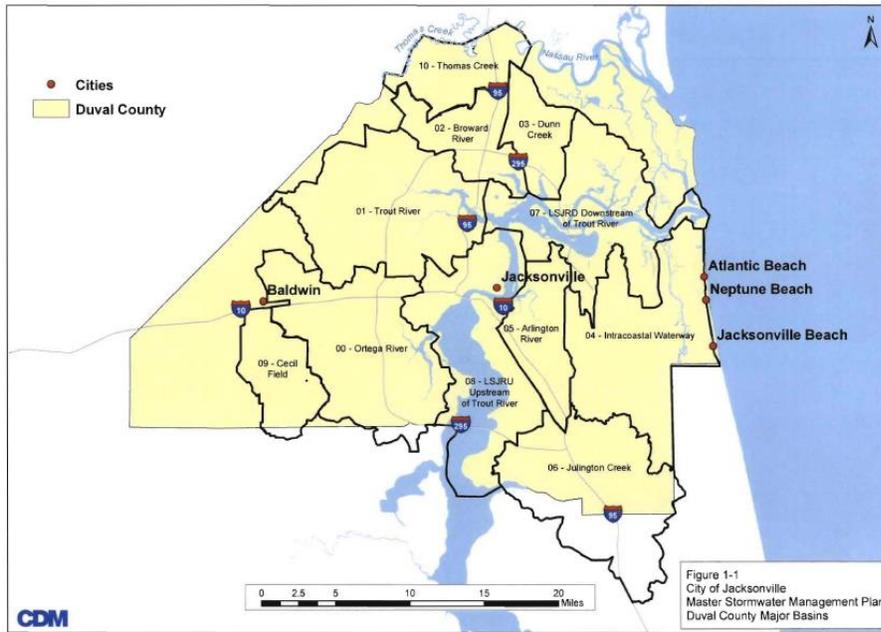
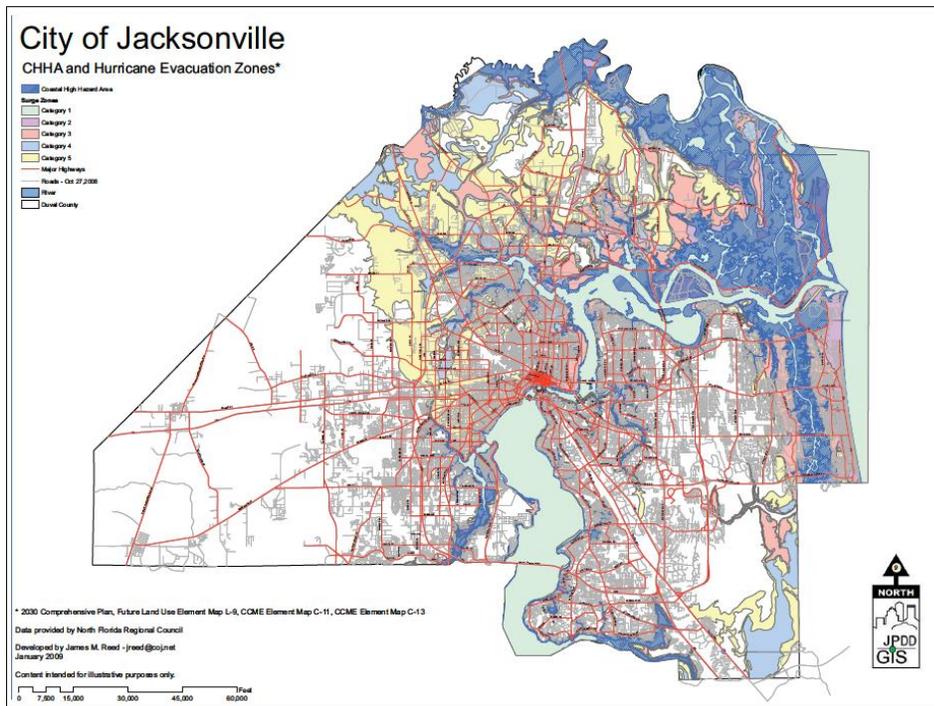


Figure 1-1
City of Jacksonville
Master Stormwater Management Plan
Duval County Major Basins

Source: City of Jacksonville Planning and Development Department, Master Stormwater Management Plan, 2014

Figure 24: Coastal High Hazard Areas



Source: City of Jacksonville 2030 Comprehensive Plan, Future Land Use Element, Updated May 2014.

Florida House Bill 1359, enacted in 2006, re-established the definition of the Coastal High Hazard Area to refer to the "area below the elevation of the category 1 storm surge line as established by a Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model" (Source: Consolidated City of Jacksonville 2030 Comprehensive Plan, Conservation Coastal Management Element, Map C-18, pg. 74).

There are three ways the Consolidated City of Jacksonville/Duval County residents can be flooded: storm surge, creeks and river or natural flooding, and neighborhood or localized flooding caused by poor drainage. Areas at risk are shown in the 100-year Flood Plain Map (Figure 22: 100-Year Floodplain) as well as areas subject to storm surge from a Category 1 storm, also called the Coastal High Hazard Area (CHHA), (Figure 24), and finally, isolated neighborhoods with drainage issues. Due to the low-lying nature of much of the consolidated city, localized flooding often accompanies heavy thunderstorms. This localized flooding rarely presents more than an inconvenience, but occasionally results in severe flooding that includes one instance that resulted in a Presidential Declaration for natural disaster. Many homes located along the banks of the St. Johns River and its tributaries will be subject to river flooding, particularly flooding which is related to severe tropical storms and hurricanes which strike the coastline from the ocean at any angle ranging from 30 degrees to 150 degrees, relative to the coastline.

Raw frequency counts do not in themselves provide a specific probability in a given year for the occurrence of hurricane-related flooding. Such events do not space themselves evenly over time, and global climatological patterns give rise to periods of more frequent and severe hurricanes, as well as periods in which such storms are less frequent or less severe on average. The 1970s and 1980s were periods of lesser hurricane activity for the southern Atlantic and the Caribbean, and the last decade has been a period of greater activity.

b. Vulnerability, Probability and Risk Attributable to Flooding Hazard

The 2013 Florida Hazard Mitigation Plan defines flooding as to the general or temporary conditions of partial or complete inundation of normally dry land areas from the overflow of inland or tidal water and of surface water runoff from any source. Floodplains are defined as any land areas susceptible to being inundated by water from any flooding source. Although storm surge presents the potential for loss of life, a study conducted from 1970 to 1999 by the National Hurricane Center found that freshwater flooding accounted for more than half (59%) of the tropical cyclone deaths in the United States.²² FEMA estimates that about 41 percent of Florida is flood prone, which is the highest percentage of all 50 states.²³ Because of the potential for flood damage, Florida has the most flood insurance policies required by the National Flood Insurance Program than any other state.

In Florida, several variations of flooding occur due to the effects of severe thunderstorms, hurricanes, seasonal rain, and other weather-related conditions. The loss of life, personal property, crops, business facilities, utilities, and transportation are major impacts of flooding. Floodwaters present an additional hazard as a public health problem when they inundate drinking water facilities, chemical and waste storage facilities, wastewater treatment facilities, and solid waste disposal sites.

The flooding hazard associated with storm surge and wind-driven water emanating from a Category 1 or Category 2 hurricane can destroy or heavily damage beachfront homes and commercial establishments, piers, seawalls, boardwalks, etc. Storm surge and wind from Category 3 or higher storms are expected to cause massive destruction on coastal barrier islands, particularly in coastal municipalities including the cities of Atlantic Beach, Jacksonville Beach and Neptune Beach. In addition, the Mayport Naval Air Station would be expected to sustain significant damages.

The 2013 Hurricane Evacuation Study identified populations vulnerable to the effects of hurricanes and analyzed the behavioral patterns of those people. New data that incorporates the storm's angle of approach, direction and intensity, as well as the risks of isolation of elevated areas due to flooded or destroyed roads, indicate much larger areas of impact from all levels of storm surge and wind-driven water than what was previously recorded. Therefore, more extensive evacuation clearance time for hurricanes will be required. Based on the recent storm surge data, and also due to planned bridge closures at onset of tropical storm force winds (40 mph) and the anticipated inundation of low-lying roads, most all land east of the Intracoastal Waterway is included in the Evacuation Zone A and B, for a Category 2 or higher rated hurricane event.

In addition to residents living in low-lying or flood-prone areas, residents who live in mobile homes and structures built to older, less robust building code standards are also vulnerable to hurricanes and tropical storms. According to the Northeast Florida Regional Council, mobile homes make up 11,013 units out of 329,778 units, or 3.33% of Duval County housing; these structures are more vulnerable to high winds than other structures. Federal law, passed after Hurricane Andrew of 1992, requires that mobile homes must now be constructed with two inch by six-inch lumber, have tie-downs and be able to withstand winds of 110 miles per hour on the coast and 100 miles per hour inland. However, approximately 90 percent of the 849,000 Florida mobile homes (source: Census of Housing, U.S. Census Bureau, revised October 31, 2011), were built before that law was enacted. Those mobile homes built after 1976 were built to withstand 90 mile per hour winds; those built before 1976 had no wind requirements (Source: The Tornado Project).

The total number of non-compliant residential structures in Duval County is not known. Building inspections are done within the local municipal jurisdictions. Building regulations vary in policy, permitting procedures and enforcement.

According to a report dated October 10, 2008 from the Florida Office of Insurance Regulation Market Research Unit, insurance payments resulting from Tropical Storm Fay totaled \$24,834,188 in Duval County. That figure includes coverage for homeowners, dwelling, mobile homeowners, commercial residential, residential private flood, and federal flood. Because this extensive damage came from a tropical storm, one can reasonably assume a Category 1 hurricane would result in even more millions of dollars of damage.

More than 50 years ago, Hurricane Dora in 1964 produced significant tidal effects, and caused the highest recorded flooding of the St. Johns River in the twentieth century. High levels of rainfall during the storm and in the four day period following Hurricane Dora, with abnormally high tides sustained by strong offshore winds of long duration combined to produce the river flooding.

Impact from Flooding to Duval County

Figure 25: Flooding Data

Storm Events Database

Search Results for Duval County, Florida

Event Types: [Flash Flood](#), [Flood](#)

Duval county contains the following zones:

'Duval'

66 events were reported between 01/01/1950 and 10/31/2014 (23680 days)

Summary Info:

Number of County/Zone areas affected:	2
Number of Days with Event:	48
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:	22
Number of Days with Event and Crop Damage:	1
Number of Event Types reported:	2

Source: *National Weather Service Jacksonville*

The National Climatic Data Center reported 48 events in Duval County, but had no reports for impacts over a 64-year period, from 1950 through 2014. No deaths or injuries have been attributed to flooding. A range of \$5,000 to \$500,000 in property/crop damages were recorded, although there are newspaper reports that attribute \$2 million dollars in property damages resulting from Hurricane Dora in 1964. Tropical Storm Fay 2008 damage assessment reported \$24 million in public assistance funding to restore public infrastructure after a significant tropical storm. The last recorded event was August 01, 2013 but the last countywide impact was felt during the summer of 2012 when several tropical systems including TS Beryl and TS Debby caused numerous homes and streets to flood, roof collapses due to wind and heavy rainfall that contributed to a rising river system, and numerous vehicles to become incapacitated by the rising water. There were about 40 road closures across Duval County during Tropical Storm Debby.

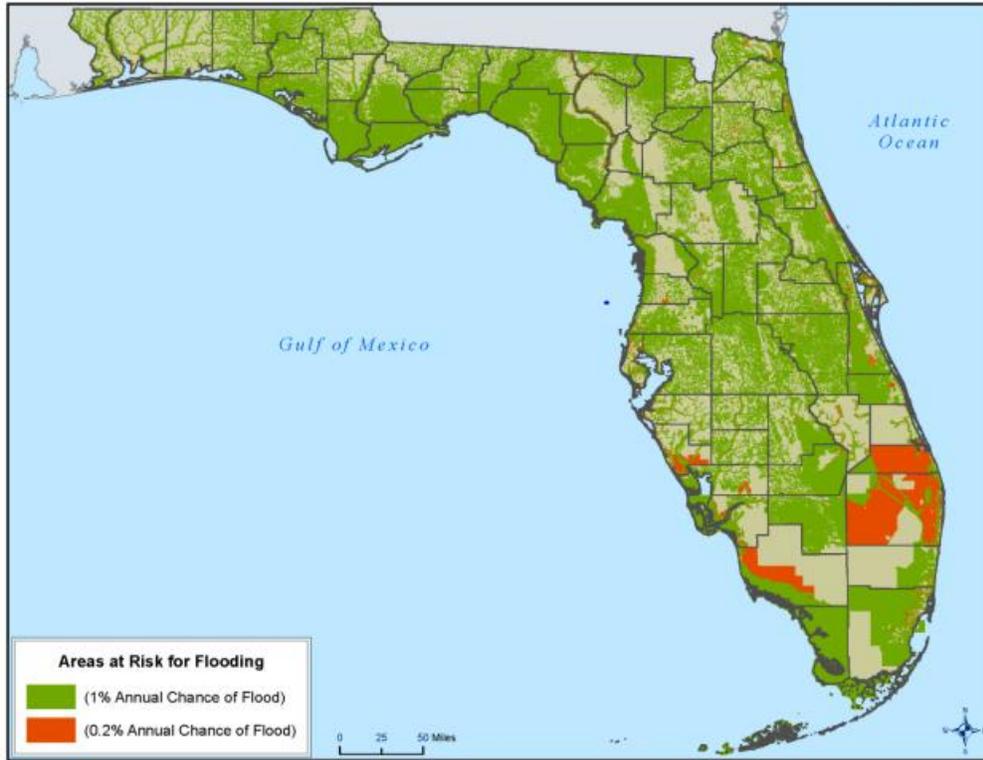
There is a 73.8 percent probability that a future flooding event will create a scenario that could lead to injuries, potential deaths and property damages in the county.

Significant segments of population in Duval County are vulnerable to the effects of flooding.

Areas with the highest level of risk include coastal barrier islands, particularly in the coastal municipalities of the cities of Atlantic Beach, Jacksonville Beach and Neptune Beach. In addition, the Mayport Naval Air Station also has significant exposure. Based on the recently updated storm surge data, and also due to planned bridge closures at onset of tropical storm force winds (40 mph) and the anticipated inundation of low-lying roads, most all land east of the Intracoastal Waterway is included in the Evacuation Zone A and B, for a Category 2 or higher rated hurricane event.

In addition, in-land communities with residents who live in low-lying or flood-prone areas, mobile or manufactured housing, and structures built to older, less robust building code standards, are also vulnerable to the flooding emanating from hurricanes and tropical storms.

Figure 26: Areas at Risk for Flood in Florida



Source: 2013 Florida Enhanced Hazard Plan, pg. 3.43

Extreme Temperature Hazard

For the purposes of Duval County's hazard analysis the effects of extreme temperatures are the combined hazards of extreme heat and extreme cold. According to the 2013 State Enhanced Mitigation Plan, extreme heat is defined as extended period of time where the temperature and relative humidity combine for a dangerous heat index. Extreme heat can occur throughout the state but typically occurs in the summer between the months of June and September. This hazard is focused on the affects to the human population. Extreme heat can ultimately cause death. Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Older adults, young children, and those who are sick or overweight are more likely to succumb to extreme heat. Florida has always been known for its high humidity and heat, which combine to affect its population.

Figure 27: Extreme Heat Hazard Ranking by County



Source: 2013 Florida Hazard Mitigation Plan, pg. 3.128

Extreme Cold is defined by the National Weather Service Jacksonville as those periods of time when temperatures fall below 28 degrees Fahrenheit. Prolonged exposure to the cold can cause frostbite or hypothermia and become life threatening. Infants and elderly people are most at risk. In areas unaccustomed to winter weather, near freezing temperatures are considered "extreme cold." During unexpected cold periods in Florida, there are often issues with propane gas supplies, and electrical and natural gas systems are pushed to their limits to meet the record demands. Also, many residents of Florida have inadequate heating systems and turn to alternatives such as space heaters and wood fires that increase the likelihood of accidental house fires.

a. Background/Frequency of Extreme Temperature

According to data provided by the National Weather Service Jacksonville, temperatures rarely rise above 100 degrees or fall below 28 degrees Fahrenheit within Duval County. Despite Florida’s normally mild climate, temperature-related deaths in Florida exceed those caused by hurricanes and tornadoes combined. Extreme high temperatures (105° heat index and above) may pose a threat of heat stress to the county’s elderly and infant populations. In the event of an electrical service interruption, the lack of air conditioning may pose a particular danger to at-risk populations. The NWS Jacksonville reported 525 extreme cold weather events over a 64 year period, for a rate of return of 8.20 events per year. The NWS Jacksonville reported 147 extreme heat events over a 64 year period, for a rate of return of 2.30 events annually. There are no deaths on record from either an extreme heat or cold event.

b. Vulnerability, Probability and Risk with Extreme Temperature

Extreme cold temperatures defined as temperatures below 28 degrees Fahrenheit, are also a potential threat. The elderly and people with medical conditions, such as diabetes, are especially at risk to extreme temperature and cannot tolerate intense cold. Cold weather-related medical conditions, such as hypothermia, can become a danger to those who are not physically prepared or sheltered adequately, such as the homeless and low income households (Source: Statewide 2013 Hurricane Evacuation Study). The kinds of facilities in each jurisdiction of Duval County impacted by extreme temperature hazard events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites.

According to the 2014 U.S. Census Bureau People Quick Facts, 12.4 percent of Jacksonville’s population is over 65 years old. The population under the age of 5 is .6.8 percent. Duval County maintains a Special Needs Registration database that is updated annually to identify residents with needs that require additional assistance during an activation or event requiring evacuation. The last freeze event occurred on December 26, 2010. NWS Jacksonville office reported around 10:00am that a mixture of snow, sleet, and rain was about 3 miles south of the University of North Florida. There were no impacts from this event and there have been no recorded events since.

The population is distributed throughout the County, so preparedness materials and educational outreach are the vehicles to address the vulnerability and impacts associated extreme temperature.

Table 14: Jacksonville Weather Extremes

Jacksonville All-Time Extremes (1871-2012)			
Temperature			
Record high	104 on July 11, 1879 and July 28, 1872		
Record low	7 on January 21, 1885		
Record lowest maximum	27 on February 13, 1899		
Record lowest daily mean	18.5 on February 13, 1899 and January 21, 1885		
Record warmest minimum	86 on July 26, 1872 and June 23, 1950		
Record warmest daily mean	94 on July 26, 1872		
Earliest freeze	November 3, 1954		
Latest freeze	April 8, 2007		
Average date of first freeze	December 6		
Average date of last freeze	February 26		
Greatest number of consecutive days with low temp at or below freezing	8 from December 16-23, 1901 & January 17-24, 1977		
Greatest number of consecutive days with minimum 20 or below	3 from December 24-26, 1983 & January 20-22, 1985		
Greatest number of consecutive days with maximum 90 or above	50 from July 8 to August 26, 2010		
Rainfall			
Maximum rainfall in one year	82.27" in 1947		
Minimum rainfall in one year	30.44" in 1927		
Maximum rainfall in one month	23.32" in June 1932		
Minimum rainfall in one month	0.00" in October 2010		
Maximum rainfall in 24 hours	10.17" on September 5-6, 1950		
Maximum rainfall in one hour	5.29" on May 27, 1975		
Greatest number of consecutive days without precipitation (including trace amounts)	33 from September 30 to November 1, 2010		
Greatest number of consecutive days without measurable precipitation	46 from October 31 to December 15, 1970		
Greatest number of consecutive days with precipitation	17 from August 30 to September 15, 2001		
Snowfall			
Maximum snowfall in 24 hours	1.9" on February 13, 1899		
Maximum snowfall in one year	1.9" in 1899		
Greatest depth of snow on ground	1.9" on February 13, 1899		
Greatest number of consecutive days with snow	2 on numerous occasions (last time December 22-23, 1989)		
Greatest number of consecutive days with at least a trace or more of snow on the ground	4 from December 23-26, 1989		
Earliest snowfall	Trace on November 28, 1911		
Latest snowfall	Trace on March 28, 1955		
Barometric Pressure			
Highest pressure	30.74" (1041.0 mb) on January 4, 1979		
Lowest pressure	28.90" (978.7 mb) on September 18, 1928		
Jacksonville Top 5 Years (1871-2012)			
Wettest	Driest	Warmest	Coldest
1) 82.27" in 1947	1) 30.44" in 1927	1) 71.5 in 1949	1) 66.2 in 1976
2) 82.00" in 1885	2) 31.20" in 1990	2) 71.3 in 1883	2) 66.3 in 1983
3) 79.63" in 1991	3) 31.76" in 1954	3) 71.0 in 1990	3) 67.0 in 1901
4) 70.57" in 1973	4) 32.56" in 1917	4) 71.0 in 1882	4) 67.0 in 2010
5) 69.47" in 2004	5) 33.40" in 2010	5) 71.0 in 1880	5) 67.1 in 1978

Source: National Weather Service, <http://www.srh.noaa.gov/jax/>

Temperature extremes, both freezes and periods of excessive heat, impact communities with a large senior population to a greater extent than those with younger populations. Inland communities away from the moderating influence of the ocean or estuaries are more vulnerable to temperature extremes.

Impacts of Extreme Temperatures

Figure 28: Excessive Heat Data

Storm Events Database

Search Results for Duval County, Florida

Event Types: **Excessive Heat**

Duval county contains the following zones:

'Duval'

0 events were reported between 01/01/1950 and 10/31/2014 (23680 days)

Summary Info:

Number of County/Zone areas affected:	0
Number of Days with Event:	0
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:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	0

Column Definitions:

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

Source: NOAA National Climatic Data Center

The National Climatic Data Center had no reports for impacts over a 64-year period, from 1950 through 2014. No deaths or injuries have been attributed to excessive heat. No dollar damages in property or crop damage were recorded. The National Weather Service Jacksonville reported 147 extreme heat events over a 64 year period, for a rate of return of 2.30 events annually. With the probability of 2.30 events in any given year, there is a 3.5 percent chance that a future excessive heat event could create a scenario that could lead to injuries and property damages in Duval County. There have been no events recorded since the last LMS update in 2010. All of Duval County’s population is vulnerable to the effects of excessive heat, with the elderly and youth under the age of five being the most susceptible. These demographics are dispersed throughout the county.

Figure 29: Extreme Cold/Wind Chill Data Storm Events Database

Search Results for Duval County, Florida

Event Types: **Extreme Cold/Wind Chill**

Duval county contains the following zones:

'Duval'

0 events were reported between 01/01/1950 and 10/31/2014 (23680 days)

Summary Info:

Number of County/Zone areas affected:	0
Number of Days with Event:	0
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:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	0

Column Definitions:

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

Source: NOAA National Climatic Data Center

While the National Climatic Data Center had no records of injuries, deaths or property damage during the past 64-years, the NWS Jacksonville reported 525 extreme cold weather events over a 64 year period, for a rate of return of 8.20 events per year. With the probability of 8.20 events in any given year, there is a 12.6 percent chance that a future extreme cold event could create a scenario that could lead to injuries and property damages in Duval County. There are no deaths on record from either an extreme heat or extreme cold event.

Drought Hazard

According to the 2013 Florida Enhanced Mitigation Plan, drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector. Drought should be considered relative to some long-term average condition of balance between precipitation and “evapotranspiration” (i.e., evaporation + transpiration) in a particular area, a condition often perceived as “normal.” It is also related to the timing (i.e., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness (i.e., rainfall intensity, number of rainfall events) of the rains. Other climatic factors such as high temperature, high wind, and low relative humidity are often associated with it in many regions of the world and can significantly intensify its severity. When drought begins, the agricultural sector is usually the first to be impacted because of its heavy dependence on stored soil water. Those who rely on surface water (i.e., reservoirs and lakes) and subsurface water (i.e., ground water), for example, are usually the last to be affected.

A short-term drought that persists for three to six months may have little impact on these sectors, depending on the characteristics of the hydrologic system and water use requirements. Drought Indexes and

Measurements In 1965, W.C. Palmer developed an index to measure the departure of the moisture supply. 106 Palmer based his index on the supply-and-demand concept of the water balance equation, taking into account more than just the precipitation deficit at specific locations. The objective of the Palmer Drought Severity Index (PDSI), shown below, was to provide measurements of moisture conditions that were standardized so that comparisons using the index could be made between locations and between months.

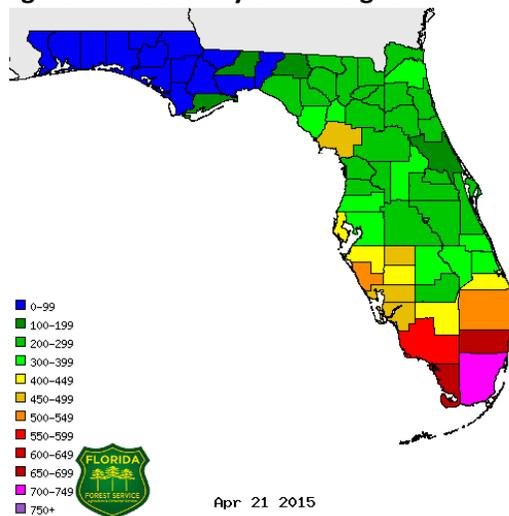
Figure 30: Palmer Drought Severity Index (PSDI)

<i>Palmer Classifications</i>			
4.0 or more	Extremely wet	-0.5 to -0.99	Incipient dry spell
3.0 to 3.99	Very wet	-1.0 to -1.99	Mild drought
2.0 to 2.99	Moderately wet	-2.0 to -2.99	Moderate drought
1.0 to 1.99	Slightly wet	-3.0 to -3.99	Severe drought
0.5 to 0.99	Incipient wet spell	-4.0 or less	Extreme drought
0.49 to -0.49	Near normal		

Source: 2013 Florida Hazard Mitigation Plan, pg. 3.117

The PDSI is most effective in determining long-term drought, a matter of several months, and is not as reliable with short-term forecasts, a matter of weeks. It uses a 0 as normal, and drought is shown in terms of minus numbers; for example, minus 2 is moderate drought, minus 3 is severe drought, and minus 4 is extreme drought. The advantage of the PDSI is that it is standardized to local climate, so it can be applied to any part of the country to demonstrate relative drought or rainfall conditions. The Keetch-Byram Drought Index (KBDI) is a continuous reference scale for estimating the dryness of the soil and duff layers. The index increases for each day without rain (the amount of increase depends on the daily high temperature) and decreases when it rains. The scale ranges from 0 (no moisture deficit) to 800. The range of the index is determined by assuming that there are 8 inches of moisture in saturated soil that is readily available to the vegetation. For different soil types, the depth of soil required to hold 8 inches of moisture varies (loam 30 inches, clay 25 inches, and sand 80 inches). A prolonged drought (high KBDI) influences fire intensity largely because more fuel is available for combustion (i.e., fuels have a lower moisture content). In addition, the drying of organic material in the soil can lead to increased difficulty in fire suppression.

Figure 31: Keetch Byram Drought Index



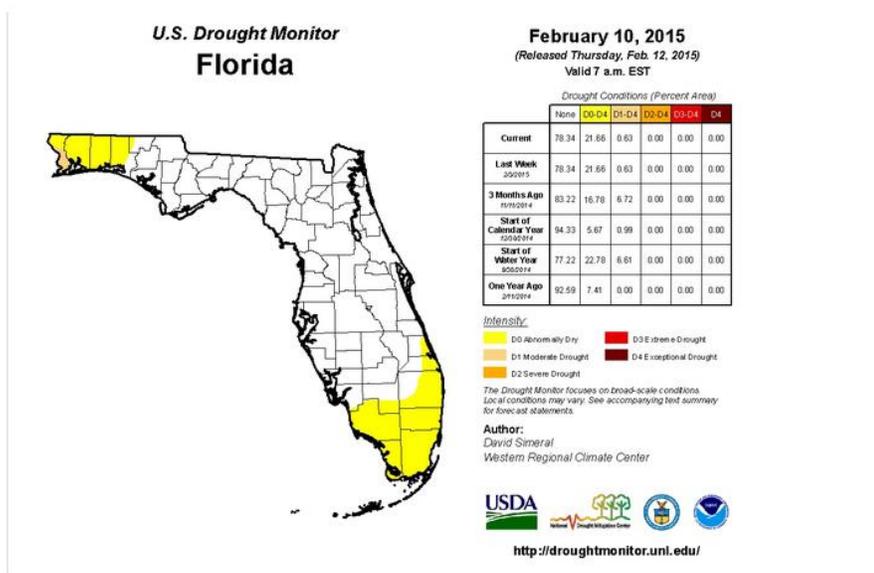
Source: Florida Forestry Service. Daily graphic representation of drought in Florida

a. Background/Frequency of Drought

Drought is a deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area. While Duval County, including the Town of Baldwin, and the cities of Atlantic Beach, Neptune Beach, Jacksonville Beach, and Jacksonville do not have a large agricultural product base susceptible to drought, this condition does affect the urban areas particularly dependent on water storage areas. Decreased water levels due to insufficient rain have led to the restriction of water use to certain amounts and types of uses throughout the county. Also, the increased pumping of groundwater and surface irrigation occurring in drought periods might result in land subsidence problems. These manifest as failures of construction materials such as slopes or grades on roadways that appear to be “sinking,” or actual collapse of a section of road or sidewalk, or development of depressions in the soil, which are sometimes interpreted incorrectly as sinkholes. The impacts of subsidence are as real as sinkholes, and infrastructure repairs can be costly.

The impact of droughts in Duval County has been relatively indirect. When a drought is combined with a lowered water supply and with another common hazard to Florida, lightning strikes, events similar to the urban wildfires of June 1998 can occur and intensify the difficulty in responding to the fires. The NWS Jacksonville reported that a rate of return for a major drought period in excess of six months without rain could be experienced once every 15 years.

Figure 32: Florida Drought Monitor Graphic



Source: USDA, U.S. Drought Monitor, 2015. Representational Graphic updated on a daily basis.

b. Vulnerability, Probability and Risk with Drought

The last drought emergency was declared in Duval County during April 15-29, 1999, when the county received a Disaster Declaration for “Fire and Drought for Emergency Protective Measures” through FEMA Public Assistance Category B. No particular area or population in the county is especially at risk from this hazard. No deaths or injuries from drought are on record through the National Climactic Data Center during the period of 2010 through 2014. The kinds of facilities in each jurisdiction of Duval County to be potentially impacted by drought events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites.

Probability of Future Drought Events

There are no specific probability trends posted for north Florida and Duval County, with regards for drought. Duval County has significant amounts of acreage designated for conservation and public lands and a diminishing amount of agricultural land, as the county continues to experience and urbanization. The 2013 Florida Hazard Mitigation Plan states that based on the previous occurrences of drought conditions, the probability of future drought events occurring over the long term with some frequency remains high. As the state overall continues to develop with higher populations, higher water demands, and more demands related to agriculture and livestock, these drought conditions and drier trends may begin to have a profound impact on the state and its residents.

Drought Impact Analysis

Drought will negatively affect the State of Florida with a variety of impacts: Drought is often associated with periods of long and intense heat. Drought usually does not affect humans directly, but extreme heat can cause injury and even death, particularly with children, elderly citizens, and other special needs populations. Injuries and potential deaths are most likely to impact rural, poor areas that lack air conditioning and immediate medical care. The largest impact of prolonged drought is the financial impact to farmers with crops and livestock. Florida, and Duval County, to a lesser extent, has a significant agriculture industry. A serious drought would damage or possibly destroy annual crops and limit the number of livestock that could be properly cared for. Drought and extreme heat have no real effect on houses, facilities, or state infrastructure. Rationing water supplies would most likely be the worst-case scenario impact for drought. Duval County has promulgated spring and summer watering restrictions for a decade. Prolonged drought over a number of years could have long-term environmental impacts on the area, including species endangerment and necessary changes to the local agricultural makeup. There is an increased sinkhole formation risk under drought conditions.

The St. Johns Water Management District (SJWMD), which includes Duval County within its boundaries, has a Water Shortage Plan (WSP) which is codified in its respective chapter of the Florida Administrative Code. Each Florida Water Management District has a WSP, and definitions of water shortage vary slightly by district.

St. Johns River Water Management District’s WSP defines water shortage as meaning a “situation within all or a specifically defined geographic area of the District when insufficient water is available to meet the needs of the users, or when conditions are such as to require temporary reduction in total use within a particular area to protect water resources from serious harm. A water shortage usually occurs due to drought.” (SJRWMD WSP; Chapter 40C-21.051 F.A.C.)

The SJWMD in Chapter 40C-21.221 describes the manner in which the District will periodically evaluate water conditions, thereby determining whether a water shortage should be declared, and the severity of the shortage. Per the District's WSP, the District is responsible for evaluating current and historical data to determine whether estimated present and anticipated available water supply will be insufficient to meet the estimated present and anticipated demands of the users, or whether serious harm to the water resources can be expected. Various metrics can be used to evaluate the sufficiency of water supplies and the likelihood of serious harm to water resources, including indicators, triggers and indices. Drought and water shortage indicators can be meteorological (precipitation) or hydrologic (stream and spring flows; and lake, reservoir, and groundwater levels). Indicators are variables that are used to identify and assess drought and water shortage conditions. A drought or water shortage trigger is a threshold value of the indicator. Trigger values are used to establish drought categories which are typically defined levels of severity with corresponding conservation measures. Triggers are typically identified (or "set") by evaluating historical conditions to identify a normal value for the indicator over a period of record. Then, triggers are set based on the diversion from that norm. For example, typical indicators used to monitor hydrologic drought are lake and groundwater levels, and streamflow. Typically, the triggers for these indicators are set at certain percentiles. The percentiles may directly relate to a drought severity (Phase I, Phase II, etc.). However, it is more common to evaluate the individual indicators and their threshold values together along with other quantitative and qualitative factors when establishing the severity of a drought or water shortage phase. An index blends multiple indicators into a single index value which directly corresponds to a level of severity. A drought index is a numerical scale that directly describes the severity of a drought. Similar to indicator threshold values, indices describe a diversion from the norm, which is typically zero. Dry conditions are indicated on the negative scale and positive values represent wet conditions. When an index is used, the severity of the drought is determined by computational methods alone. In other words, the decision or policy maker is removed from the "equation." However, when sufficient data exists for a geographic area of interest, water managers are more apt to evaluate a mix of individual indicators (which can also include popular indices) in determining drought or water shortage conditions for their area. The latter approach is broadly supported in the literature. Unlike drought, water shortage is not commonly defined in terms of an index. However, there are several water scarcity indices. Water scarcity indices generally apply to evaluating the sustainability of water resources, or supply over the long term. Therefore, their use is not appropriate in the context of this project because water shortage refers to a temporary condition. The District evaluates and manages long-term water availability through their water resource assessments, Water Supply Plans, Water Use Permits, development of Minimum Flow and Level (MFL) assessments and recovery strategies; and other planning, monitoring, and permitting processes. (Source: Special Publication 2013-SP8, "Development of Regional Water Shortage Management Responses and Recommended Phased Response Methods," St. Johns River Water Management District)

Impact from Drought to Duval County

Figure 33: Drought Data

Storm Events Database

Search Results for Duval County, Florida

Event Types: **Drought**

Duval county contains the following zones:

'Duval'

1 events were reported between 01/01/1950 and 10/31/2014 (23680 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	1
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:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

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

Source: NOAA National Climatic Data Center

The National Climatic Data Center reported one event in Duval County, but had no reports for impacts over a 64-year period, from 1950 through 2014. No deaths or injuries have been attributed to drought. No dollar damages in property or crop damage were recorded. With zero impacts recorded over a 64-year period, there is less than 5 percent probability that a future drought event would create a scenario that could lead to injuries and property damages in Duval County. All of Duval County's population is vulnerable to the effects of drought. Future consequences will continue to include water restriction actions during the dry months. The potential will exist for more construction materials failure on roadways or sidewalks, or land settling due to subsidence from lowered water tables.

Wildfire Hazard and the Wildland/Urban Interface (Brush Wildfires & Forest Fires)

a. Background/Frequency of Wildfire/Wildland/Urban Interface Fires

Wildfire is defined by the Florida Forest Service (FFS) as any fire that does not meet management objectives or is out of control. According to the 2013 Florida Enhanced Mitigation Plan, wildfires occur throughout all of Florida every year and are part of the natural cycle of Florida's fire-adapted ecosystems. Many of these fires are quickly suppressed before they can damage or destroy property, homes and lives. There are four types of wildfires:

- Surface Fires: Burn along the forest floor consuming the litter layer and small branches on or near the ground.

- Ground Fires: Smolder or creep slowly underground. These fires usually occur during periods of prolonged drought and may burn for weeks or months until sufficient rainfall extinguishes the fire, or it runs out of fuel.
- Crown Fires: Spread rapidly by the wind, moving through the tops of the trees.
- Wildland/Urban Interface Fires (WUI): Fires occurring within the WUI in areas where structures and other human developments meet or intermingle with wildlands or vegetative fuels. Homes and other flammable structures can become fuel for WUI fires. This is the emphasized natural hazard through wildfire addressed by the Duval County Local Mitigation Strategy. Prescribed or controlled fires have been used on both public and private lands across the state to replace the natural benefits provided by wildfires can provide. Prescribed burns help to reduce the amount of flammable vegetation in an area which in turn lessens the intensity of a wildfire that may occur in that same area. Firefighters then have an opportunity to suppress the fire while it is small and easier to control. Approximately 70 percent to 80 percent of all wildfires in Florida are caused by humans. Wildfire prevention and public awareness campaigns have helped to greatly reduce the number of human-caused wildfires in Florida. Other measures used to help reduce the number and severity of wildfires includes red flag warnings issued by the NWS and county burn bans.

Environmental short-term loss caused by a wildland fire can include the destruction of wildlife habitat and watersheds. Long-term effects include reduced access to affected recreational areas, destruction of cultural and economic resources and community infrastructure, and vulnerability to flooding due to the destruction of watersheds. The type and amount of fuel, as well as its burning qualities and level of moisture, affect wildfire potential and behavior. The continuity of fuels, expressed in both horizontal and vertical components, is also a factor because it expresses the pattern of vegetative growth and open areas. Topography is important because it affects the movement of air (and thus the fire) over the ground surface. The slope and shape of terrain can change the rate of speed at which the fire travels. Temperature, humidity, and wind (both short- and long-term) affect the severity and duration of wildfires.

A wildfire is defined as any free burning uncontrollable wildland fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment. This kind of event is common (87 times per year consuming 1,170 acres annually) in Duval County but not large in scope (average 13 acres) (Source: Florida Forest Service, 2015). The Consolidated City of Jacksonville/Duval County is experiencing increased development, with the accompanying influx of residents living in urban interface zones with forests. The rapid western development of Duval County increases the vulnerability of that population to wildfires. Development trends in the north side of the county are increasing population pressures in that area. Fires can spread rapidly from traditionally rural and unpopulated regions of west and north Duval County into new high-density residential neighborhoods. More details on this hazard can be found in the 2013 *Southern Wildfire Risk Assessment Summary Report*. This report was generated through a web mapping portal called SouthWRAP, sponsored by the Southern Group of State Foresters and produced by the FSS, for wildfire risk assessment.

Florida is a fire-dependent ecosystem that has a very long growing season and typically receives large amounts of rainfall contributing to massive accumulations of flammable native vegetation. Since the early 1950s when Floridians actively began to suppress all fires to protect newly planted forest and keep newly built dwellings safe, vegetative fuel has become dense and thick. Natural fires have given way to dangerous wildfires, which often damage rather than benefit natural surroundings. On an average year, Florida will experience annually 3,711 wildfires burning nearly 177,501 acres. Years with a higher number of hard freezes followed by windy springs also contribute to increased wildfire activity. The probability of wildfire events is

high for Duval County. There are six events recorded through the National Climatic Data Center from 2010-2014, however, there is no loss of life or injuries on record within Duval County events.

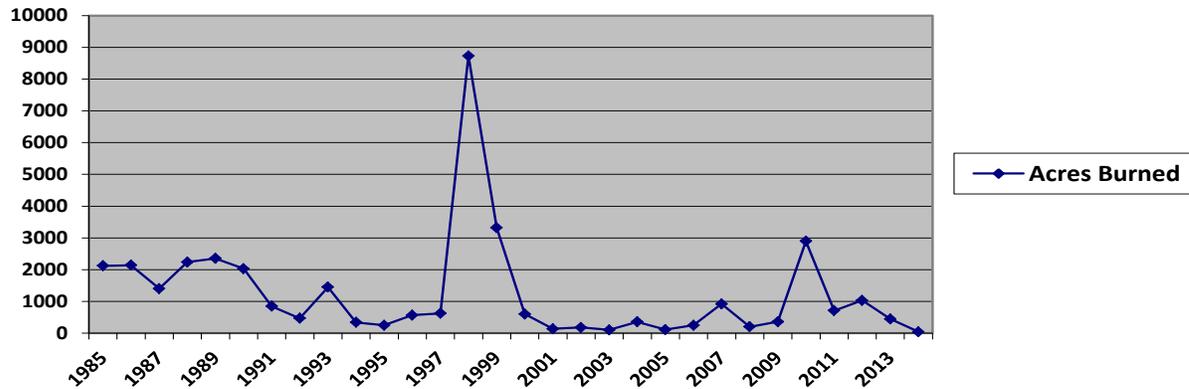
Significant wildfire events were recorded in Duval County during 1998 when 400 wildfires burned 8,730 acres; in 1989 when 154 wildfires burned 2,353 acres; 1990 when 193 wildfires burned 2,031 acres; and in 1999 when 149 wildfires burned 3,316 acres. These active wildfire years tend to coincide with periods of drought, particularly the years of 1985 and 1998. 1998 was a particularly active wildfire year for the State of Florida. From June 1 through July 2, half a million acres burned statewide. Wildfires were reported burning in all of Florida's 67 counties. Duval County escaped with only 140 wildfires, no loss of life and no homes were destroyed. The areas most severely impacted were close to Baldwin near Yellow Water Road and areas in the extreme southeast corner of the County south of J.T. Butler Boulevard.

In 2000 the Normandy Road Fire burned 2,258 acres north of Normandy Blvd and east of US 301 in Maxville. A trailer dragging a chain lit more than 30 fires along the road, which all burned together and spread rapidly to the north. The Marsh Fire burned 422 acres in an isolated section of marsh off Yellow Bluff Road on the north side in 2006. Firefighters were unable to reach the fire and were forced to allow it to burn itself out. In 2010, dry conditions assisted the growth of a brush fire (Normandy Fire) in southwest Duval County. The Baldwin Bay Fire in 2012 burned 953 acres off CR 121, north of U.S. 90. Dry conditions caused this swampy area to smolder for three months. The Pumpkin Hill Fire burned 363 acres off Cedar Point Road on the north side in 2013. No lives were lost or injuries to responders or to citizens were documented. From 2010 through 2014, the Florida Forest Service reported two residences and three out buildings were damaged by wildfire. They were able to rebuild. Another two out buildings were lost to wildfire, but no residences were lost.

As Duval County's growth continues to push into areas that were previously agricultural, more homes will be threatened by wildfires every year. According to the Florida Forest Service, the areas of the County most susceptible to wild-land fires are west of I-295 near Cecil Commerce Center and the Argyle Forest area, on the north side in the Tisonia area and around the International Airport, and on the south side around Bayard, east of US1 and along Hodges and Kernan Boulevards. Duval County is very susceptible to wildfires starting from escaped yard debris burns and lightning strikes particularly during north Florida's dry season from March through June and during extended periods of drought. Since 2000, lightning has caused only 23% of total fires in Duval County; the remaining 77% were human-caused.

A mitigation initiative that has shown promising returns is the Town of Baldwin's adoption of the Firewise program in 2010; as a result of the 2010 LMS Update process. Baldwin is an ideal location with a defined perimeter and an engaged community that recognized the wildfire interface hazard could be devastating to their town. It remains a goal to have other communities/neighborhoods adopt the Firewise program to mitigate for their hazard.

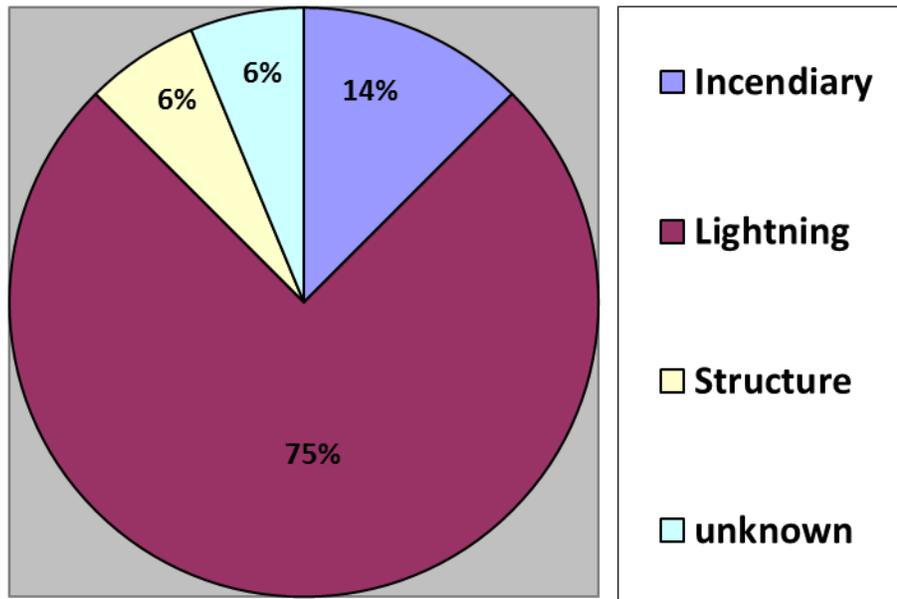
Figure 34: Duval County Acres Burned 1985 to 2014



Source: Florida Forest Service, 2015

The primary cause of wildfires in Duval County during 2014 was lightning with 12 wildfires burning 1.1 acres or 75.85% of all wildfire causes. Fires of an incendiary nature were the second leading cause in Duval County in 2014 with two wildfires burning 5.5 acres or 13.41% of all wildfire causes that year.

Figure 35: Duval County Wildfire Causes for 2014



Source: Florida Forest Service, 2015

Vulnerability, Probability and Risk with Wildfire

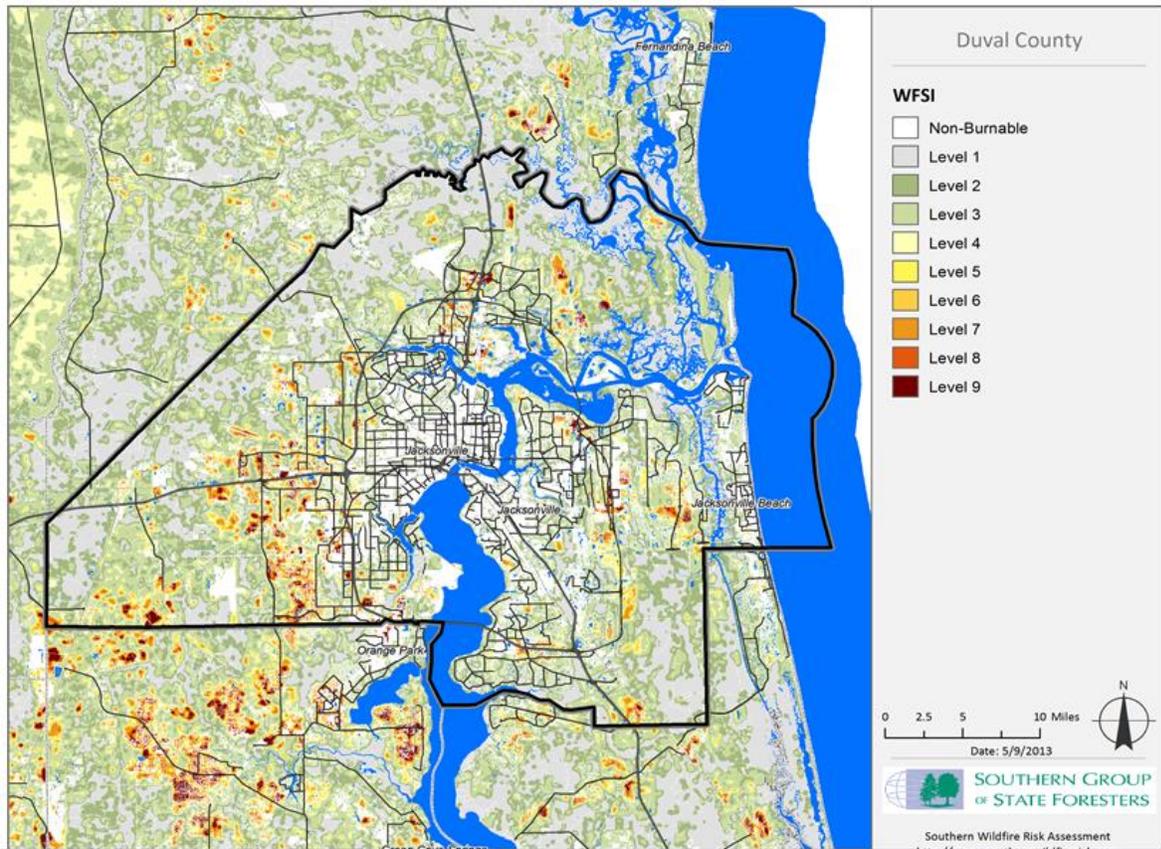
Duval County encompasses 545,174.2 acres of land with a mixture of industrial, residential, agricultural, commercial and other miscellaneous land uses. The current land use classifications for Duval County are listed below. The land uses marked with an asterisk indicate a higher risk from wildland fires. Of the half million acres of land in Duval County, 319, 350.7 acres or 58% could be classified as having a moderate to high wildfire risk. These high-risk areas are primarily located in the rural areas of the county, outside of the I-295 loop.

Table 15: Duval County Acreage at Risk from Wildfire

Duval County Land Use	Acres
Total Residential	114,156.7
Low Density (2 dwellings per acre)	30,382.8
Medium Density (2-5 Dwellings per acre)	55,353.3
High Density (6 or more dwellings per acre)	28,420.6
Commercial	21,775.5
Industrial	6,781.1
Institutional (military and other)	10,456.7
Recreation	6,554.8
Agricultural (pastures and cropland)	15,775.1
Total Upland, Non-forest	19,472.1
Herbaceous uplands	8,131.4
Shrub and brushland	6,362.8
Mixed upland, nonforested	4,988.0
Upland Forest	129,428.9
Wetland Forest	79,234.8
Wetland non-forest	51,909.4
Transportation and Utilities	23,007.3
Barren and Disturbed Land	7,318.8
Water	58,070.8
Other (no data) [Open Land]	1,232.2
Total	545,174.2
Total at Risk from Wildfire	319,350.7

Source: Florida Forest Service, 2015

Figure 36: Duval County Acreage per Level of Concern



Source: Southern Wildfire Risk Assessment Summary Report, Florida Forest Service, 2013 report

Figure 37: Duval County Acreage per Level of Concern

Level of Concern Class	Acres	Percent
Non-Burnable	249,462	42.4%
Level 1	63,396	10.8%
Level 2	47,715	8.1%
Level 3	121,527	20.7%
Level 4	23,354	4.0%
Level 5	18,192	3.1%
Level 6	20,032	3.4%
Level 7	22,875	3.9%
Level 8	9,356	1.6%
Level 9	11,774	2.0%
Total	587,682	100.0%

Source: Southern Wildfire Risk Assessment Summary Report, Florida Forest Service, 2013 report

Probability of Future Wildfire Events

Approximately 80 percent of all wildfires in Florida occur within one mile of the WUI. Florida has a year round fire season with the most active part taking place from April to July. The majority of wildfires in Florida (70-80 percent) are caused by humans with arson and escaped debris burning being the top two causes. The largest number of lightning-caused fires occurs in July. The drier months tend to be January, February and March but this is not always the case depending on drought conditions and frequency of frontal passages. Dry months, combined with low humidity and high wind have the highest number of fires reported. The Florida Forest Service has developed a web-based Geographic Information System (GIS) mapping application called Fire Risk Assessment System (FRAS). This system provides statewide risk data that assists in determining high-risk areas and can be accessed at:

http://www.floridaforestservice.com/wildfire/wf_fras.html. FRAS uses wildfire fuel types and densities, environmental conditions, and fire history to produce a Level of Concern (LOC), which is a number on a scale that runs from 1 (low concern) to 9 (high concern), for a given geographic area. The computation of LOC incorporates two other indices: the Wildland Fire Susceptibility Index (WFSI) and the Fire Effects Index. The WFSI calculates the probability of a given acre burning, given a probability of ignition based on historical data, and expected fire size based on a rate of spread. The rate of spread depends on fuel types, topography, shading from the sun, wind conditions, and potential weather conditions in the given geographic area. Based on necessary assumptions, this index is not the probability of an acre burning but a relative comparison of index values between areas in the state. The wildland fire susceptibility analysis integrates the probability of an acre igniting and wildland fire behavior. It combines the data from the fire occurrence areas with fire behavior data developed by FlamMap. An index was computed for each 30x30 meter cell of burnable vegetation within the state. Please refer to Figure 38.

Wildfire Impact Analysis

According to the 2013 Florida Enhanced Mitigation Plan, wildfires will negatively affect the State of Florida with a variety of impacts:

- Forested lands and any surrounding urban areas, WUI, are most at risk to wildfires. Potential risks include destruction of land, property, and structures, as well as injuries and loss of life.
- Although rare, deaths and injuries usually occur at the beginning stages of wildfires when sudden flare-ups result from high wind conditions. In most situations, however, people have the opportunity to evacuate the area and avoid bodily harm.
- Responders are most at risk during the process of fire suppression. Responders put themselves in harm's way to contain the fire and save lives and property. Firefighters are often trapped by fires that either grow or suddenly change directions.
- Wildfires are usually small and quickly contained in Florida, and therefore the state does not expect any events to result in the loss of the ability to deliver essential services or continue day-to-day government functions.
- Major fires have the ability to disrupt transportation in large areas of the state. The recent events in 2012 resulted in closures to the interstate system that affects local residents as well as seasonal tourists.

Impacts of Wildfires

Figure 38: Wildfire Events Data

Storm Events Database

Search Results for Duval County, Florida

Event Types: **Wildfire**

Duval county contains the following zones:

'Duval'

9 events were reported between 01/01/1950 and 10/31/2014 (23680 days)

Summary Info:

Number of County/Zone areas affected:	2
Number of Days with Event:	9
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:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

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

Source: NOAA National Climatic Data Center

The National Climatic Data Center reported 9 events over a 64-year period, from 1950 through 2014. No deaths or injuries have been attributed to the events. No dollar damages were recorded for the event. In averaging the number of 9 events over 64-years, there is an 13.8 percent probability that a future wildfire event could create a scenario that could lead to injuries and property damages in the range of \$25,000 to \$2.0 million-plus in Duval County. The population residing in wildfire urban interface sectors of Duval County is at risk for this hazard. As previously described, according to the Florida Forest Service, the most susceptible areas include west of I-295 near Cecil Commerce Center and the Argyle Forest area, on the north side in the Tisonia area and around the Jacksonville International Airport. On the south side around Bayard, vulnerability exists east of US1 and along Hodges and Kernan Boulevards.

Table 16: Hazard Identification Table

Hazard (from Natural Causes)	Records for Identification	Why Identified
Wind from Tropical Cyclones (Hurricane Hazard)	Review of Emergency Preparedness Division (EPD) Event Files – Incident Action Plans and After Action Reports National Weather Service (NWS) Data Risk Assessments	All jurisdictions in Duval County subject to Tropical Storm Force Wind (TSFW) on annual basis Impact of hurricane, TSFW, and Nor’easters have caused significant damage (personal and property) with wind associated with events
Storm Surge from Tropical Cyclones (Hurricane Hazard)	Sea, Lake and Overland Surges from Hurricanes (SLOSH) 2013 Model Review NWS data Review of 2010 FEMA FIRM maps	Beaches jurisdictions/ riverine sections of County subject to storm surge on annual basis Impact of hurricane, TSFW events caused significant damage (personal and property) associated with event
Floods	EPD Incident files Review of 2010 FEMA FIRM maps Community Rating System 2012 Data for repetitive loss areas	Associated with seasonal storms, such as TSFW events and Nor’easters, which impact all jurisdictions The County in its entirety is within the Upper St. Johns River watershed, which contains numerous rivers, streams, creeks, tributaries and low lying marsh and drainage basins
Extreme Temperatures <28° or >99°	EPD incident files Small Business Administration (SBA) disaster declarations NWS Jacksonville Office records Jacksonville Electric Authority (JEA) records	Impact upon sensitive populations, such as elderly, special needs or homeless Potential dollar damage to agricultural concerns Impact upon electric grid of County, particular with high temperatures, resulting in “brown-outs” when there is peak demand for service
Hazard (from Natural Causes)	Records for Identification	Why Identified
Wildfires (Brush, Forest Fires)	Fla. Forest Service Jacksonville Fire Marshal incident records Jacksonville Fire & Rescue Dept. records	Increasing impact upon urban/rural interface of population in County, particularly to west and north sides Potential dollar damage to interface populations and agricultural concerns
Thunderstorms & Tornadoes	NWS data EPD Incident Records	Entire county is at risk for Impact is to an immediate area of touchdown, although dollar damage may not be particularly high
Drought	Southeast Regional Climate Center, USC Fl. Dept of Agriculture records Keetch-Byram Drought Index Palmer Drought Index	Entire county is at risk - Impact upon agricultural interests

Man Made or Technological Cause	Records for Identification	Why Identified
Hazardous Materials Accidents	Review of Consolidated City of Jacksonville HazMAT Hazard Specific Plan Department of Regulatory Compliance data review Local Emergency Planning Committee (LEPC) files	Major transportation corridors in County, I-95, I-10, CXS railways (N-S and E-W) High volume of truck traffic moving through County increases vulnerability Railroads transport unknown amounts of hazardous materials
Terrorism Expanded to include Cyber; Active Shooter-Lone Offender; Biological Disease Outbreak	Subject matter experts (military, health) assessments	USMC Identification Matrix Florida Department of Health Risk Assessment Study Florida Department of Law Enforcement Fusion Center
Critical Infrastructure Disruption	JEA records EPD event files Special Needs Registration database for oxygen dependent population	Potential dollar impact to business disruption from event Impact to sensitive populations in facilities such as nursing homes, hospitals, congregate care All of the County is vulnerable
New Hazard	Records for Identification	Why Identified
Climate Change (Adaptation to Climate Change)	NOAA studies FEMA studies Academic studies and conferences Florida DEM Enhanced Mitigation Strategy, 2013 NEFRC planning materials	Shocks and stresses, as identified by 100 RC processes Impacts upon the population Potential dollar damage to economic sectors Long term coastal flooding salinization of potable water climatological conditions leading to drought, unusual weather patterns

E. Probability of Occurrence - Summary

Determining the probability of occurrence of hazardous events is a complex and difficult process in analyzing the historical frequency of these events. Historical data is helpful, but cannot guarantee an accurate probability.

For hurricanes, three conclusions can be drawn from the historical data. One is that Duval County will be affected by a hurricane; although, the probability of a hurricane hitting the county directly is low in any given year. The second conclusion is that any hurricane striking the area is likely to possess Category 1 or 2 winds, since these are more common than storms in higher categories. Therefore, potential risk from hurricanes in the county is unlikely to be higher than is predicted for storms of those magnitudes. There is little in the area, except distance from the coastline, to mitigate wind effects. Wind damage, including that from tornadoes spawned by a hurricane is likely to be as significant a risk factor as storm-caused flooding. The State of Florida adopted new construction standards with the 2010 State Building Code, with which new construction and permitted retrofits will aid with the mitigation of hurricane wind effects.

Table 17: Duval County Historical Events

Major Incidents Impacting Duval County				
Number	Date	County	Incident Description	Declaration Type
4068	7/3/2012	Duval	Tropical Storm Debby	Major Disaster Declaration
1785	8/24/2008	Duval	Tropical Storm Fay	Major Disaster Declaration
3288	8/21/2008	Duval	Tropical Storm Fay	Emergency Declaration
1680	2/8/2007	Duval	Severe Storms, Tomadoes, and Flooding	Major Disaster Declaration
1679	2/3/2007	Duval	Severe Storms and Tornadoes	Major Disaster Declaration
3220	9/5/2005	Duval	Hurricane Katrina Evacuation	Emergency Declaration
1561	9/26/2004	Duval	Hurricane Jeanne	Major Disaster Declaration
1551	9/16/2004	Duval	Hurricane Ivan	Major Disaster Declaration
1545	9/4/2004	Duval	Hurricane Frances	Major Disaster Declaration
1539	8/13/2004	Duval	Hurricane Charley and Tropical Storm Bonnie	Major Disaster Declaration
1359	2/5/2001	Duval	Severe Freeze	Major Disaster Declaration
2305	6/2/2000	Duval	Jacksonville Fire Complex	Fire Management Assistance Declaration
1300	9/22/1999	Duval	Hurricane Floyd	Major Disaster Declaration
3143	9/14/1999	Duval	Hurricane Floyd	Emergency Declaration
2262	5/14/1999	Duval	Jacksonville District Fire	Fire Management Assistance Declaration
3139	4/27/1999	Duval	Fire Hazard	Emergency Declaration
1223	6/18/1998	Duval	Florida Extreme Fire Hazard	Major Disaster Declaration
2201	6/16/1998	Duval	Jacksonville Complex Fire	Fire Management Assistance Declaration
1195	1/6/1998	Duval	Tornadoes	Major Disaster Declaration
1141	10/15/1996	Duval	Severe Storms/Flooding	Major Disaster Declaration
982	3/13/1993	Duval	Tornadoes, Flooding, High Winds, Tides, Freezing	Major Disaster Declaration
966	10/8/1992	Duval	Flooding, Severe Storm, Tornadoes	Major Disaster Declaration
851	1/15/1990	Duval	Severe Freeze	Major Disaster Declaration
732	3/18/1985	Duval	Severe Freeze	Major Disaster Declaration
698	3/29/1984	Duval	Freezing Temperatures	Major Disaster Declaration
526	1/31/1977	Duval	SEVERE WINTER WEATHER	Major Disaster Declaration
176	9/10/1964	Duval	HURRICANE DORA	Major Disaster Declaration
Source: https://www.fema.gov/disasters/grid/state-tribal-government/47?field_disaster_type_term_tid_1=All Small Business Administration Declarations*				
FL12523	1/1/2011	Duval	Drought	Dept. Agriculture Declaration
FL13612	5/2 - 5/3/2013		Excessive Rain, High Wind, Hail, Lightning & Tornadoes	Dept. Agriculture Declaration
FL13946	10/01/2013 - 03/24/2014		Excessive Rain	Dept. Agriculture Declaration
FL13947	01/01 - 01/31/2014		Freeze and Frost	Dept. Agriculture Declaration
Dept of Agriculture declared no disasters in 2010				
*From internal emails in City of Jacksonville Computer, period of 2010-2015				

The third conclusion is that the relative infrequency of hurricanes in the area, and the substantial growth of a population without direct experience of a hurricane event, has made the population complacent in determining personal risk and exposure, and consequently, minimizing the impacts of being exposed to a hurricane. The population growth and the pressures placed on the existing roadway system also greatly complicate evacuation measures.

The emphasis placed on the danger of hurricanes downplays the danger of tropical storms, which affect Duval County more often than hurricanes. In 2008, Tropical Storm Fay resulted in \$50 million in estimated damages to public infrastructure [Source: EPD After-Action Report], an estimated \$100 million in business disruption [First Coast Manufacturers Association], and a presidential disaster declaration. Duval County received another disaster declaration in 2012 for TS Debby, although the financial impact of \$1.9 Million awarded for debris clearance and public infrastructure repairs was less than the \$11.7 Million awarded for TS Fay's repairs (Source: FloridaPA.org).

All people living at the beaches, in mobile homes, or within 100-year flood zones are at risk for serious property damage and personal injury from flooding and wind associated with tropical storms and hurricanes up to Category 3 which can be expected every 5 to 30 years. According to the 2008 Florida Hurricane Catastrophic Fund, the worth of property at risk to hurricane damage in that year amounted to \$87.8 billion. A category 3 Hurricane can also be expected to disrupt economic activity for several months, resulting in the permanent loss of more than 50% of small businesses over the five year period following the event. The risk of taking no action to mitigate these losses is significant.

Other hazards were also assessed for the type of impact typically expected and historical frequency of occurrence. Table 16 combines the frequency with which each hazard may occur and the severity or impact each could inflict to show the highest priority for mitigation efforts. This information was obtained from varied sources. This analysis indicates that of all hazards studied, hurricanes and tropical storms and their winds with storm surge potential, have the largest impact making it the best target for cost-effective mitigation efforts. The flood hazard for Duval County is the third highest priority. Wildfire in the Urban Interface and thunderstorms are the fourth and fifth level priorities. Extreme temperatures and drought hazards are rated highly and the specific measures that are implemented include the Warning Notification Systems used by the National Weather Service and the County emergency management office to alert the public to the hazard.

Table 18: Duval County Hazard Analysis

Priority	Hazard	Probability	Severity	Percent of Population	Population Description
1	Wind from Tropical Cyclones	111 storms/1.5 year return/event 26 hurricanes/6.2 year return/event 7 major hurricanes/23.1 year return/event	90 MPH	885,558 (100%)	Entire County
2	Storm Surge	0.12 storms/yr.	> 1 FT	722,000 (81%)	Population estimate of Evacuation Zone A, B, C, D, E
3	Floods	66 events/ 1.03 events/year	> 6"	151,000 (17%)	Population within the 100 year and 500 year floodplain
4	Brush, Wildfires, Forest Fires	87 events/year	13 Acres	50,000 (5.64%)	Wildland/Urban Interface Population
5	Thunderstorms (TH) & Tornadoes (T)	TH - 337/5.27 events/year T- 62 events/.97 per year	4 to 12 lightning flashes per sq km/yr & EF0 to EF2	885,558 (100%)	Entire County
6	Hazardous Materials Accidents	2 events/year	Clean up required	1,000 (.11)	Less than 1000 persons
7	Critical Infrastructure Disruption	1/10 year	>12 hrs.	885,558 (100%)	Entire County – economic impacts
8	Terrorism – inclusive of Cyber Terrorism Active Shooter/Lone Offender Biological Disease Outbreak	0.01 events/year	Injury/Death	885,558 (100%)	Entire County – economic impacts
9	Extreme Temperatures	Extreme Cold - 525 events/ 8.20 events per year Extreme Heat - 147 events/2.30 events per year	<28° or >99°	57,902 (17%)	No. of households in poverty (2.60 per household)
10	Drought	1/15 year	> 6 months with D0 to D4 conditions	885,558 (100%)	Entire County

Priority	Hazard	Probability	Severity	Percent of Population	Population Description
11	Adaptation to Climate Change	15-30 years	Renourish 1.4 Million cubic yds. over 10 miles of Atlantic shoreline	98,000 (11%)	Coastal Communities

Excerpted from U.S. Bureau State and County Quick Facts, 2013 estimates; Consolidated City of Jacksonville/Duval County CEMP 2012; National Weather Service Jacksonville Office; Florida Forest Service; USCM Integrated Threat Matrix 2014 (FOUO); Florida Department of Health Risk Assessment Matrix, Duval County, 2014; ACE Environmental Assessment New Borrow Area Duval County Shore Protection Project, August 2014

F. Vulnerability and Loss Estimates

Geographic Areas Vulnerable To Hazards:

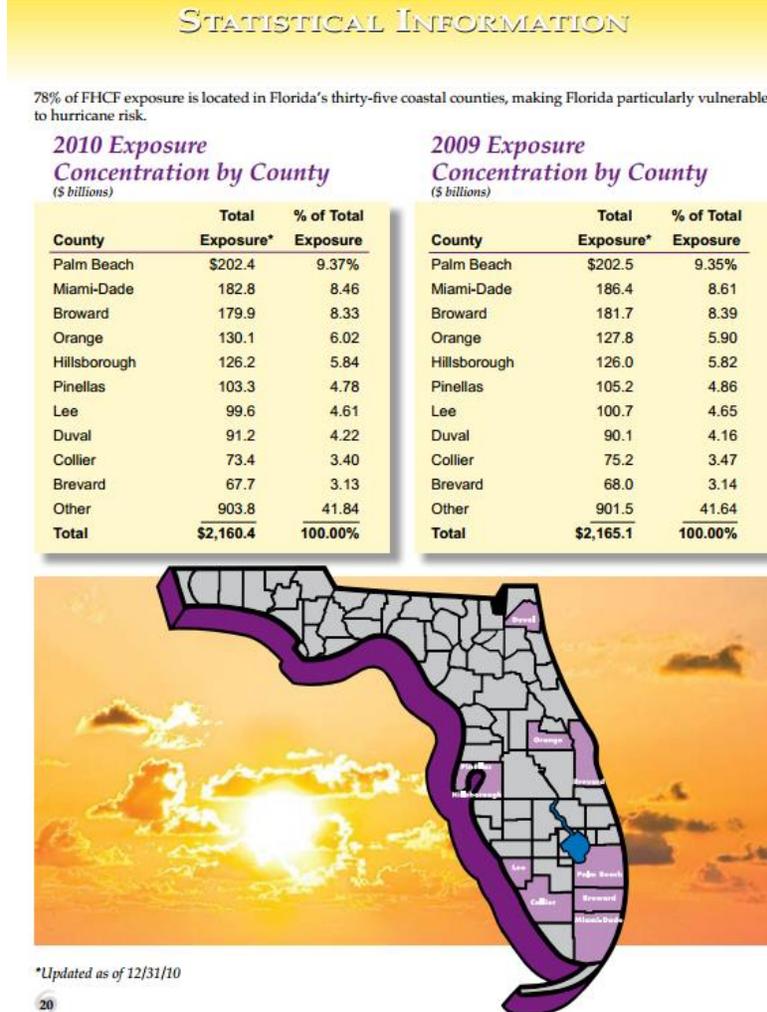
Human activity is not distributed uniformly over all of Duval County. Human activity can most closely be mapped by associating it with the extent of the built environment. Risk to life and property certainly exists outside of the urbanized areas of the County, but for purposes of this study are considered of lesser loss potential than those areas where most of the population exists. That area might be described generally as all lands within the I-295 beltway corridor with the following additional areas: 2 miles west of I-295 on the west side of Jacksonville below I-10 and above 103rd Street; 4 miles west of I-295 below 103rd Street south to the County line; All lands south of the St. Johns River from I-295 on the east side of Jacksonville to the Atlantic coast south to Beach Boulevard; that part of the beaches between the Intracoastal Waterway and the Atlantic Ocean from Beach Boulevard south to the County line; all lands east of I-295 on the east side of Jacksonville to St. Johns Bluff Road and south of Beach Boulevard to the Baymeadows Road extension; That area generally known as Mandarin south and west of I-295 and I-95 from the St. Johns River south to Julington Creek. More than 90% of Duval County’s population resides and works within these areas.

Wind from Tropical Cyclone Impact:

According to 2011 data provided by the insurance industry to the Florida Hurricane Catastrophe Fund, the State has benefitted from five years without major hurricanes making landfall in Florida. However, the exposure of Citizens (the Florida Wind Insurance Corporation) to catastrophic risk has grown, being the largest insurer in the Florida property market with more than 1.2 million policyholders. Duval County stands as eighth among Florida counties in terms of exposure of property at risk from hurricanes, with \$91 billion in insured property within the county.

These figures reflect insured property, and are based on insurance company estimates of what costs would be necessary to replacement structures and contents. More comprehensive data, drawn from figures supplied by the Duval County Property Appraiser, estimates the actual dollar value and the fair market value of property in the County somewhat differently than the estimate indicated in Table 17 by the Hurricane Catastrophe Fund’s data. Table 18 provides information on the value of real property in the County as a whole, as well as the values estimated for property in the more vulnerable beaches communities.

**Table 19: 2010 Florida Hurricane Catastrophe Fund
Exposure Concentration for Selected Counties (In billions of dollars)**



Source: Hurricane Wind Catastrophe Fund 2009-2010 annual report, retrieved January 31, 2015.

As the beaches communities and mobile home properties represent the most vulnerable areas in a hurricane, the value of residential construction for each of the beach cities is shown below. As the table illustrates, more than a billion dollars of property improvements are at risk in the Beaches. The emphasis placed on the danger of hurricanes suppresses the danger of tropical storms, which affect Duval County more often than hurricanes. In 2008, Tropical Storm Fay resulted in \$50 million in damage to public infrastructure (Source: EPD estimates), an estimated \$100 million in business disruption (First Coast Manufacturers' Council), and a presidential disaster declaration (FEMA-1785-DR-FL).

Table 20: Value of Construction in Atlantic Beach, Jacksonville Beach, and Neptune Beach

City	No. of Buildings	Building Value	Property Market Value
City of Atlantic Beach	8,630	\$ 1.07 Billion	\$2.28 Billion
City of Jacksonville Beach	13,380	\$ 2.31Billion	\$4.10 Billion
City of Neptune Beach	2,974	\$ 4.12 Million	\$ 9.8 Million

Source: Duval County Property Appraisers, January 2015

Vulnerable Critical Facilities

Mitigation is a critical component of critical facility management. The Consolidated City of Jacksonville maintains a database of such facilities as furnished by the City of Jacksonville, the varied County departments, the regional authorities within Duval County, and the jurisdictions within Duval County to comprise the critical facilities inventory. The inventory consists of the critical facilities, the NFIP repetitive loss data, historic flood data and the locations of hazardous materials that fall under the jurisdiction of Section 302 of the Federal Emergency Planning and Community Right to Know Act. This data has been furnished by the City of Jacksonville Department of Regulatory Compliance.

Duval County and the municipalities control a huge inventory of properties. Therefore, due to the enormity of the information, the listing of non-critical municipal public buildings and facilities will be maintained by the Consolidated City of Jacksonville and each jurisdiction within the county.

A critical facilities inventory is maintained by the City of Jacksonville Division of Emergency Preparedness and the Information Technology Department of facilities deemed critical by the state and federal governments. A copy of this list has been supplied to FDEM as well.

The following facilities are included in the critical facilities inventory:

- Hospitals
- Fire Stations
- Hurricane Risk Shelters
- Public Schools, Colleges and Universities
- Evacuation Routes
- Water Treatment Plants
- Sewage Treatment Plans
- Electric Substations
- Government Buildings
- Emergency Response Facilities

While the state and federal government defines critical facilities as those listed above, the Consolidated City of Jacksonville and the JEA have defined critical facilities by the order of priority in power restoration. One is the highest priority of critical operation to a “five” in ranked order in restoring power through the JEA.

The priority facilities include the following

Level One - Hospitals

Level Two – Includes, but not limited to, Federal Aviation Authority Transmitting Towers, Jacksonville International Airport, government buildings inclusive of fire stations and military complexes, JEA substations for electrical power and sewer facilities; waste treatment plants..

Level 3 –Includes, but not limited to, Duval County EOC, dialysis centers, and the activated Duval County hurricane risk shelters.

Level 4 – Includes, but not limited to, American Red Cross Command Post, City Hall complex, Motor Pool Complex, CSX transportation, blood alliance center, jail and correctional institutes within the County.

Level 5 – Includes, but not limited to, JEA lift stations and the intersections on county evacuation routes.

Vulnerable Populations

Of more concern than the loss of property is, of course, the potential loss of life or injury to individuals from hurricane events. The classic emergency management definition of vulnerable populations examined the issue from a mitigation perspective and included populations who live in the following areas:

- Mobile homes and low-lying areas
- Flood hazard and storm surge zones
- Populations with physical or cognitive development disabilities, requiring additional levels of support for evacuation, transportation, sheltering and disaster housing

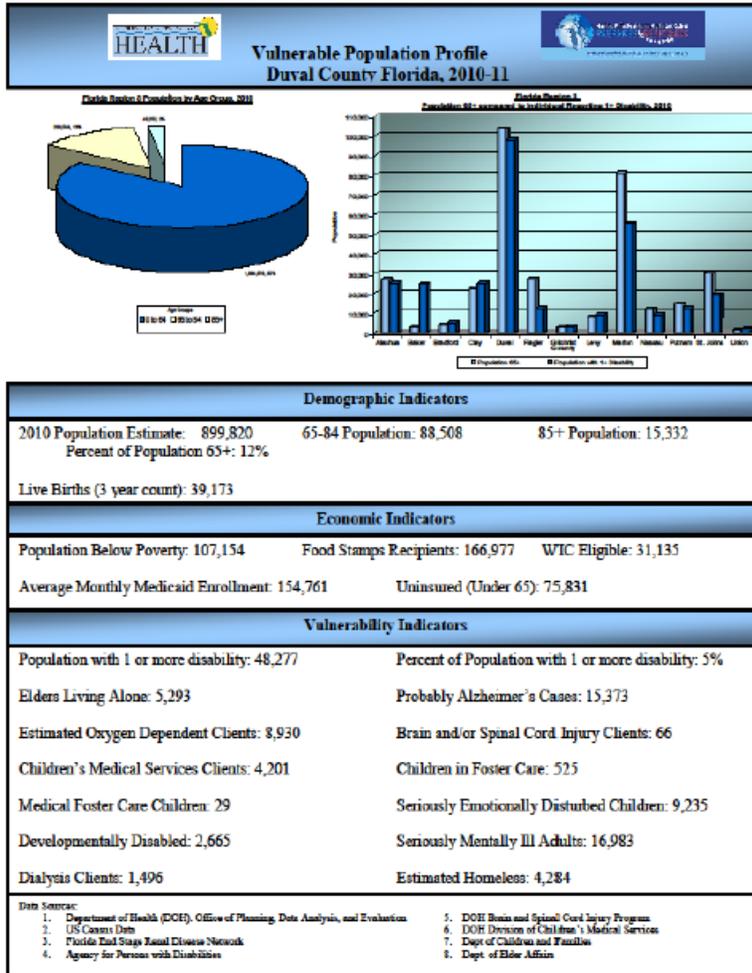
In the whole community approach to all-hazards planning, the definition of vulnerable population has been broadened using the Florida Department of Health's definition as follows:

- Populations not well integrated into the health care system or disaster response planning, because of ethnic, cultural, economic, geographic or health characteristics

Figure 39: Duval County Vulnerable Population Profile, 2010 - 2011

C. County Vulnerable Population Profile

The Florida Department of Health, Bureau of Preparedness and Response compile Vulnerable Population Profiles for each County in the State of Florida. This information for Duval County is provided below and is dated 2011. This provides a simple overview of some of the key indicators of the vulnerable population in the County and is by no means an exhaustive list.



Source: Hurricane Evacuation Study 2013, Vol. 1, Appendix IV-C, pg. IV-C5

Additionally, 27,648 households, or 9.1%, in Duval County do not have a car, making them more vulnerable during an evacuation (Source: Hurricane Evacuation Study 2013, Appendix C, pg. IC-3).

With respect to storm surge, the Hurricane Evacuation Study provides the following data:

Table 21: Estimated Population Evacuating Duval County for 2015

	Evacuation Level A	Evacuation Level B	Evacuation Level C	Evacuation Level D	Evacuation Level E
Estimated Evacuating Population Clearing Duval County					
12-Hour	224,180	235,309	267,851	235,091	211,792
18-Hour	280,225	343,159	401,777	352,636	317,689
24-Hour			468,740	470,182	423,585
36-Hour				538,750	608,903

Source: Hurricane Evacuation Study 2013, Vol. 4, pg. IV-86

Table 22: Estimated Population Evacuating Duval County for 2020

	Evacuation Level A	Evacuation Level B	Evacuation Level C	Evacuation Level D	Evacuation Level E
Estimated Evacuating Population Clearing Duval County					
12-Hour	234,465	210,042	261,367	265,024	231,454
18-Hour	293,081	315,063	392,051	397,536	347,181
24-Hour		358,822	490,064	530,048	462,908
36-Hour				563,176	636,499

Source: Hurricane Evacuation Study 2013, Vol. 4, pg. IV-86

NEFRC has estimated that for the low evacuation levels A and B, clearance will vary as much as 40 percent depending upon the response curve (Source: Hurricane Evacuation Study, Vol.4-4, pg. IV-85). Therefore a 12-hour response curve may yield a clearance time of 13 or 14 hours, while an 18-hour response curve may yield a clearance time of 19 or 20 hours. This leads to a higher level of variability than larger evacuations. For high level evacuations, clearance time is reduced to approximately 10 to 15 percent.

Table 23: Public Shelter Demand for Hurricane Base Scenarios 2013 Northeast Florida Region

Table V-9A. Public Shelter Demand for Hurricane Evacuation Base Scenarios 2015

Level	Baker County	Clay County	Duval County	Flagler County	Nassau County	Putnam County	St. Johns County	Northeast Region
CAPACITY	2,600	7,077	32,904	6,485	4,577	2,276	7,200	63,119
A	2,251	4,910	20,378	2,533	4,923	3,552	7,463	46,010
B	2,362	5,911	24,418	3,707	4,989	3,639	9,824	54,850
C	2,473	9,152	33,696	4,342	5,289	4,044	10,319	69,315
D	2,584	11,009	39,651	5,637	5,409	4,397	11,119	79,806
E	2,697	11,531	45,064	6,555	5,526	4,753	11,840	87,966

*Capacity based on Primary Risk ARC4496 Compliant shelters. Numbers in Red represent a shelter deficit.

Source: Volume 1-4 Technical Data Report, Chapter V Regional Shelter Analysis, Table V-9a Public Shelter Demand for Hurricane Evacuation Base Scenarios 2015

Source: Hurricane Evacuation Study, Vol. 1-4 Technical Data Report, Chapter V, Regional Shelter Analysis, Duval County Toolkit, pg. 29

According to this set of data, 20,378 people in Duval County are expected to evacuate in the case of a lower level hurricane, such as a Category 1 hurricane. The County's shelter capacity will be insufficient in the case of a Level 3 Hurricane Base Scenario, which would correlate to a Category 3 hurricane. Duval County increased the number of available American Red Cross (ARC) 4496 Standard hurricane risk shelter spaces by

more than 12,000 spaces during the years 2007 to 2011. Regardless of the increases in shelter capacity, Duval County shelter capacity remains insufficient for the population anticipated to evacuate in case of a CAT 2 or CAT 3 Hurricane, prior to considering the out of county evacuation of the surrounding counties into Duval County. Compounding the challenges is the cost to retrofit or construct public school infrastructure which is required by the State Department of Education to provide enhanced hurricane protection area (EHPA) in 50% of a structure which meets ARC 4496 Standards for hurricane risk sheltering.

The Duval County Public Schools (DCPS) Facilities Construction Division in 2011 provided an estimate that each new school or public building requires approximately \$1.5M of additional funding to make it suitable for sheltering, providing approximately 800 general occupancy spaces and 100 special needs spaces.

There is a retrofit cost of approximately \$1.0M per school, providing approximately 400 general occupancy spaces (Source: City of Jacksonville Planning and Development Department white paper on the definition of Coastal High Hazard Area [CHHA] dated 11-23-2009).

It should also be noted that these population figures will not remain static. Population increases east of the Intracoastal Waterway will result in an increase in the number of people evacuating during hurricanes. Improved economic conditions have begun to reflect increased development in the areas surrounding the Coastal High Hazard Area (CHHA) of Duval County, as defined by the State of Florida. The economic slowdown experienced in 2008 had brought a temporary reprieve to development; however, as the economy continues to improve, it is anticipated that development will resume in this ecologically sensitive and flood/storm surge vulnerable area. Design and construction appropriate to the hazards of the area, and building structures that conform to current State building codes will mitigate the impacts, but the increase of density of population will require additional resources to be allocated for hurricane evacuation routes and hurricane risk sheltering as well as the planning for post-disaster housing.

The potential for significant flooding effects in Duval County is highly variable, depending on the path of a storm, the time of day or month in which the storm strikes, the length of time the storm stays offshore, the amount of rainfall, and so forth. The potential for wind damage, however, is less affected by such variables. The major issue is simply the velocity of the winds, how long they endure, and the quality of construction of the structures that are exposed to them. The results from this study can be seen in the table below.

Table 24: General Building Stock Exposed to Hurricane Wind Table

Table 4.5: General Building Stock Exposed to Hurricane Wind		
Occupancy	Dollar Exposure (\$1,000)	% of Total Building Value
Residential	40,069,489	72.8
Commercial	10,937,980	19.9
Industrial	1,815,170	3.3
Agricultural	141,132	0.3
Religious	1,311,903	2.4
Government	209,328	0.4
Education	538,732	1.0
TOTAL	\$55,023,734	100

Source: PDRP (2012) page 4-14

Storm Surge Impact

Storm surge is associated with hurricane hazard events, therefore has a financial impact upon the jurisdictions. According to a report dated October 10, 2008 from the Florida Office of Insurance Regulation Market Research Unit, insurance payments resulting from Tropical Storm Fay totaled \$24,834,188 in Duval County. As this extensive damage resulted from a tropical storm, one can reasonably assume a Category 1 hurricane would result in even more millions to billions of dollars in damages.

Flood Hazard Impact

The emphasis placed on the danger of hurricanes overshadows the danger of tropical storms, which affect Duval County more often than hurricanes. In 2008, Tropical Storm Fay resulted in an estimated \$50 million in damages to public infrastructure [Source: EPD After Action report], an estimated \$100 million in business disruption [First Coast Manufactures Council], and a presidential disaster declaration [FEMA-1785-DR-FL], primarily from flood and wind exposure. The Tropical Storm Debby declared disaster of 2012 [FEMA-4068-DR-FL] generated another \$1.9 million in debris management and public assistance claims (Source: Florida Public Assistance records, www.floridapa.org, 2015).

Duval County has \$3,378,015,254 worth of residential property within the 100-year flood zones (Source: JPPD). By far the majority of these properties are river and creek front properties. Nearly every major water basin in the county is improved with waterfront development. A large number of properties that are vulnerable to flooding are along both sides of the Intracoastal Waterway and the three beach communities. FEMA has identified more than 20 residential properties as Severe Repetitive Loss, which is defined as 4 or more incidents of damage resulting in at least \$5,000 worth of damage for each claim. The demand for this type development is great, leaving the most logical course of mitigation action being strict enforcement of construction standards for building in such areas with elevated finish floor elevations adequate to minimize or eliminate damage due to flooding. By far the greatest number of repetitive loss properties is along a single body of water called Wills Branch Creek. The City of Jacksonville is responsible for ongoing dredging and maintenance of the creek to curtail flooding vulnerability. Several flood prone homes along Wills Branch were spared serious flooding damage during Tropical Storm Fay in 2008 due to the successful dredging project. The remaining flood prone properties have benefitted from the maintenance of existing drainage improvements and the City's ongoing initiative to educate flood-insured property owners about alternatives to mitigate the flood hazard attendant to their property. Twenty properties in Jacksonville have received assistance through the NFIP and FEMA repetitive loss grant programs for a variety of mitigation alternatives, such as, acquisition and demolition of structures, standard elevation, minor flood control, hardening of critical infrastructure, mitigation reconstruction, and code-plus construction. The probability of future flood damage to jurisdictions within Duval County is high, based on flood event probability summarized in Table 11 on page 89.

Severe Thunderstorms Hazard Impact

The impact of a wind storm event is comparable to that of the hurricane hazard, given the exposure and vulnerability of Duval County's older housing stock. Unlike a hurricane, a thunderstorm/wind storm event tends have a specific track, and the damage is localized to specific areas of impact.

Tornado Hazard Impact

The impact of a tornado event is comparable to that of the hurricane hazard, given the exposure and vulnerability of Duval County's older housing stock. Unlike a hurricane, a tornado tends to have a specific track, and the damage is localized to specific areas of impact.

Hazardous Materials Hazard Impact: (Not a Natural Hazard)

Hazardous materials are present in all properties within 2000 feet of I-95, I-10, I-295, Haines Street/ 20th Street, the channel of the St. Johns River, the JAXPORT facilities, and the major rail corridors. The most vulnerable population with regards to hazardous materials accidents are residents of the downtown area reaching as far north as the Trout River. A relatively dense network of rail lines places this area at risk. It is characterized with older homes correlated with a population with low income demographics. About one third of the recorded river spills have also taken place in the St. Johns River adjacent to this same area. Although mostly industrial land uses lay along the northern reaches of the I-10/ rail corridor, there are several pockets of residential areas at increased risk from this type of hazard. There is an interstate/rail corridor which traverses the County from north to south along its entire length and many residential properties lie within the 2000-foot highest danger zone. The variable with this hazard is the weather condition factor at the time of the accident/incident. The plumes from such events vary greatly depending on wind speed and precipitation. In December 2007, the T-2 Laboratory Explosion incident illustrated vividly the potential impacts to life and property based on an industrial accident within the perimeter of residential neighborhoods, a City-owned electric power plant and at least two military installations. Immediate response by the Jacksonville Fire and Rescue Department and the first successful use of Code Red ©, mitigated the potential of the incident's expansion and hazards to the public. The industrial accident resulted in four deaths and 32 injuries (Source: U.S. Chemical Safety and Hazard Investigation Board, Report 2008-3-I-FL, September 2009).

Critical Infrastructure Disruption Impact (Not a Natural Hazard)

Such an event of duration for a period greater than 12 hours is predicted to occur once every ten years, but causes a wide (but not very deep) impact. Generally these kinds of events are not life-threatening and cause little permanent wide-spread damage, but are very costly for their short spans. No particular area or population in the county is especially at risk from this hazard. An example of the hazard is 2002 power outage which engulfed the majority of the county for more than 8 hours. One possible impact can be examined in the Economic Vulnerability Figure 44, page 141, for the property values of businesses and residential properties within the footprint of an incident.

Terrorism Impact (Not a Natural Hazard)

All of Duval County is susceptible to this hazard. The *Duval Prepares* partnership encouraged the County to enhance the scope of the definition of terrorism to include Cyberterrorism, Active Shooter/Lone Offender, and Biological Disease Outbreak (Source: January 13, 2015 *Duval Prepares* meeting on hazard and vulnerability prioritization for 2015 LMS Update). Since 911, all of the country has been on higher levels of alert and situational awareness regarding the potential threat of terrorism. The United States Marine Corps provided a Threat Matrix which examines the implications of Cyber-Terrorism, such as credit card data breaches with major retailers and businesses around the country. With the Active Shooter/Lone Offender scenario, Jacksonville experienced an event in 1990 in which a gunman killed 9 people in a GMAC office.

Finally, the Florida Department of Health (FDOH-Duval) provided its 2014 Health Risk Assessment which examined the potential for a Biological Disease Outbreak. In 2009, the Duval County EOC and the FDOH-Duval stood up Unified Command for several months to work Incident Command System processes around the H1N1 flu outbreak in Duval County. With a .01 percent probability of an incident taking place, even one episode would create major concerns for public safety and community economic stability.

Extreme Temperature Hazard Impact

The physical effects of extreme temperature hazards disproportionately impact the elderly and economically disadvantaged populations which tend to be concentrated in the north and northwest sector of Duval County. There is no economic data available regarding the impacts of this hazard in Duval County. The probability of economic impact from this event is low.

Drought Hazard Impact

The direct physical effects of drought typically include poor crops and foliage, increased fire danger, less water in the soil, streams and reservoirs, and less water available for livestock and wildlife. These lead to indirect effects such as less farm income, foreclosures, and reduced revenues for vendors and retailers who serve agricultural producers. Recent drought conditions have caused some trees to become unstable. Should the County experience a wind or rain event, structures will be in danger from falling trees. The extent of danger from falling trees is unknown. The extent of social effects of extreme drought and heat waves includes brown outs, potential loss of life in the elderly and other at risk populations, and possible water restrictions. There are small-family agricultural and farming properties in addition to tree farms in Duval County. The County has experienced a number of dry periods in the past twenty years. Duval County experienced prolonged drought conditions between 1998 and 2008 which resulted in drought declarations through the U.S. Small Business Administration (SBA) and ecological impacts to businesses in 2007. The probability of economic impact is selective, based upon the above considerations, and considered low due to the number of people impacted.

Estimated Losses – Summary

The potential dollar loss volume to vulnerable structures within Duval County is addressed in the economic vulnerability map by zip code, figure 39 (source: Duval Property Appraisers Office, 2015). The analysis will include, and is not limited to, methodology descriptions, hazard area maps, and data tables that provide the outcome information for each analysis. The Hazards U.S./Multi-Hazard (HAZUS-MH) software was used by the Northeast Florida Regional Council to generate the 2013 Hurricane Evacuation Study's regional inventory of assets, advanced analysis functions, and mapping capabilities. The HAZUS-MH-derived data has features that allow advanced GIS layers, inclusive of census tracts/blocks featuring demographics, general building inventories, line data features, inclusive of utilities and roads. Additionally, there are point data features such as critical infrastructure, high potential loss facilities and bridges. Additionally, dollar damage information was retrieved from the Duval County 2012 Post Disaster Redevelopment Plan.

To supplement information derived from the outcome of the damage loss estimate alternative methods, information has been provided from the Duval County Property Appraiser's Office in order to demonstrate assessed property values in the County. The Property Appraiser determines **just value** (also called market value) for all real estate in Duval County in accordance with Florida law. Just value is based on *fair market value* which is the estimated price a purchaser willing but not obliged to buy would pay a seller willing but

not obliged to sell. The market value listed on the annual notices of property assessment is determined by the Property Appraiser’s Office. Property is assessed as of January 1 each year, so market value is typically determined by analyzing sales data of comparable properties which have occurred **prior** to January 1.

Table 25: Potential Impact as % of Population in Duval County and Jurisdictions

Hazard	Duval County (885,558 pop.)	City of Jacksonville	Town of Baldwin	Jacksonville Beach	Neptune Beach	Atlantic Beach
Natural Hazard						
Wind from Tropical Storm > 39MPH	100%	100%	100%	100%	100%	100%
Storm Surge (from Hurricane, Tropical Storms, Nor’easters)	71%	71%	0%	100%	100%	100%
Flooding (from Hurricane, Tropical Storm, Seasonal Heavy Rains, Nor’easters)	151,000 in FEMA flood zones	17%	<5%	100%	100%	100%
Extreme Temperatures(<28° or >99°)	<20%	17%	17%	17%	17%	17%
Wildfire	>30%	>30%	100%	<25%	< 25%	< 25%
Thunderstorms & Tornadoes	100%	100%	100%	100%	100%	100%
Drought	100%	100%	>90%	100%	100%	100%
Natural or Man-Made Hazard						
Critical Infrastructure Disruption	100%	100%	100%	100%	100%	100%
Man-made/Technological Hazard						
Hazardous Materials Accidents	100%	>50%	100%	>25%	>25%	>25%
Terrorism	100%	100%	100%	100%	100%	100%
Adaptation to Climate Change	75%	75%	<25%	100%	100%	100%

Multiple Sources: Consolidated City of Jacksonville/Duval County CEMP; National Weather Service; Florida Forest Service, 2013 SLOSH maps, FEMA FIRM Maps

Hazards Formula

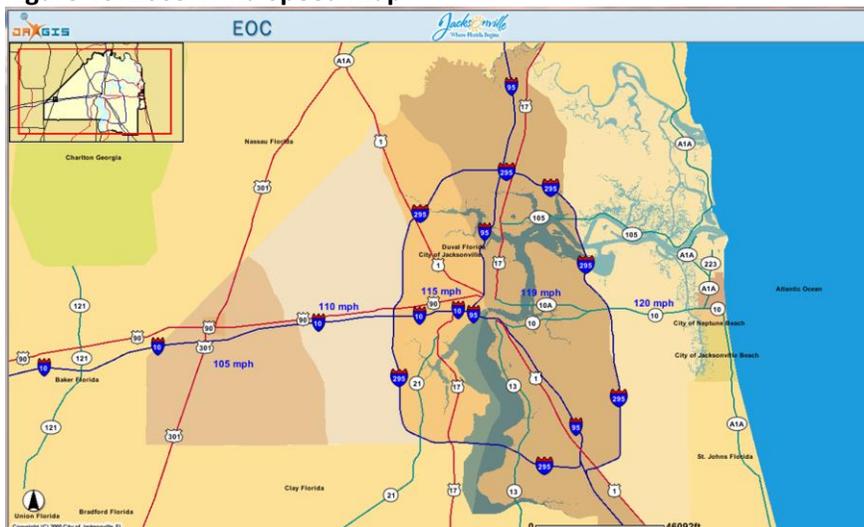
The planning assumption is to calculate a percentage of the population exposed to each hazard, vulnerability, or risk, in using standard statistical models such as SLOSH or HAZUS data, if data was readily available. Otherwise, percentages were calculated for the population exposed to specific hazards.

Wind from Tropical Storm Force Winds (greater than 39 MPH): Duval County is considered a coastal county. Population had to be redistributed as the Wind Speed Zones were eliminated in the Florida State Building Code of 2010. The wind speed map is still posted on the City JAXGIS site, and the population was distributed according to that map.

Geographic Area	Wind Speed	Population Impacted
Beaches Communities, Mayport – Atlantic Ocean west to I-295	120 MPH	100,200
East Jacksonville west of I-295 to I-95	119 MPH	403,000
West Jacksonville, east of I-95 to I-295 Loop northbound	115 MPH	196,000
West Jacksonville, east of I-295 to Cecil Field	110 MPH	113,000
West of Cecil Field, including Whitehouse, Town of Baldwin	105 MPH	6,148

The total county population is 885,558 (US Census Data, 2013). All areas in Duval County are subject to Tropical Storm Force Winds (TSFW). Zip code distribution data derived from www.usa.com, zip code analysis, January 31, 2015.

Figure 40: 2005 Wind Speed Map



Source: EOC Maps, JAXGIS, retrieved January 28, 2015

Storm Surge: Duval County is a coastal county off of the Atlantic Ocean in the upper St. Johns River watershed, which was designated an American Heritage River in 1998 by U.S. Department of Environmental Protection. Major rivers and tributaries experience tidal influences which are worsened by the effects of flooding, seasonal tropical storm rain and rain associated with hurricane hazard. Duval County evacuation zones were established using a Zone A-E designation to better account for the storm surge hazard, using the SLOSH Model Depth Analysis coupled with National Weather Service Jacksonville Office modeling. The Consolidated City of Jacksonville/Duval County adopted the Evacuation Zones A-E as in 2014 to derive the population at risk for exposure to storm surge.

Flooding: Duval County is a coastal county in the Upper St. Johns River watershed, with numerous rivers, streams, creeks, tributaries, marshes and drainage basins. The formulas are based on the number of population residing in the 100-year and 500-year floodplains as outlined in the 2010 FEMA FIRM maps and the County drainage basins.

Extreme Temperatures: Families living in poverty are most susceptible to this hazard. The U.S. Census Bureau estimates 17% of households are in poverty (Source: U.S. Census Bureau Quick Facts, 2013 Estimates).

Drought: All of the population in the county and jurisdictions are susceptible to this hazard.

Critical Infrastructure Disruption: All of the population in the county and jurisdictions are susceptible to this hazard (Source: JEA Compliance Standards, Electric System Reliability History, retrieved February 12, 2015, [www.jea.com/About /Electric Generation](http://www.jea.com/About/Electric%20Generation)).

Hazardous Materials Accidents: All properties and population residing within 2000 feet of I-95, I-10, I-295, Haines Street/ 20th Street, the channel of the St. Johns River, the major rail corridors and the properties contained in JAXPORT. The most vulnerable population as far as hazardous materials accidents are residents of the downtown area reaching as far north as the Trout River. A relatively dense network of rail lines places this lower income area at risk. About one third of the recorded river spills have also taken place in the St. Johns River adjacent to this same area. All of the County and jurisdictions are susceptible to this hazard.

Terrorism: All of the county and its jurisdictions are susceptible to this hazard (Source: Consolidated City of Jacksonville/Duval County CEMP 2012; USMC Threat Identification Matrix; FDOH Duval Risk Assessment Tool).

Adaptation to Climate Change: Significant portions of the county, and primarily the coastal area, are susceptible to this hazard. The jurisdictions of Atlantic Beach, Jacksonville Beach and Neptune Beach are 100 percent exposed to this hazard. During the past decade, impacts have been substantiated through coastal erosion and the mitigation strategy used by Army Corps of Engineers to periodically renourish the shoreline. The City of Jacksonville is exposed in the area east of the Intracoastal Waterway and to the north towards Mayport. The Town of Baldwin is relatively immune to coastal hazard threats, although climatic changes could severely impact agricultural interests, and increase the vulnerability to wildfire conditions.

Hazards Not Rated: Sinkhole/Landslide; Tsunami; Earthquake; Dams/Levee Failure; and Volcano.

G. Hazard Vulnerabilities

Listed below are narratives and matrices addressing hazards that were ranked by the LMS Working Group and the LMS Advisory Committee as having the potential to have impact upon the Consolidated City of Jacksonville/Duval County and its jurisdictions. These narratives and matrices will have the intent to rate the vulnerability, probability and risk associated with each hazard*. In consultation with the Northeast Florida Regional Council, the LMS defines these vulnerabilities, probabilities and risks as an ordinal series of “very low,” “low,” “moderate,” and “high,” according to the Consolidated City of Jacksonville/Duval County Comprehensive Emergency Management Plan (Source: CEMP, pg. 32) varied parameters were established based upon knowledge of the potential consequences, timing and release characteristics for a spectrum of emergencies, natural and man-made. Therefore, identification of consequences in emergency management planning on vulnerability is based on the expected severity of the event, probability is based upon the frequency of past events, and risk is equal to the vulnerability as compared to the probability of future events.

This is a snapshot of the methodology used to describe “extent” of vulnerability, or magnitude/severity.

Areas Vulnerable to Hurricane Hazard

The risk of death, injury and property losses resulting from wind and storm surge elements of a category 1 or 2 hurricane is greatest at the three beaches communities extending from Ponte Vedra on the south up to and including Mayport Naval Station on the north and including land $\frac{3}{4}$ of a mile west of the Intracoastal Waterway. Four areas will experience category 2 force winds in addition to the beaches; 1) lands south of the St. Johns River from Mill Cove to the Charter Point area, north of Fort Caroline Road; 2) lands on the north bank of the St. Johns River from the intersection of Hecksher Drive and Imeson Park Boulevard west to I-95 and south to 27th street; 3) lands on the north bank of the river in the eastern quadrant of the downtown core from State Street on the north west to Main Street; 4) lands on the western bank of the St. Johns River from the intersection of King Street and the river bank in Riverside west to Cassat Avenue and south to Wilson Boulevard near Ortega; continuing all lands east of Roosevelt Boulevard as far south as the I-295 and the County line. All of these areas are primarily residential land use with densities in the three to four dwelling units per acre range. Preliminary indications from storm surge calculations are that for a category two storm, water up to about ten feet of depth above the surface can be expected in a worst-case scenario over nearly all the land between Third Avenue and the Ocean in all three Beach communities. Water 3 to 4 feet above the surface is projected to cover nearly all of the City of Atlantic Beach. Land on both sides of the Intracoastal Waterway from Beach Boulevard on the north, San Pablo Road on the west and Butler Boulevard on the south is expected to be below 3 to 4 feet of water. The next largest area adversely affected by storm surge, are lands north and south of the Trout River and Ribault River basins in northwest Jacksonville’s Riverview neighborhood. Most of the rest of affected lands are relatively small in size and include the north end of University Boulevard, lands on each side of the Arlington River, parts of San Marco, Riverside and Ortega neighborhoods along the river’s edge.

Areas Vulnerable to Wildfire Hazard

Generally, all the developed land outside I-295/9A loop is vulnerable to the wildfire hazard. Population growth has primarily occurred and is expected to continue in this vulnerable area. Developed parcels surrounding an undeveloped and heavily forested swath mostly west of Kernan Road reaching from Beach

Boulevard northward nearly to Monument Road are also vulnerable. Fire protection from sixty fire stations in the County are near most developed land throughout the county. There are new developments underway to the extreme northeast of the county to the southeast of the county that will not have a fire station within five miles of the development, which is a concern for the ISO rating structure for property insurance. The few hundreds of homes and businesses that are isolated from other development and in the areas subject to wildfire are at great risk in the event of drought.

Areas Vulnerable to Hazardous Materials

All properties contained within 2000 feet of I-95, I-10, I-295, Haines Street/ 20th Street, the channel of the St. Johns River and the major rail corridors.

The most vulnerable population as far as hazardous materials accidents are residents of the downtown area reaching as far north as the Trout River. A relatively dense network of rail lines places this lower income area at risk. About one third of the recorded river spills have also taken place in the St. Johns River adjacent to this same area.

Although mostly industrial land uses lay along the northern reaches of the I-10/ rail corridor, there are several pockets of residential areas at increased risk from this type of hazard. In 2014, a Southern Norfolk train derailed in the downtown area on the north bank of the St. Johns River early in the morning of February 11, 2014, necessitating HAZ MAT response, and the evacuation of the *Florida Times Union* newspaper headquarters. The Jacksonville Fire Marine Rescue Unit was deployed along with Coast Guard assets. Boom was quickly placed in the river in the footprint of the affected area, and no spill of chemicals was found, after the City Department of Regulatory Compliance tested the river water. No property was damaged, no persons were injured or killed, but the incident illuminates the potential for life and property damages.

Areas Vulnerable to Flooding

Duval County has more than 120,000 in population living within the 100-year flood zones and another 31,000 living in the 500-year floodplain (Source: Hurricane Evacuation Study, Vol. 6-4, pg. 9). By far the majority of these properties are adjacent to river and creek and/or stormwater retention facilities that developers describe as lakes or other water bodies. Nearly every major water basin in the county is lined with waterfront development. A large number of properties that are vulnerable to flooding are along both sides of the Intracoastal Waterway and the three beach communities. FEMA has identified more than 20 residential properties as Severe Repetitive Loss, which is defined as 4 or more incidents of damage resulting in at least \$5,000 worth of damage for each claim. The demand for waterfront access development is high, leaving the most logical course of mitigation action being strict enforcement of construction standards for building in such areas with elevated finished floor elevations and elevation of the foundation a minimum of 12 inches above Base Flood Elevation (BFE), according to the City of Jacksonville freeboard requirement, to minimize or eliminate damage due to flooding.

By far the greatest number of repetitive loss properties is along a single body of water called Wills Branch Creek. A long awaited drainage improvement project under the US Army Corps of Engineers was completed in 2001 to resolve flooding issues. The City of Jacksonville is now responsible for ongoing dredging of the creek to curtail this type of flooding vulnerability. Several flood prone homes along Wills Branch were spared serious flooding damage during Tropical Storm Fay in 2008 due to the dredging project immediately preceding the storm. The remaining flood prone properties will benefit from improved maintenance of

existing drainage improvements and an ongoing mitigation project of acquisition and demolition of structures with voluntary residential participation.

Areas Vulnerable to Thunderstorms and Tornadoes

All of Duval County is vulnerable to the effects of severe thunderstorms, including flooding, power outages, lightning-generated fires, and widespread storm-generated debris. Localized flooding, in particular, creates a common inconvenience and occasionally results in severe flooding. Severe flooding and wind damage from severe thunderstorms have both initiated Presidential Declarations of Natural Disaster. All of the County and its jurisdictions are vulnerable to tornadoes, although the risk for any given parameter or sector of the County is low.

Areas Vulnerable to Extreme Temperatures

As described in previous sections, all of Duval County and its jurisdictions are susceptible to the effects of extreme temperatures.

Areas Vulnerable to Drought

As described in previous sections, all of Duval County and its jurisdictions are vulnerable to the effects of severe temperatures at the lower and upper ranges.

Adaptation to Climate Change

In preparation for understanding the scope of the challenges presented by adaptation to climate change, the City of Jacksonville Emergency Preparedness Division sent mitigation planners to the ***Coastal Hazards Summit: Working Together towards a Resilient and Sustainable Coast,*** held for counties and other area stakeholders on February 13-14, 2013 to learn more about the issues and potential impacts to the Northeast Florida region. The summit was sponsored by NOAA, Sea Grant Florida, Integrated Ocean Observing System, Southeast Coastal Ocean Observing Regional Association, University of Florida Institute for Sustainable Coastal Environment and Infrastructure, Office of Research and the Engineering School of Sustainable Infrastructure and Environment. The purpose of this summit was three-fold: bring together federal agencies, state agencies, researchers, insurance and other businesses, and coastal communities to share the latest advances in coastal hazard research and planning/preparation/mitigation/response activities; explore ways to apply the latest findings and products in coastal hazard research to assist stakeholders planning activities; and identify critical research needs to enhance the stakeholders continued planning and preparation effort for a hazard resilient and resource sustainable coast.

City of Jacksonville planners coordinated with the State of Florida State Hazard Mitigation Plan Advisory Team (SHMPAT) on ways to integrate climate change effects into the State's Enhanced Hazard Mitigation Plan. The City is currently authorized by the State and FEMA to address natural hazards and vulnerabilities under the five-year Local Mitigation Strategy (LMS), last updated in 2010. The 2015 update will be available in the near future, as part of an ongoing cycle.

The *Duval Prepares* partnership, as the advisory body to the LMS working group, was briefed that when the State adopts an updated Enhanced Hazard Mitigation Plan addressing the hazard profile more fully, Duval County would convene its stakeholders, inclusive of the coastal cities of Atlantic Beach, Jacksonville Beach, and Neptune Beach, to address the integration of adaptation to climate change issues into the LMS plan. Staff reviewed two major documents, consisting of FEMA's ***Climate Change Adaptation Policy Statement*** published January 1, 2012 and the ***State of Florida Enhanced Hazard Mitigation Plan***, adopted August 24, 2013. Additional documents reviewed include the FEMA Frequently Asked Questions (FAQs) fact sheet regarding ***"Incorporating Sea Level Rise (SLR) into Hazard Mitigation Assistance (HMA) Benefit Cost Analysis FAQs"*** and the ***Duval County PDRP*** adopted in 2012.

FEMA's overarching policy advises ... "The purpose of this policy statement is to establish an Agency-wide directive to integrate climate change adaptation planning and actions into Agency programs, policies and operations." State and federal documents indicate this is an ongoing process in development. The scope, severity and pace of future climate change impacts are difficult to predict, but have the potential to affect Duval County and its jurisdictions, public and private infrastructure, housing, and its populations within all jurisdictions of the county, with specific emphasis on the coastal and major riverine areas of the county.

Specific areas where adaptation to climate change actions and programming would benefit the county include:

Impacts on mitigation, preparedness, response and recovery operations: particularly in the context of a coastal region increasing in population, and increasing requirements for emergency services, response and recovery capacity. Resiliency of critical infrastructure and various emergency assets: continuing of operations, delivery of services and emergency response could be impacted and made more complex by damage or disruption to the interconnected energy and infrastructure networks.

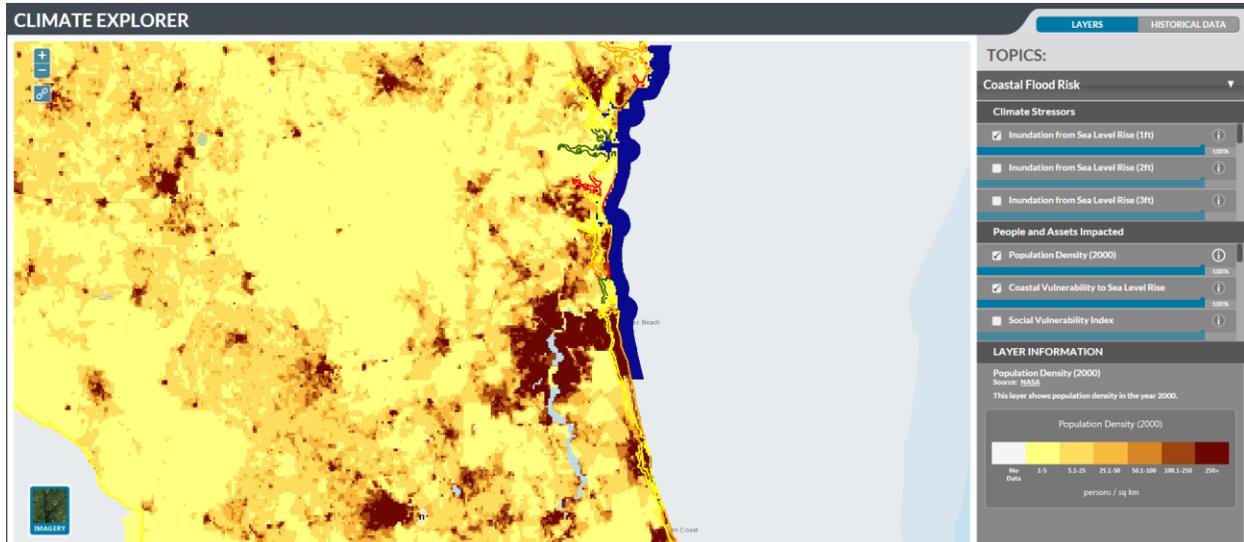
Climate change could trigger indirect impacts that increase risk with vulnerable populations through effects such as, but not limited to, human suffering, economic disruption, internal displacement of population, cross-border migration, and spread of life-threatening disease.

Duval County will continue to monitor the developments in the science and research through other agencies, organizations and educational institutions that possess climate science and climate change adaptation expertise to prepare strategies and programs applicable to the County and its jurisdictions within a mitigation framework. Division staff applied the U.S. Climate Resilience Toolkit, a product utilizing data sets through a partnership of federal agencies and organizations led by the National Oceanic Atmospheric Agency (NOAA) in order to show potential levels of coastal flooding depths and impacts on large segments of the population.

At the LMS Update meeting of January 13, 2015 dedicated to the review of hazards and vulnerabilities within Duval County, the partners discussed the need to identify an additional hazard that addresses the impacts of coastal flooding and rising waters upon infrastructure, population, and the housing within the area. At this

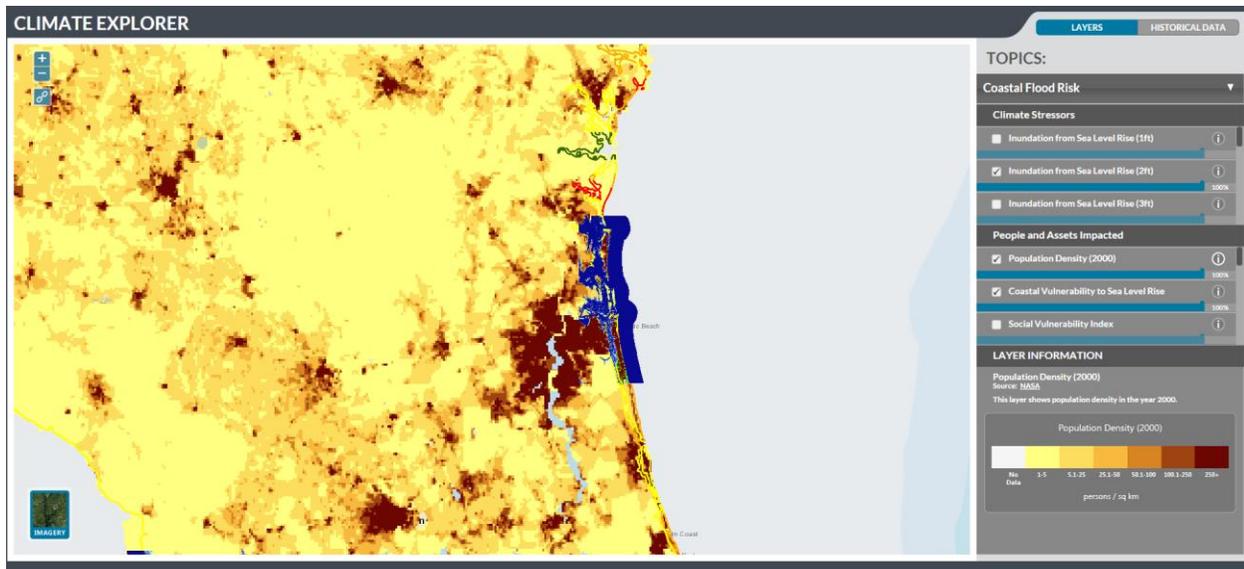
meeting, the *Duval Prepares* partners formally adopted a new hazard for incorporation into the Duval County Local Mitigation Strategy called “Adaptation to Climate Change.”

Figure 41: Coastal Flooding Risk at One Ft. Elevation, Duval County and NE Florida Region



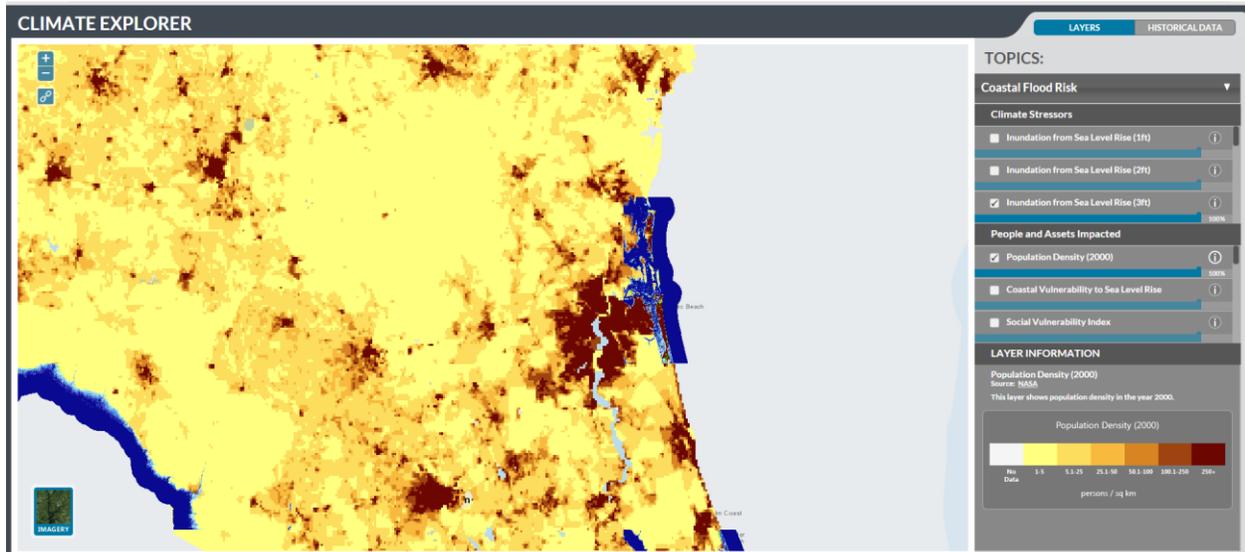
Source: <http://toolkit.climate.gov/climate-explorer/>; U.S. Climate Resilience Toolkit, U.S. Federal Agencies Consortium led by the National Oceanographic Atmospheric Agency (NOAA); retrieved January 27, 2015

Figure 42: Coastal Flooding Risk at Two Ft. Elevation, Duval County and NE Florida Region



Source: <http://toolkit.climate.gov/climate-explorer/>; U.S. Climate Resilience Toolkit, U.S. Federal Agencies Consortium led by the National Oceanographic Atmospheric Agency (NOAA); retrieved January 27, 2015

Figure 43: Coastal Flooding Risk at Three Ft. Elevation, Duval County and NE Florida Region



Source: <http://toolkit.climate.gov/climate-explorer/>; U.S. Climate Resilience Toolkit, U.S. Federal Agencies Consortium led by the National Oceanographic Atmospheric Agency (NOAA); retrieved January 27, 2015

H. Hazard Prioritization Process

On January 13, 2015, the **Duval Prepares** partnership evaluated the historic hazards previously identified in the 2010 LMS Update. Each municipality has different level and degrees of exposure based this hazard analysis. Duval County used the *Duval Prepares* members to review the hazards and to identify new emerging hazards. The members reviewed the existing hazards as previously identified in Table 15 and used a normative group process to rank order hazards based on frequency, severity, damage estimates and other professional knowledge using group consensus to arrive at the hazard priority. The Duval County 2015 LMS Update defines these vulnerabilities, probabilities and risks as an ordinal series of measurements of “low” (expected to occur every 500 years); “moderate-low” (expected to occur every 100 years); “moderate” (expected to occur every 50 years), “moderately high” (expected to occur every 25 years) and “high” (expected to occur every 10 years or more frequently).

Resilience and Climate Change

A new emerging hazard was identified as “Climate Change.” The partnership voted to include a hazard to be called “Adaptation to Climate Change” in order to address the multiple impacts that Duval County can anticipate during the next 15 to 30 years from this risk (among the impacts, but not limited to, drought, flooding from rising waters, storm surge inundation from tropical cyclone, displacement of population, salinization of fresh water sources; loss of land and coastal waterfront, and economic impacts).

That prioritization process yielded the top hazards to be:

- Wind from Tropical Cyclone
- Storm Surge from Tropical Cyclone
- Floods
- Wildfires

- Thunderstorms and Tornadoes
- Hazardous Materials Accidents
- Critical Infrastructure Disruption
- Terrorism (cyber-terrorism/active shooter-lone offender, Biological Disease Outbreak)
- Extreme Temperature
- Drought
- Adaptation to Climate Change

Duval Prepares, the LMS Advisory Committee, reaffirmed the above priorities as the top priorities for the 2015 LMS Update at the January 20, 2015 hazard prioritization meeting. The description of the planning process and meeting schedule for the Local Mitigation Strategy 2015 update is contained in Appendix C.

I. Multi-Hazard Maps

The multi-hazard maps used in the 2010 LMS Update could not be replicated for the 2015 LMS Update as the MEMPHIS data set used to develop the maps is no longer supported. Therefore, the data sets used to establish the risks to populations within Duval County are the HAZUS/SLOSH models used in analyze vulnerability in the 2012 Duval County Post Disaster Redevelopment Plan and the Vulnerability Analysis of the 2013 Hurricane Evacuation Study, inclusive of Duval County. These vulnerability analyses document the highest levels of risk to Duval County for the following hazards: Hurricane hazard (high winds and storm surge); wildfire in the wildland/urban interface hazard; hazardous material impact; hazard flooding hazard; and tornado hazard.

Staff examined the hazards in terms of **risk to population** and determined the hurricane hazard inclusive of wind and storm surge, is the greatest risk to the geographic area from the coast inland to the Intracoastal Waterway and the population living in low-lying areas, housing not built to current building codes, mobile homes, or living in housing built in pre-FIRM floodplain areas. Table 24 summarizes the probabilities, risks and vulnerabilities.

Table 26: Vulnerability, Probability, Risk Assessment Table (1950– 2014) Vulnerability to Hazard by Community

Hazard	Events Recorded 1950-2014	Probability of Occurrence	Significant #s of People	Economic Impact	Vulnerability Level	Risk Level	Duval County	City of Jacksonville	Jacksonville Beach	Atlantic Beach	Neptune Beach	Baldwin
Natural Hazard												
Wind from Tropical Cyclone	111	High	Yes	High	High	High	Y	Y	Y	Y	Y	Y
Storm Surge (from Hurricane, Tropical Storms, Northeasters)	1.2	High	Moderately High	High	High	Moderate	Y	Y	Y	Y	Y	N
Flooding (from Hurricane, Tropical Storm and Seasonal Heavy Rains, Nor'easters)	66	High	Yes	High	High	High	Y	Y	Y	Y	Y	Y
Extreme Temperatures(<28° or >99°)	8	Low	No	Low	Low	Low	Y	Y	Y	Y	Y	Y
Wildfire (Brush, Forest)	87	High	No	Low	Low	Moderate	Y	Y	Y	Y	Y	Y
Thunderstorms (TH) & Tornadoes (T)	337 TH/ 1 /T	High/ Low	Yes/No	Moderate/ Moderate	Moderate/ Moderate	Moderate/ Low	Y	Y	Y	Y	Y	Y
Drought	2	Low	Yes	Low	Low	Low	Y	Y	Y	Y	Y	Y
Climate Change	Ongoing coastal erosion	Moderate	Yes	Moderate	Moderate	Moderate	Y	Y	Y	Y	Y	Y
Natural or Man-Made Hazard												
Critical Infrastructure Disruption	1	Low	High	Moderate	Moderate	Low	Y	Y	Y	Y	Y	Y
Man-made Hazard												
Hazardous Materials Accidents	2	Moderate	Incident Dependent	Moderate	Moderate	Moderate	Y	Y	Y	Y	Y	Y
Terrorism	0	Low	Yes	High	Moderate	Moderate	Y	Y	Y	Y	Y	Y

See Footnotes below for description of categories

Type of Hazard: Disaster events and incidents that have taken place or have the probability to take place in Duval County (with exception of hazards deleted from further consideration) as updated by the ***Duval Prepares*** Advisory Committee during the meetings of January 13 and January 20, 2015).

Documentation Sources: City of Jacksonville 2030 Comprehensive Plan Consolidated City of Jacksonville/Duval County Comprehensive Emergency Management Plan (2012); Duval County Post Disaster Redevelopment Plan (2012); Florida Forest Service; National Weather Service Jacksonville; City of Jacksonville Emergency Preparedness Division event response files; City of Jacksonville Beach; Town of Baldwin; City of Neptune Beach and City of Atlantic Beach CEMPs and/or EARS ; Duval County HAZmat Hazard Specific Plan (2007); Duval County Flood Hazard Specific Plan (2007); Duval County Hurricane Hazard Specific Plan (2007); Duval County Terrorism Response Hazard Specific Plan (2007); Duval County Severe Weather Hazard Specific Plan (2007); Duval County Tornado Hazard Specific Plan (2007); Duval County Wildfire Hazard Specific Plan (2007); Northeast Florida Regional Council Statewide Regional Evacuation Study: Northeast Florida (2013); Jacksonville Electric Authority (JEA) compliance records; City of Jacksonville Public Works and Planning & Development Departments; NFIP Community Rating System (CRS) data.

J. Multi-Hazard Economic Vulnerability Analysis by Property Value

The multi-hazard risk maps have been consolidated into one map that depicts the market value of properties throughout Duval County by zip code. This incorporates a vulnerability assessment based on economic impact for all jurisdictions in the county. A reviewer who examines the hazards maps in Section III should be able to compare and contrast the property value information through the vulnerability analysis to determine the correlation of the values and corresponding risk from the hazards of the parcels within the zip code. All market value information is collected from the Duval County Property Appraiser's data base, effective January 2015. The fair market value is assessed at 99% confidence level per the valuation process used by the Property Appraisers. A total of 345,578 structures valued \$42.06 Billion. The properties that these structures are located on have a combined market value of approximately \$67 Billion (Source: Duval County Property Appraiser, 2015).

Figure 44: Economic Vulnerability Analysis for Impact

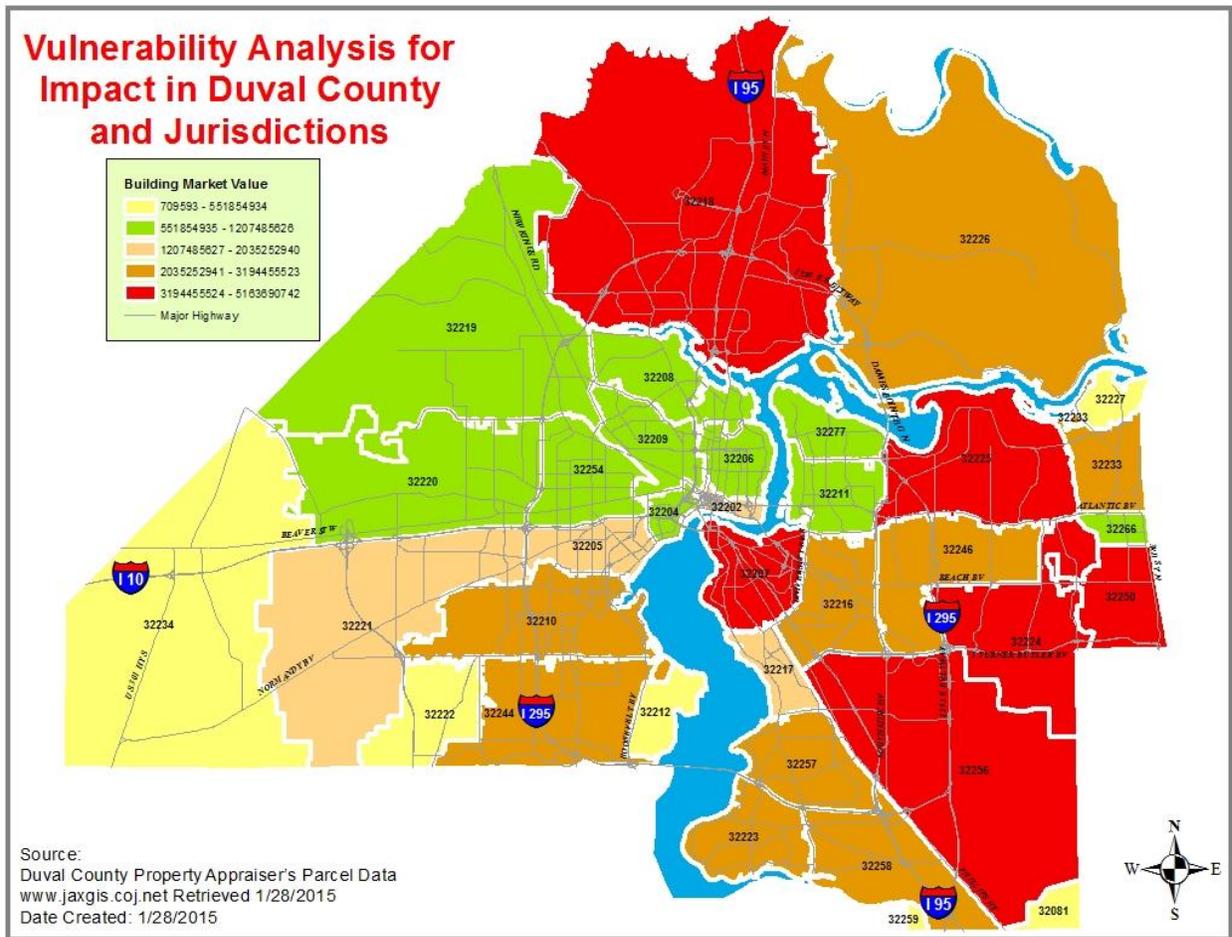


Table 27: Duval County Economic Vulnerability Data

Zipcode	Number of Bldgs.	Total Bldg. Value	Total Market Value
	1	\$0.00	\$171,050.00
32009	1	\$21,525.00	\$101,673.00
32073	2	\$89,074.00	\$126,233.00
32081	180	\$1,146,596.00	\$7,949,233.00
32099	1	\$41,458,889.00	\$43,121,665.00
32201	1	\$117,671.00	\$305,693.00
32202	2,038	\$1,484,098,013.00	\$2,035,252,940.00
32203	2	\$8,769,876.00	\$11,235,951.00
32204	3,601	\$800,283,906.00	\$1,180,464,499.00
32205	12,538	\$1,120,394,250.00	\$1,823,290,750.00
32206	8,500	\$538,325,592.00	\$867,201,683.00
32207	14,876	\$2,008,460,456.00	\$3,476,493,827.00
32208	14,091	\$760,135,149.00	\$1,083,253,583.00
32209	15,206	\$821,976,969.00	\$1,033,164,102.00
32210	23,442	\$1,867,466,690.00	\$3,125,275,193.00
32211	11,214	\$809,227,186.00	\$1,207,485,626.00
32212	3	\$145,520.00	\$35,655,285.00
32216	14,077	\$1,858,145,183.00	\$2,714,814,622.00
32217	7,239	\$834,929,039.00	\$1,439,011,746.00
32218	21,367	\$2,489,409,017.00	\$3,784,393,727.00
32219	5,587	\$657,673,288.00	\$1,050,095,934.00
32220	5,234	\$478,965,578.00	\$783,152,303.00
32221	9,967	\$1,022,830,824.00	\$1,633,324,975.00
32222	3,741	\$370,718,855.00	\$551,854,934.00
32223	10,199	\$1,397,563,343.00	\$2,405,502,290.00
32224	12,367	\$2,477,131,069.00	\$3,763,304,094.00
32225	19,919	\$2,811,800,422.00	\$4,237,263,663.00
32226	7,380	\$1,089,548,741.00	\$2,531,334,677.00
32227	4	\$211,898,171.00	\$312,146,053.00
32229	10	\$2,308,892.00	\$3,283,216.00
32233	8,620	\$1,072,220,597.00	\$2,281,414,758.00
32234	2,065	\$163,554,725.00	\$383,303,284.00
32241	0	\$0.00	\$7,115.00
32244	20,469	\$1,560,129,328.00	\$2,232,707,808.00
32245	0	\$0.00	\$120.00
32246	17,272	\$2,161,944,450.00	\$3,194,455,523.00
32250	13,380	\$2,305,629,271.00	\$4,104,443,785.00
32254	7,660	\$639,523,984.00	\$939,067,028.00
32256	15,211	\$3,546,422,189.00	\$5,163,690,742.00
32257	13,489	\$1,601,329,377.00	\$2,576,499,645.00
32258	11,533	\$1,670,260,638.00	\$2,395,424,664.00
32259	5	\$37,659.00	\$709,593.00

32266	2,974	\$411,798,363.00	\$976,429,794.00
32277	9,309	\$868,582,051.00	\$1,204,424,761.00
32299	1	\$88,146.00	\$163,667.00
33209	1	\$31,903.00	\$36,703.00
33246	7	\$11,320,749.00	\$23,411,949.00
99999	794	\$82,851,685.00	\$123,103,317.00
Total	345,578	\$42,060,764,899.00	\$66,739,325,476.00

Source: Duval County Property Appraiser's Office, JAX GIS, retrieved January 29, 2015

Section IV- Mitigation Initiatives

A. Project Selection

Mitigation initiatives that were identified as a product of the Duval County Local Mitigation Strategy reflect the unique balance of the community's vision, goals and objectives with the risks and vulnerabilities posed by the hazards that threaten it. Potential projects and programs will be based on an all-hazards approach, and will specifically consider:

All natural, technological and societal hazards; vulnerable population and property as well as environmental and economic resources; and, a comprehensive risk analysis based on probability (frequency) and exposure.

The LMS Advisory Group/Duval Prepares is the body that ensures the maintenance of effective projects and programs already accepted and operational in the community. The LMS Working Group, the SEPPC, is the body that ratifies and accepts the recommendations of the LMS Advisory Group.

Development of highly detailed analyses of potential new initiatives requires substantial resources, therefore new projects and programs identified and listed will be evaluated and prioritized based on the information available. Generally, initiatives and projects will document the following:

- why the project is needed;
- how it would effectively reduce disaster damages or save lives (technical merit);
- anticipated cost-effectiveness (benefit – cost analysis)
- degree of acceptability to the public and regulatory agencies if implemented.

Prioritization will involve an in-depth assessment of a project's ability to meet specific criteria as defined by a *Prioritization Point Scale*.

B. Prioritization Criteria and Process

The point system will serve as an objective ranking process for mitigation projects and programs for the Local Mitigation Strategy and may be revised and/or adopted as defined in the Evaluation and Enhancement Procedures of the Strategy.

Potential mitigation initiatives will be prioritized based on a point scale value of the following general criteria:

- Urgency/Severity
- Benefit/Cost Justification (quantification of benefits)
- Effectiveness
- Legal authority
- Availability of funds
- Conformity to local mitigation goals and objectives

In addition, in considering *urgency*, a high priority will be given to those projects which immediately reduce loss of life and damage to property; secondly, initiatives which facilitate a quick return to normalcy from disaster without compromising the goals and principles of this strategy, and lastly, initiatives which address long-term redevelopment. Mitigation initiatives will be prioritized annually and as urgency or availability of funding requires.

Table 28: Prioritization Point Scale for Mitigation Initiatives

Hazard Mitigation Initiatives (Project Prioritization process, Updated January 13, 2015 by *Duval Prepares* Advisory Committee).

Categories	Maximum Points Available	Scoring Instructions	Points Awarded
<p>1. <u>Consistency With Existing Comprehensive Growth Management Plan</u></p> <p><i>Is the project or initiative consistent with or incorporated in the existing Comprehensive Growth Management Plan?</i></p>	10	If “yes” then award 10 points; if “no” award 0 points. If project or initiative is consistent with <u>recommended changes proposed</u> but not yet adopted to the Comprehensive Growth Management Plan, award 5 points.	
<p>2. <u>Consistency With Existing Emergency Management Plan or Other Functional Plan Developed by an Official Local Governmental Entity</u></p> <p><i>Has this project or initiative already been proposed as a management initiative or structural improvement in any emergency proposed or adopted by County or local jurisdictions?</i></p>	10	If the project or initiative has been proposed but not officially adopted, award 5 points. If the project has been adopted, award 10 points.	
<p>3. <u>Consistency with Structured Programs & Processes</u></p> <p><i>Does the project or initiative meet criteria or guidelines within its hazard area, which will provide program credits to the community or citizens? (Ex. Community Rating System, which will reduce flood insurance rates for property owners.)</i></p>	10	Award 10 points for those measures providing program credits.	

Categories	Maximum Points Available	Scoring Instructions	Points Awarded
<p>4. <u>Project's Potential to Provide Economic Benefits</u></p> <p><i>Does the project or initiative provide an economic benefit to the community?</i></p>	10	Award 10 points for those measures providing an economic benefit.	
<p>5. <u>Community Benefit</u></p> <p><i>Does the project reduce loss to or significantly benefit a large portion of a community as a whole? How many people are directly and indirectly affected?</i></p>	10	<p>Award 10 points for those projects that benefit all of the community. Award lesser point scores for those projects which are area or group specific:</p> <p>Benefit 80% of the community = 8 pts. Benefit 60% of the community = 6 pts. Benefit 40% of the community = 4 pts. Benefit 20% of the community = 2 pts. Benefit 10% or less of the community = 1 pt.</p>	
<p>6. <u>Community Exposure</u></p> <p><i>Does the project mitigate a frequently occurring problem or a problem to which a community is particularly vulnerable, or a hazard that is a high level of risk as identified in the Local Mitigation Strategy Hazard Identification and Vulnerability Assessment?</i></p>	10	<p>Award up to 10 points for those projects that mitigate a hazard risk to which the community has a high exposure based on the vulnerability analysis. Reduce the points awarded as the risk or frequency of events for which this project or initiative mitigates declines.</p> <p>Multi-Hazards = 2 pts. High-risk hazards-region-wide impact = 8 pts. High-risk hazards-localized impact = 6 pts. Medium risk hazards-region-wide or non-specific location = 4 pts. Low risk hazards-non-site specific = 2 pts</p>	

Categories	Maximum Points Available	Scoring Instructions	Points Awarded
<p>7. <u>Cost Effectiveness</u></p> <p><i>What is the cost effectiveness of the initiative or project, based on conducting a preliminary analysis using a representative sample or BCA software 3.0 or later of the technical feasibility and benefits versus costs? Please include damage and impact costs from both presidentially declared and non-declared events.</i></p>	10	<p>A total of 10 points will be awarded in this category based on the following:</p> <p style="padding-left: 40px;">Benefit/cost ratio = 1.0 or greater = 10 pts. Benefit/cost ratio = <1.0 = 0 pts.</p>	
<p>8. <u>Effective Project Useful Life</u></p> <p><i>How long will the community continue to receive the benefits of a particular mitigation project or initiative?</i></p>	10	<p>Award 10 points to projects with a useful life greater than 40 years. Award 8 points to projects with a useful life between 20-39 years. Award 6 points to projects with a useful life between 10-19 years. Award 4 points to projects with a useful life between 5-9 years. Award 2 points to projects with a useful life between 1-4 years. Award 0 points to projects with a useful life equal to 0.</p>	
<p>9. <u>Public Support</u></p> <p><i>Can public support for this project be documented?</i></p>	10	<p>Award 10 points to projects that have solicited public input.</p>	
<p>10. <u>Sponsorship and Funding Availability</u></p> <p><i>Does this project have an active sponsor that will take responsibility for its management and implementation?</i></p>	10	<p>Award 10 points if there is an identified sponsor <u>and</u> the sponsor has 100% matching funds committed to the project or initiative. Award 8 pts. If sponsor matches 50% to 100%. Award 5 points if there is an identified sponsor for the proposed project or initiative, but no funding match from sponsor; 0 points if no sponsor.</p>	
<p>11. <u>Environmentally Sound</u></p> <p><i>Does the project impact environmental or historical resources?</i></p>	10	<p>Award up to 10 points to projects or initiatives that have no negative impact on environmental or historical resources, taking into account appropriate mitigation measures that may be applied. Award 5 points for projects that have a medium impact on those resources; award 0 points for projects or initiatives that have a high impact.</p>	

Categories	Maximum Points Available	Scoring Instructions	Points Awarded
12. <u>Consistency with Local Mitigation Strategy Goals and Objectives</u>	5	A total of 5 points will be awarded in this category based on projects or initiatives that: Meet 3 or more goals/objectives = 5 pts. Meet 2 goals/objectives = 4 pts. Meet 1 goal/objective = 3 pts. Meet no goals/objectives = 0 pts.	
13. <u>Consistency with the City Resilience Framework (CRF) Drivers</u> <i>Is the project or initiative consistent with one or more of the 12 City Resilience Framework Drivers, as presented in this Local Mitigation Strategy?</i>	10	A total of 10 points will be awarded based upon the quantity of CRF drivers met: 0 pts = 0 CRF Drivers met 2 pts = 1-2 CRF Drivers met 4 pts = 3-4 CRF Drivers met 6 pts = 5-6 CRF Drivers met 8 pts = 7-8 CRF Drivers met 10 pts = 9-12 CRF Drivers met	
14. <u>BONUS CREDITS for Post Disaster Funding</u> Does the project/initiative have urgency due to official declaration of disaster and availability of post-disaster funding?	(10)	A total of 10 points will be awarded if the project has been approved for a post-disaster funding priority of 1. Award 7 points if the project has a post-disaster funding priority of 2, 5 points if a priority of 3.	
TOTAL POINTS	125 (135)		

C. 2015 Mitigation Initiative Prioritization Results

Advisory Committee/**Duval Prepares** members generated more than 100 different potential mitigation projects organized into 7 categories of land use, construction, critical facilities, economic diversification, transportation, natural environment and community resources. Each of the potential initiatives is included so that all jurisdictions in Duval County have a standard base of projects to apply towards when funding becomes available. This process was adopted because Capital Improvement Funding for public infrastructure has dwindled during the years of the economic recession experienced by the United States. As shown earlier in the LMS, the impact was particularly hard on Duval County. This process was a whole-group consensus-driven exercise. Projects are listed in numeric order, not in a ranked score for each potential initiative.

The prioritization of a proposed mitigation project will take place when funding becomes available through pre-or post-disaster resources. A copy of the mitigation project submission form is attached, to reflect the information requested about projects recommended for inclusion in the 2015 LMS Update.



Duval County LMS Project Submission Form
Duval County Local Mitigation Strategy
Project Submission Form
General Information Required

1. Name, address and phone for contact regarding proposed project:

Name: _____

Address: _____

Phone #: (____) _____

Organization: _____

Project Name: _____

2. Description of the proposed project:

3. Explanation of need for proposed project:

4. Relation to goals, objectives and policies in the LMS and/or consistency with existing emergency management plan or other functional plan of a local government entity:

5. Hazard that proposed project will mitigate against and the project's effective useful life:

6. Estimated cost of proposed project. Has cost-benefit ratio been established?:

7. Source of funding for proposed project:

8. Estimated percentage of population benefited from proposed project. Is there public support for the project?:

9. Estimated percentage of jurisdiction benefited from proposed project (or project's potential to provide economic benefits):

10. Estimated amount of time to implement proposed project:

11. Party responsible for implementing proposed project:

12. Potential environmental impacts of proposed project:

13. Additional comments or information not inquired for above:

**Please return project information to:
Emergency Preparedness Division,
Jacksonville Fire and Rescue Department
515 North Julia Street, Suite 400, Jacksonville, FL 32202
Contact Information: (904) 255-3110
Email: lblack@coj.net**

TABLE 29: CURRENT MITIGATION INITIATIVES

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
GOAL		1	Reduce	Risk							
1	City of Atlantic Beach	Master Drainage Plan	Master Plan and design comprehensive stormwater/drainage of Atlantic Beach	F/SS	Multiple/ Local/ State/ Federal (include post disaster funding)	Y	Atlantic Beach	30,000	Deferred; no funding	More than 12 months	E and N
2	City of Atlantic Beach	Donner Subdivision Sewer Retrofit	Atlantic Beach Upgrades	F/SS	HMGP, TS Debby Tier I	Y	Atlantic Beach	155,000	In Progress	More than 12 months	E
3	City of Atlantic Beach	Area B Sewer Upgrade	Area B Sewer Upgrade 3600 l.f. of pipe. Line existing manholes, complete point repairs	F/SS	Not Yet Identified	Y	Atlantic Beach	200,000	Nor Yet Started, no funding identified	More than 12 months	E
4	City of Atlantic Beach	Sewer Retrofit	Area D Sewer Pipe Upgrade - more than 50 yrs. Old, 3300 l.f.	F/SS	HMGP Tier 3	Y	Atlantic Beach	165,000	Not yet started, no funding identified	More than 12 months	E
5	City of Atlantic Beach	Generator elevation project	New project to install generator for Police and City Hall bldg.	F/SS	HMGP Tier III	Y	Atlantic Beach		To be submitted to DEM in 2015	More than 12 months	E
6	City of Atlantic Beach	Sewer Pipe Upgrade Phase 1	Forrestal Sewer Pipe Upgrade – Phase I	F/SS	HMGP Tier III	Y	Atlantic Beach		To be submitted to DEM in 2015	More than 12 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
7	Town of Baldwin	Drainage master plan	Town of Baldwin drainage improvement plan	F/SS	Multiple/ Local/ State/ Federal (include post disaster funding)	Y	Baldwin	100,000	In Progress	More than 12 months	E
8	All Beaches Communities, Duval	Beach Renourishment Program	Beach erosion control project - program to mitigate storm surge damage - all beaches municipalities requested reincorporation into the 2015 LMS	F/SS/W/ACC	US Corps of Engineer Capital Improvement Budget		US-ACE	10+ miles,\$3-5M per mile, \$22 Million	Last Project 2012, \$22,000,00 New 2015 Project: Duval Borrow Area Project	36 Months	E
9	All Beaches Communities, Duval	Sand Dune Revegetation	Jacksonville Beach Sand Dune Revegetation	F/SS/W/ACC	Not Known	Not Known	Jacksonville Beach	\$10 -15 M	Deferred, no funding identified	More than 12 months	E
10	Jacksonville Beach	Utilities	East end of 3rd Street between Seagate and 7th avenue N	F/SS/W	TBD	Not Known	Jacksonville Beach		Deferred – No Funding	Not Known	E
11	Jacksonville Beach	Utilities	East of 3rd St. between 17th Ave S. and St. Johns County line	F/SS/W	TBD	Not Known	Jacksonville Beach		Deferred – No Funding	Not Known	E
12	City of Jacksonville Public Works	McCoys Creek Project	A. McCoy Creek Drainage Improvement Project – Closure of McCoy Creek Boulevard and channel	F/SS	Stormwater fund; Bond funds, Fed & State aid if available	Not Known	Jacksonville Public Works	20,000,000	Deferred, insufficient funding in the utility fee fund	More than 12 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
			expansion between Hollybrook Ave and I-95. B. Outfall widening and relocation C. Installation of Regional Stormwater Facility McCoy Pond C D. Residential relocation program for repetitive loss properties								
13	City of Jacksonville Public Works	Hogan's Creek Drainage	A. Hogan Creek Drainage Improvement Project - A. Improved conveyance under the Arlington Street Expressway B. Off-line Regional Stormwater Facility at the Hart Expressway C. In-line Regional Stormwater Facility at Liberty Street D. Relocation of repetitive loss properties	F/SS	Stormwater fund; Bond funds, Fed & State aid if available	Not Known	Jacksonville Public Works	15,000,000	Deferred, insufficient funding in the utility fee fund	More than 12 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
14	City of Jacksonville Public Works	Moncrief Creek Drainage	A. Moncrief Creek Drainage Improvement Project - Bank stabilization and channel widening between 33rd Street and Gulf View. B. In-line Regional Stormwater Facility at Gulf View C. Bank stabilization from 26th street to 16th street D. Off-line Regional Stormwater Facility Relocation of repetitive loss properties as applicable	F/SS	Stormwater fund; Bond funds, Fed & State aid if available	Not Known	Jacksonville Public Works	15,000,000	Deferred, insufficient funding in the utility fee fund	More than 12 months	E
15	Jacksonville Public Works	“Emerald Necklace project”	flood mitigation for Hogan’ Creek and Springfield Neighborhoods – wet detention ponds	F/SS	PDM 2013	Y	City of Jacksonville	2,000,000	Submitted to FEMA in 2013 PDM. No status update	More than 12 months	E
16	Jacksonville Public Works	Streets and Drainage –	“No Road /Lambing Intersection” Drainage	F/SS	State and Federal	Not Known	City of Jacksonville0	1,260,000	Not yet submitted	More than 12 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
			Improvements								
17	Jacksonville Public Works	Crystal Springs Area Drainage Improvements	F/SS West side of Jacksonville	F/SS	State and Federal	Not Known	City of Jacksonville	2,000,000	Not yet submitted	More than 12 Months	E
18	Jacksonville Public Works	Dinsmore Area Drainage Improvements	F/SS North side of Jacksonville correct flooding	F/SS	State and Federal	Not Known	City of Jacksonville	4,522,000	Not yet submitted	More than 12-months	E
19	Jacksonville Public Works	Liberty Street Bridge Improvements	Partial collapse of bridge-needs to be elevated and improve safety for public use	F/SS/ACC	State and Federal	Not Known	City of Jacksonville	1,000,000	Not yet submitted	More than 12-months	E
20	Jacksonville Sheriff's Office (JSO)	Main Jail Retrofit	Elevate Generator serving Main Jail	F/SS	HMGF Tier III	Y	JSO/City Public Bldgs.	200,000	Not yet submitted	More than 12 months	E
21	City of Neptune Beach	Stormwater	Stormwater pumping facility for Hopkins Creek	F/SS	Multiple/ Local/ State/ Federal (include post disaster funding)	Y	Neptune Beach	Not Known	Deferred; no funding	More than 12 months	C
22	City of Neptune Beach	–Bal Harbor Estates Sanitary Sewer Rehabilitation and Restoration	Post Disaster Drainage project for neighborhood impacted by TS Debby - Engineering Study	F/SS	HMGF Tier I	Y	Neptune Beach	600,000 Phase One Engineering Study	In Progress	36 months	E
23	City of Neptune Beach	Comprehensive Drainage	Master Plan and design for comprehensive	F/SS	Multiple/ Local/ State/	Y	Neptune Beach	300,000	Deferred; no funding	More than 12 months	E and N

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
		Study	stormwater/ drainage of Neptune Beach		Federal (include post disaster funding)						
24	City of Neptune Beach	8-inch Sanitary Sewer Force Main Extension	Northwest Regional Water Treatment Plant – Florida Blvd.	F/SS	HMGP Tier III	Y	Neptune Beach	750,000	Advanced to DEM not selected for funding	More than 12 months	E
25	City of Neptune Beach	Sewer Rehabilitation	400 -500 Block	F/SS	HMGP Tier III	Y	Neptune Beach	2,000,000	Advanced to DEM not selected for funding	More than 12 months	E
26	City of Neptune Beach	Treatment Plant	Anoxic Tank Expansion Wastewater Treatment Plant	F/SS	Post Disaster Funding	Y	Neptune Beach	125,000	Not yet submitted	More than 12 months	E
27	City of Neptune Beach	Florida Blvd. and 5 th Street Culvert Upgrade	135 l.f. of corrugated pipe that is at end of useful life, undersized and restricting flow	F/SS	Post Disaster Funding	Y	Neptune Beach	750,000	Not yet submitted	More than 12 months	E
28	Duval County	Underground Utility Placement	Pre-disaster plan for post disaster underground utility placement	F/SS/W/ CID	Multiple-HMGP/ CIP	Y	JEA	Not Known	Ongoing	Ongoing	N and E
29	Duval County	Drawbridge Program	Replacement program for 35 drawbridges on designated evacuation routes (Hecksher Road bridges and	F/SS/W	Multiple/Local/ State/ Federal	Y	F-DOT/ Local Jurisdictions	\$10,000,000+	Ongoing	Ongoing	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
			Main Street Bridge maintenance in progress)								
30	Duval County	Emergency Generators	Emergency Generator – funding assistance program	F/SS/W	Multiple/ Local/ State/ Federal	Y	Emergency Preparation coordinating with local jurisdictions	750K for a SpNS shelter as example	Ongoing	More than 12 months	E and N
31	Duval County	Stormwater / Drainage Infrastructure	Implementation of Stormwater Management Plans/ Maintenance of drainage Infrastructure	F/SS	Multiple/ Local/ State/ Federal (include post disaster funding)	Y	Local jurisdictions	Not Known	Ongoing	More than 12 months	E and N
32	Duval County	Study of stormwater retention and basins	Study of regional cumulative impacts of natural stormwater retention systems & storm basins	F/SS	City of Jacksonville CIP and stormwater utility fee/State/ Federal	Y	Jacksonville	5,000,000	Deferred, insufficient funding in the utility fee fund	More than 12 Months	E and N
33	Duval County	Wildfire Mitigation Projects	Fuel reduction around critical facilities and residential areas	WF	State/Federal	Not Known	Florida Forestry Service /Jacksonville Fire and Rescue	Master planning \$50,000	Ongoing	More than 12 months – last project Town of Baldwin Firewise program	E and N

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34	Duval County Public Schools (DCPS)	DCPS facilities varied storm drainage improvements	(Fletcher HS, Atlantic Beach #65, Fort Caroline MS #230, Fort Caroline ES #235, Butler MS 168, Lakeshore MS #69, Maintenance Shop #67, James Weldon Johnson #152, Englewood ES #87, Parkwood Heights #204, Englewood HS, Mandarin Oaks ES #258, Mandarin HS, Douglas Anderson HS, Baldwin HS, Venetia #68, Sadie Tullis #116, Cedar Hills ES 397	F/SS/W		Stormwater management fund/ DOE/ DCPS	DCPS	5,000,000	Deferred, insufficient funding	More than 12 months	E and N
Goal 2		Decrease	Vulnerability								
Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards to be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
35	City of Atlantic Beach	Emergency Generators for Critical Facilities	emergency power support for city emergency operations facility (City	F/SS/W/ CID	Post Disaster Funding	Y	Atlantic Beach	110,000	Tier III under review at DEM	More than 12 months	E

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			Hall and Police Station)								
36	Town of Baldwin	City Hall and Fire Station 46	Hardening of critical infrastructure	W	HMGP - 4068 Tier I/landfill tipping fees	Y	Baldwin	65,000	Awarded	18 months	E
37	Town of Baldwin	Critical infrastructure hardening	Post Disaster Shelter	W	HMGP – 1785 Tier I/landfill tipping fees	Y	Baldwin/City of Jacksonville	300,000	In Progress	More than 12 months – to be completed 2015	E
38	City of Jacksonville Beach	Water Plant Generator	Osceola Ave. Water Plant emergency power generator	F/SS/CID	Post Disaster Funding	Y	Jacksonville Beach	400,000	Not yet submitted	More than 12 months	E
39	City of Jacksonville Beach	Portable Pump Program	portable pumps for lift stations (JEA has FLA WARN system serving region)	F/SS/ACC	State /Federal Post Disaster Funding	Y	JEA/ COJ Public Works	400,000	Not yet submitted	More than 12 months	E
40	City Jacksonville Fire & Rescue	Wind Retrofit Program	Groups of fire stations grouped into phases 1-6 for wind retrofit	W	State/ Federal Varied	Y	City of Jacksonville Fire Rescue	150,000+	Phases 5 and 6 Not yet funded – Phase 3 has been extended to resolve individual fire stations issues	More than 12 months	E
41	City of Jacksonville Public Works	Debris Management	Debris management plan to restore county more quickly after emergency event in disposal of storm-generated	F/SS/W	Post Disaster Funding	Y	Public Works of each jurisdiction	\$13,000,000 up to \$75,000,000	Ongoing, based on history with Hurricane Jeanne, Tropical Storm Fay and Tropical Debby Declared Disasters	Annual updates with revisions after each disaster event	E

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			debris								
42	City of Jacksonville	facilities for shelter retrofit	Ongoing review of buildings capable to sustain retrofit	F/SS/W	Post Disaster Funding	Y	City Park and Recreation Dept.	2,000,000 for retrofit into SpNS shelter capabilities	Not yet funded	More than 12 months	E
43	City of Jacksonville	Public Buildings Retrofits	A. Fleet Management Central Garage Wind Retrofit	W	Post Disaster Funding	Y	Jacksonville Public Works	700,000	Not yet funded	More than 12 months – identified after TS Fay	E
44	City of Jacksonville		Ed Ball Bldg. Data Center Hardening	W/CID	Post Disaster Funding	Y	Jacksonville Public Works	300,000	Not yet funded	More than 12 months – identified after TS Fay	E
45	City of Jacksonville Housing Division	Home Retrofit Program	Residential Housing Hardening for Low Income Residents	W	RCMP	Y	FL Dept. Of Business Regulation, FL Division of Emergency Management, building industry; FLASH, Housing & Neighborhood Services Division and Emergency Preparedness Division	500,000	Ongoing, on funds available through State RCMP	More than 12 months	E
46	City of Jacksonville	Public Buildings Retrofits	A. Fleet Management Central Garage Wind Retrofit	W	Post Disaster Funding	Y	Jacksonville Public Works	700,000	Not yet funded	More than 12 months – identified after TS Fay	E
47	City of Jacksonville	Critical Infrastructure	Ed Ball Bldg. Data Center	W/CID	Post Disaster	Y	Jacksonville Public Works	300,000	Not yet funded	More than 12 months –	E

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	Public Buildings	re	Hardening		Funding					identified after TS Fay	
48	City of Jacksonville Public Buildings		Flood Mitigation for Armory (Historic Bldg.)	F/SS	HMGP Tier III	Y	City of Jacksonville Public Works	300,000	Submitted to DEM in 2014. No update.	More than 12 months	E
49	City of Jacksonville	facilities for shelter retrofit	Ongoing review of buildings capable to sustain retrofit	F/SS/W	Post Disaster Funding	Y	City Park and Recreation Dept.	2,000,000 for retrofit into SpNS shelter capabilities	Not yet funded	More than 12 months	E
50	City of Jacksonville Public Works	Flood Ditch System Capabilities	Ditch maintenance and clean out projects	F/SS	Annual Budgets	N	FDOT-City Public Works/local governments	Included in operations budgets	Ongoing	Annual	E
51	City of Jacksonville Emergency Management	Jacksonville Alternate Disaster Warehouse	Hardening of facility serving county EM	W/SS/F	HMGP Tier III	Y	City of Jacksonville	100,000	Submitted for HMGP-HUR Isaac	More than 12 months	E
52	Jacksonville Sheriff's Office (JSO)	Emergency Generator relocation project	relocate jail generator above BFE	F/SS/ACC	Post Disaster Funding	Y	JSO/City Public Bldgs. Division	600,000	Not yet submitted to DEM	More than 12 months	E
53	City of Neptune Beach	Generator Project	generator for City Hall	F/SS/CID	Post Disaster Funding	Y	Neptune Beach	100,000	Not yet submitted	More than 12 months	E
54	Duval County	Hurricane Risk Sheltering Program	Shelter assessment & retrofit program	F/SS/W	Multiple/ Local/ State/ Federal (include post disaster funding)	Y	Jacksonville/ DCPS/universities and state colleges	2,000,000 for a SpNS shelter added to new school construction 1,500,000 for generator to support SpNS sheltering	Ongoing	More than 12 months	N and E
55	Duval County Public Schools (DCPS)	Critical Infrastructure Hardening Retrofit	Twin Lakes Middle School Shuttering Retrofit	W	Multiple/ Local/ State/ Federal (include	Y	CPS	350,000	Not yet funded	More than 12 months	E

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					post disaster funding						
56	DCPS	infrastructure- West Riverside ES	DCPS Wind Retrofit and Wall Support West Riverside ES #12	W	To be Determined	Not Known	DCPS	200,000	Not yet funded	More than 12 months	E
57	DCPS	infrastructure Frank Peterson HS	replacement of electric panels (lightning protection) and light fixtures, relocation of water meter and water main	F/SS/CID	Post Disaster Funding	Y	DCPS	250,000	Not yet funded	More than 12 months	E
58	DCPS	infrastructure Lee HS	replacement of electrical and 1200 AMP distribution panel for lightning protection	F/SS/CID	Post Disaster Funding	Y	DCPS	250,000	Not yet funded	More than 12 months	E
59	Duval County jurisdictions	Relocation and/or retrofit of vulnerable critical facilities	Identification and creation of mitigation plan for specific vulnerable facilities	F/SS/W/ACC	Multiple/ Local/ State/ Federal (include post disaster funding)	Not Known	Local governments	Project dependent – 500,000+	Not yet funded	More than 12 months	E
60	Duval County	County Debris Management	Pre-positioned contracts for post- disaster debris removal;	W	State /Federal Post Disaster	Y	COJ Public Works	4,000,000+ (depending upon the disaster scale)	Ongoing	Annual updates to plans and FEMA permitted sites	E

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		Plan	pre-designation of sites		Funding						
61	FSCJ	Bartram Degree Completion Center (South in mandarin)	Critical Infrastructure Hardening, use as hurricane risk shelter	W/SS/F	Post Disaster Funding	Y	Florida State College at Jacksonville	3,000,000	Deferred – capital campaign halted	More than 12 months	N
62	FSCJ	Health College Hardening	Critical Infrastructure Hardening, use as medical needs hurricane risk shelter; inclusive of generators for special needs	W/SS/F	Post Disaster Funding	Y	Florida State College at Jacksonville	5,000,000	Not yet submitted	More than 12 months	N
63	Greater Jacksonville Agricultural Fair (JGAD)	Wind Retrofit	Buildings on Fairgrounds Retrofit for Emergency Response and Recovery	F/SS/W	Post Disaster Funding	Y	JGAF/ Dept. of Agriculture	300,000+	Not yet funded	More than 12 months	E
64	Greater Jacksonville Agricultural Fair (JGAF)	Wind and Safe Room Construction	Design and construct Code Plus facility to support emergency response/recovery/provide tornado shelter for Fair attendees	F/SS/W/T	Post Disaster Funding	Y	JGAF/ Dept. of Agriculture	1,000,000	Not yet funded	More than 12 months	N
65	Jacksonville Airport Authority (JAA)	retrofits	Hardening of Jacksonville Aviation Authority Critical Facilities	W	Multiple/ Local/ State/ Federal (include post disaster	Y	JAA	500,000+	Not yet funded	More than 12 months – identified after TS Fay	E

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					funding)						
66	JAXPORT	hardening project	Critical Facilities Hardening, Port-Wide	W	Multiple/ Local/ State/ Federal (include post disaster funding)	Y	JAXPORT	500,000+	Not yet funded	More than 12 months – identified after TS Fay	E
67	JAXPORT	Generator	Emergency Energy Source for Port Central Operations Building (PCOB)	F/SS/CID	Post Disaster Funding	Y	JAXPORT/Division of Emergency Preparedness	200,000	Not yet submitted	More than 12 months	E
68	Jacksonville Health and Medical Facilities	Structural enhancement program for public safety/health and medical critical facilities	Review public and private hospitals, public safety and health and medical facilities for retrofit opportunities to support life safety issues	W	Post Disaster Funding	Y	City of Jacksonville/ Dept. of Health Duval County/Division of Emergency Preparedness Public and private hospitals	5,000,000+	Not yet funded	More than 12 months	E
69	JEA	Lift Station retrofit	JEA sewage lift station retrofit and elevation and alternate electric source	F/SS/ACC	State /Federal Post Disaster Funding	Y	JEA/ COJ Public Works	350,000	Ongoing		E
70	JEA	Electric substations	Retrofit vulnerable electric substations - floodproofing	F/SS/ACC	State /Federal Post Disaster Funding	Y	JEA	Not Known	Not yet funded	More than 12 months	E
71	JEA	JEA Resilience Projects	Bradley Road Pump Station Electrical and Associated	F/SS/ACC	Post Disaster Funding	Y	JEA	2,100,000	Not Yet Submitted	More than 12 Months	E

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			Improvements								
72	JEA	230kV River Crossing Improvement (Alternative #1)	Retrofit towers into current NECS code and increase clearance over navigable waterway – 190FT	F/SS/W/ACC	Post Disaster Funding	Y	JEA	25,000,000	Not Yet Submitted – high dollar project replacing 50-year old infrastructure	More than 12 Months	E
73	JEA	230kV River Crossing Improvement (Alternative #2)	Retrofit towers for current NECS code and increase clearance over navigable waterway – 220FT	F/SS/W/ACC	Post Disaster Funding	Y	JEA	55,000,000	Not Yet Submitted – high dollar project replacing 50-year old infrastructure	More than 12 Months	E
74	JEA	230kV River Crossing Improvement (Alternative #3)	Replace 1960s era towers , construction of two termination stations and underground 6- transmission circuits over navigable waterway – 220FT	F/SS/W/ACC	Post Disaster Funding	Y	JEA	75,000,000	Not Yet Submitted – high dollar project replacing 50-year old infrastructure	More than 12 Months	E
75	JEA	Alachua Master Pump Station Improvements	Wet well retrofit and relining to prevent sanitary sewer overflow	F/SS/ACC	Post Disaster Funding	Y	JEA	2,453,000	Not Yet Submitted	More than 12 Months	E
76	JEA	Springfield District Energy Plant Backup Power	Upgrade of chilled water plant for backup power to chillers and	F/SS/ACC	Post Disaster Funding	Y	JEA	2,100,000	Not Yet Submitted	More than 12 Months	E

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		Upgrade	cooling towers serving the regional Shands trauma center. Install backup generators.								
77	JEA	Northwest Regional Water Treatment Plant	Replace existing water treatment plant which serves the Jacksonville International Airport. Development increasing in this area.	F/SS/ACC	Post Disaster Funding	Y	JEA	9,250,000	Not Yet Submitted	More than 12 months	E
78	JEA	Southeast Water Treatment Plant	Incorporate high service pumps and Metal Bldg. Replacement - primary provider to Mayo Hospital	F/SS/ACC	Post Disaster Funding	Y	JEA	1,250,000	Not Yet Submitted	More than 12 months	E and N
79	JEA	PSI – South Shores Second Sub-Aqueous FM crossing	Provide a 36” force main parallel to existing 42” force main crossing under St. Johns River	F/SS/ACC	Post Disaster Funding	Y	JEA	8,700,000	Not Yet Submitted –high dollar projects replacing 40 year old infrastructure	More than 12 months	E
80	The Salvation Army (TSA)	Homeless Shelter and Disaster Food Warehouse Retrofit	hardening of primary homeless shelter /securing food services for bulk distribution	W	HMGP Tier 3	Y	Salvation Army	223,000	Submitted to DEM Not selected	More than 12 months	E

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81	University of North Florida	Critical Infrastructure Hardening	Shelter assessment & retrofit program at buildings 42, 51, 10, 45, 53 and Hicks Hall (old AOL building)	W	Post Disaster Funding	Y	UNF/EPD	\$3,000,000 - \$5,000,000 per building to retrofit	Deferred, FEMA did not select PDM project for funding - also Tier III under HMGP for Bldgs. 42 and 51 project	More than 12 months	E
82	WJCT - TV	WJCT-TV emergency broadcast capability	Relocation of Emergency Radio Operations	F/SS/CID	Post Disaster Funding	Y	WJCT-TV and Division of Emergency Preparedness	300,000	Not yet submitted	More than 12 months	E
Goal 3		Education	Training	Communications	Outreach						
83	Duval County Floodplain Managers in all jurisdictions	Awareness of Flood Hazards	A program to require notification to prospective home buyers of potential flood hazard property	All Hazards	Multiple/ Local/ State/ Federal (include post disaster funding) Public and private sources	Y	Northeast Florida Board of Realtors/Banking Industry, City Planning Dept. for CRS	300,000	No funding available	More than 12 months	N/A
84	Duval County Floodplain Managers in all jurisdictions	Flood insurance education programs	Flood insurance education for at-risk property owners	All Hazards	Multiple/ Local/ State/ Federal (include post disaster funding) Public and private sources	Y	Florida Dept. of Business and Insurance Regulation, NFIP, Municipal building officials, Planning and Development Dept. for CRS, and Floodplain	300,000	Ongoing in multiple departments	On-Going – COJ annual flood letters to property owners; all hazards emergency guide produced annually and distributed countywide. The JaxReady website and JaxReady app. for IOS and Android	N/A

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							Manager for jurisdictions			smartphones and tablets	
85	Duval County		Education/incentive programs for builders - higher building standards/cost-effective retrofitting	F/SS/W ACC	Not Identified	Not Known	NE Florida Builders Assn./ Building Officials Org. //FL Dept. Of Business & Professional Reg./ FLASH	500,000	Ongoing in multiple departments and agencies – no additional funding identified	My Safe Florida Home remains unfunded	
86	Duval County	Fire education and risk reduction program	Firewise and Community Wildfire Protection Planning	WF	Not Identified	Not Known	Individual Jurisdictions fire department, Florida Forestry Service	Not Known	Town of Baldwin adopted in 2011	More than 12 months	
87	City of Jacksonville Emergency Management	Property Owner and business education – impacts to wetlands	Program for property owners to educate on the impacts of filling wetlands that might affect homes/businesses	F/SS/ACC	Multiple/ Local/ State/ Federal (include post disaster funding) Public and private sources	Y	Emergency Preparedness, Planning and Development Dept., CRS program	Operational Budgets	Ongoing in multiple departments and jurisdictions	Annual CRS letter and community outreach	

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88	Duval County Floodplain Managers in all jurisdictions	Promotional Program – Floodway Maintenance	Environmental benefits of floodway maintenance. Neighborhood information program for all hazards	F/SS	City operational budget	N/A	COJ Floodplain, Planning and Dev. Dept., CRS credits , Public Works Dept.	Not known	Ongoing in multiple departments and jurisdictions	Annual CRS letter and community outreach	
89	City of Jacksonville Emergency Management	All hazards education (combined several projects contained in the 2010 LMS into this project)	Neighborhood information program for all hazards – disaster preparedness plan for neighborhoods – family emergency preparedness	F/SS/W/WF/T/ACC	City operational budget and public/private financing	N/A	Emergency Preparedness//LEPC/ Fire Depts./ COJ Volunteer Services/ Red Cross	Operational budgets	Ongoing in multiple departments and jurisdictions	All hazards emergency guide distributed countywide. JaxReady website and JaxReady app for IOS and Android smartphones and tablets	N/A
90	City of Jacksonville Emergency Management	Evacuation Shelter Education (combined two projects contained in the 2010 LMS)	Hurricane evacuation/ shelter education program for homes and businesses – shelter managers training	F/SS/W/WF/T/ACC	City operational budget and public/private financing	N/A	Emergency Preparedness//LEPC/ Red Cross	public/private financing	Ongoing in multiple departments and agencies	All hazards emergency guide distributed countywide. JaxReady website and JaxReady app for IOS and Android smartphones and tablets. Red Cross offers shelter ,management training	N/A
91	Duval	Speakers	All hazard	All Hazards	City	N/A	Division of	Operational	Ongoing through	annual outreach	N/A

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	Prepares City of Jacksonville Emergency Management	Bureau	mitigation speaker's bureau		operational budget and public/private financing		Emergency Preparedness//CERT/Red Cross/media	budgets	multiple departments and agencies	during hurricane season workshop, tabletop exercises, drills and safety fairs	
92	City of Jacksonville Emergency Management	CERT Program	Education on preparing post-disaster kits - (first aid, saws, tools, etc.) for pre-during-post events	All Hazards	City operational budget	N/A	Division of Emergency Preparedness//CERT/Jacksonville Fire and Rescue	Operational budgets	Ongoing through multiple departments and agencies	Biannual outreach as resources permit	N/A
Goal 4		Land	Use	Zoning	Development	Controls/					
Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
93	NEFRC	NE Florida Regional Council	Resilience Planning Project	ACC	HMGP Tier III	Y	Northeast Florida Regional Council	50,000	Submitted to DEM in 2014. No status available.	More than 12 months	N/A
Goal 5		Protect	Business and	Industry							
94	Duval County	Training Program	Disaster preparedness training program for small businesses (such as Hurricane Biz or Small Business Development Center [SBDC] annual workshop)	W/SS/WF/ACC	Not Known	Not Known	Small Business Administration/UNF/Duval Prepares Business Sustainability Committee/Association of Contingency Planners	35,000	Ongoing	Annual training through Assn. of Contingency Planners (ACP) and SBDC	N/A

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95	City of Jacksonville Emergency Management	Establish Business Emergency Operations Center (EOC)	Co-locate business oriented EOC within County EOC to provide business information for response / recovery in all hazards environment	F/SS/W/WF /T/ ACC	Not Known	Not Known	Emergency Preparedness, Jacksonville Fire and Rescue, Duval County EOC	75,000	Identified in the Duval County Post Disaster Redevelopment Plan of 2012	More than 12 months	E
96	Duval County	Firewise or Community Wildfire protection plans	DOF Firewise Program to be adopted throughout Duval County	WF	Not Known	Not Known	Duval Prepares/ SEPPC ratification	Not known	Ongoing – Town of Baldwin adopted in 2011	12 Months	N/A
Goal 6		Prevention	Of Repetitive	Loss							
97		Elevation, relocation, acquisition program for repetitive loss properties	Focus on properties meeting technical feasibility and cost effectiveness standards set by F-DEM and FEMA	F/SS/W/ ACC	FEMA pre and post disaster grant program	Y	Local Government s/EPD	\$5,000,000	Ongoing	More than 12 months	E
98	City of Jacksonville		5156 Martha Ann Drive Standard Elevation, Pottsburg Creek	F/SS	FEMA pre and post disaster grant program	Y	Jacksonville/ EPD/property owner	300,000	In Progress	18 Months	E
99	City of Jacksonville		6734 Bakersfield Drive, Wills Branch Creek Acquisition/	F/SS	FEMA pre and post disaster grant program	Y	Jacksonville/ EPD/property owner	210,000	In Progress	24 months	E

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			demolition								
100	City of Jacksonville		6934 Bakersfield Drive, Wills Branch Creek Acquisition/ demolition	F/SS	FEMA pre and post disaster grant program	Y	Jacksonville/ EPD/property owner	197,000	In Progress	24 months	E
101	City of Jacksonville		6944 Bakersfield Drive, Wills Branch Creek Acquisition/ demolition	F/SS	FEMA pre and post disaster grant program	Y	Jacksonville/ EPD/property owner	222,000	In Progress	24 months	E
102	City of Jacksonville		6958 Bakersfield Drive, Wills Branch Creek Acquisition/ demolition	F/SS	FEMA pre and post disaster grant program	Y	Jacksonville/ EPD/property owner	275,000	In Progress	24 months	E
103	City of Jacksonville		6968 Bakersfield Drive, Wills Branch Creek Acquisition/ demolition	F/SS	FEMA pre and post disaster grant program	Y	Jacksonville/ EPD/property owner	239,000	In Progress	24 months	E
104	City of Jacksonville		1570 Navaho Drive Wills Branch Creek Acquisition/ demolition	F/SS	FEMA pre and post disaster grant program	Y	Jacksonville/ EPD/property owner	230,000	In Progress	24 months	E
105	City of Jacksonville		4604 Fremont, drainage canal overflow; Acquisition/ demolition	F/SS	FEMA pre and post disaster grant program	Y	Jacksonville/ EPD/property owner	148,000	In Progress	24 months	E
106	City of Jacksonville		3804 and 3806 Boone Park Avenue; Little Fishweir Creek Acquisition/	F/SS	FEMA pre and post disaster grant program	Y	Jacksonville/ EPD/property owner	365,000	In Progress	24 months	E

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			demolition								
	COMPLETED				PROJECTS						
Goal 1		Reduction	Of Risk								
	City of Atlantic Beach	Stormwater Drainage Infrastructure	City of Atlantic Beach Salt Air Gravity Sewer Rehabilitation	F/SS	HMGP TS Fay	Y	City of Atlantic Beach	400,000	Completed	More than 12 months	E
	Town of Baldwin	Infrastructure	Baldwin Bypass on US 90 and US 301	CID/	DOT Capital Improvement Plan	Y	FDOT	650,000	Completed	More than 12 months	E
Goal 2		Decrease	Vulnerability								
	Duval County	Adoption of Redevelopment Process	Develop functional procedures for EOC Executive Group to identify redevelopment options pre-event	F/SS/W	EMPA/EMPG	N	Emergency Preparedness/Planning & Dev.	200,000	Completed with adoption of 2012 Post Disaster Redevelopment Plan and incorporation of Recovery Strategy into the Comprehensive Emergency Management Plan (CEMP) 2012	24 months	N/A
	Duval County	Safety Review in Overarching comprehensive plans	Procedures to require public safety review of new development in identified hazard areas (flood zones, flood-prone areas, urban/wildland interface areas)	F/SS/W/T	EMPA/EMPG	N	Emergency Preparedness/Planning & Dev./ NE Florida Planning Council/Floodplain Manager	100,000	Completed with adoption of 2010 FEMA flood maps, 2012 Duval County Post Disaster Redevelopment Plan, 2013 Statewide Hurricane Evacuation Study, Program, the 2014	24 months	N/A

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			& impact on hurricane evacuation						Community Rating Community Assistance Visit (CAV) for a ranking of 6		
	City of Jacksonville	Wind Retrofits – public buildings for response and recovery	City of Jacksonville Traffic Engineering Bldgs (2) Wind Retrofit	W	HMGP Tier I	Y	City of Jacksonville and Dept. of Public Works	45,000	Completed, TS Fay retrofit	More than 12 months	E
	City of Jacksonville		Solid Waste Division & Solid Waste Div. C. Maintenance Bldg– 1031 Superior St. W	W	HMGP Tier I	Y	City of Jacksonville and Dept. of Public Works	94,000	Completed, TS Fay retrofit	More than 12 months	E
	City of Jacksonville		Rights of Way (ROW) Div. GM East Yard Complex 609 St. Johns Bluff Road N.	W	HMGP Tier I	Y	City of Jacksonville and Dept. of Public Works	94,000	Completed, TS Fay retrofit	More than 12 months	E
	City of Jacksonville		ROW-GM West Yard Complex & ROW-GM West Yard Complex 2 2639 1st Street W	W	HMGP Tier I	Y	City of Jacksonville and Dept. of Public Works	94,000	Completed, TS Fay retrofit	More than 12 months	E
	City of Jacksonville		Public Buildings Division - 555 W. 44th St.	W	HMGP Tier I	Y	City of Jacksonville and Dept. of Public Works	94,000	Completed, TS Fay retrofit	More than 12 months	E
	JAXPORT	Infrastructure Improve	Masthead Lighting Tie Downs Wind	W	HMGP Tier I	Y	JAXPORT	53,000	Completed, TS Fay retrofit	More than 12 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
		nts	Retrofit - Talleyrand, Blount Island, & Dames Pt.								
	Duval County	Shelter Assessment and retrofit program	Mandarin Middle 2nd Floor Shuttering	W	HB7121	Y	DCPS	498,000	Completed, 2004 combined State Funding	36 months	E
	DCPS		Chimney Lakes Elementary 2nd floor shuttering	W	HB7121	Y	DCPS	300,000	Completed, 2004 combined State Funding	36 months	E
	DCPS		AAA High School (Atlantic Coast HS) shuttering and hurricane shelter construction	W	DCPS CIP	N	DCPS	(\$2,000,000 for mitigation features)	Completed in 2011. Applied for PDM in 2010, FEMA did not select for further review	36 months	N
	DCPS		Westview K-8 School hurricane shelter construction	W	DCPS CIP	N	DCPS	300,000 for mitigation features	Completed in 2011. Applied for PDM in 2010; FEMA did not select	36 months	N
	DCPS		Bartram Springs Elementary hurricane shelter construction	W	DCPS CIP	N	DCPS	250,000 for mitigation features	Completed in 2011. Applied for PDM in 2010; FEMA did not select	36 months	N
	DCPS		Twin Lakes EL SpNs generator	W/CID	HB7121	Y	DCPS	350,000 for special needs generator and shutters	Completed in 2010.	36 months	E
	City of Jacksonville	City Shelter Retrofit Evaluation Program	Northwest Multipurpose Center Shelter Code Plus Construction	F/SS/W	HB7121/CDBG, Jacksonville CIP	Y	City of Jacksonville/ Parks and Recreation Dept.	5,000,000 (325,000 for mitigation features)	Completed in 2010.	24 months	N
	Town of Baldwin		Town of Baldwin Community	W/WF/CID	HMGP Tier 1, Jacksonville	Y	Town of Baldwin	300,000	Completed in 2014. Used TS Debby funds for a	24 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
			Center Post Disaster Shelter		e landfill tipping fees				post disaster shelter to serve in a whole community context.		
	Jacksonville Fire and Rescue	Phased Wind Retrofit	JFRD Group 1 Fire Stations Wind Retrofit	W	HMGP Tier 1	Y	Jacksonville Fire and Rescue , Emergency Preparedness	50,000	Completed in 2010. HMGP Funds Hurricane Charley	24 months	E
	Jacksonville Fire and Rescue		JFRD Group 2 Fire Stations Wind Retrofit	W	HMGP Tier 1	Y	Jacksonville Fire and Rescue , Emergency Preparedness	200,000	Completed in 2010. Retired in 2013. HMGP Funds Hurricane Frances	36 months	E
	Jacksonville Fire and Rescue		JFRD Code Plus Construction FS 40	F/SS/W/T/CID	HMGP Tier 3	Y	Jacksonville Fire and Rescue , Emergency Preparedness	650,000 Mitigation features only	Completed in 2011. Retired in 2-12/ Groundhog Day Disaster Funds	36 months	E
Goal 6		Acquisition	Relocation	Demolition	of	Repetitive	Structures				
	City of Jacksonville		4260 Yacht Club Rd Elevation, Ortega River	F/SS/W	FMAP 2005	Y	Emergency Preparedness/Property Owner	800,000	Completed in 2010	36 Months	E
	City of Jacksonville		Clark's Fish Camp -12903 Hood Landing Road Elevation; Julington Creek	F/SS/W	FMA 2007	Y	Division of Emergency Preparedness/Property Owner	371,000	Completed in 2010	36 months	E
	City of Jacksonville		4914 Rhode Island Drive South acquisition/ demolition; Ribault River	F/SS	FMA 2007	Y	Emergency Preparedness/Property Owner	150,000	Completed in 2009	24 months	E
	City of		2811 W. Fourth	F/SS/W	SRL 2008	Y	Emergency	150,000	Completed in 2010	24 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
	Jacksonville		St. Mitigation Reconstruction; street flooding				Preparedness/Property Owner				
	City of Jacksonville		6804 Bakersfield Drive acquisition/demolition; Wills Branch Creek	F/SS	SRL 2008	Y	Emergency Preparedness/Property Owner	550,000	Completed in 2010	24 months	E
	City of Jacksonville		7080 Delaware Court acquisition demolition; Wills Branch Creek	F/SS	SRL 2008	Y	Emergency Preparedness/Property Owner	350,000	Completed in 2010	24 months	E
	City of Jacksonville		1873 Powell Place Minor Flood Control (changed to Standard Elevation); St. Johns River	F/SS/W	Previous FMAP 2005; new award - SRL 2010	Y	Emergency Preparedness/Property Owner	250,000	Completed in 2015. Change in Mitigation Alternative – increased to a standard elevation project in 2011 after DEM engineering review	36 months	E
	City of Jacksonville		6864 Bakersfield Drive acquisition/ Demolition; Wills Branch Creek	F/SS	SRL 2009	Y	Emergency Preparedness/Property Owner	250,000	Completed in 2011	24 months	E
	City of Jacksonville		6872 Bakersfield Drive acquisition Demolition; Wills Branch Creek	F/SS	SRL 2009	Y	Emergency Preparedness/Property Owner	250,000	Completed in 2011	24 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
	City of Jacksonville		6882 Bakersfield Drive acquisition Demolition; Wills Branch Creek	F/SS	RFC 2009	N	Emergency Preparedness/Property Owner	280,000	Completed in 2011	24 months	E
	City of Jacksonville		6910 Bakersfield Drive acquisition; Demolition; Wills Branch Creek	F/SS	RFC 2009	N	Emergency Preparedness/Property Owner	281,000	Completed in 2011	24 months	E
	City of Jacksonville		32 Dongalla Court Minor Flood Control, Pottsburg Creek	F/SS	SRL 2010	Y	Emergency Preparedness/Property Owner	45,000	Completed in 2011	12 months	E
	City of Jacksonville		6906 Bakersfield Drive acquisition/ demolition; Wills Branch Creek	F/SS	FMAP 2010	Y	Emergency Preparedness/Property Owner	250,000	Completed in 2012	24 months	E
	City of Jacksonville		6842 Bakersfield Drive acquisition/ demolition; Wills Branch Creek	F/SS	SRL 2010	Y	Emergency Preparedness/Property Owner	250,000	Completed in 2012	24 months	E
	City of Jacksonville		6817 and 6847 Bakersfield Drive acquisition/ Demolition; Wills Branch Creek (2	F/SS	SRL 2010	Y	Emergency Preparedness/Property Owner	555,000	Completed in 2012	24 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
			parcels)								
	City of Jacksonville		10130 Paxton Road acquisition Demolition; Trout River	F/SS	SRL 2010	Y	Emergency Preparedness/Property Owner	200,000	Completed in 2012	24 months	E
	City of Jacksonville		5180 Martha Ann Dr. Acquisition Demolition; Pottsburg Creek	F/SS	SRL 2010	Y	Emergency Preparedness/Property Owner	550,000	Completed in 2013	36 months	E
	City of Jacksonville		5138 Martha Ann Dr. Acquisition Demolition; Pottsburg Creek	F/SS	SRL 2010	Y	Emergency Preparedness/Property Owner	450,000	Completed in 2013	36 months	E
	City of Jacksonville		1580 Navaho Drive acquisition demolition; Wills Branch Creek	F/SS	RFC 2010	N	Emergency Preparedness/Property Owner	550,000	Completed in 2013	36 months	E
	City of Jacksonville		6768 Bakersfield Drive Acquisition demolition; Wills Branch Creek	F/SS	SRL 2010	Y	Emergency Preparedness/Property Owner	258,000	Completed in 2012	24 months	E
	City of Jacksonville		7048 Seneca Ave. Acquisition demolition; Wills Branch Creek	F/SS	SRL 2010	Y	Emergency Preparedness/Property Owner	260,000	Completed in 2012	24 months	E
	City of Jacksonville		3915 San Jose Blvd. Acquisition/	F/SS	SRL 2010	Y	Emergency Preparedness/Property	339,000	Completed in 2012	24 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
			Demolition; St. Johns River /San Marco area				Owner				
DEFERRED											
	American Red Cross of NE Florida	Wind Retrofit Headquarters 851 Riverside	ARC Jacksonville Headquarters Retrofit	W	Post Disaster Funding	Y	American Red Cross/EPD	70,000+	Deferred – not ranked high enough in FEMA Benefit Cost Ratio	More than 12 months	E
	Duval County	Incentive Mechanisms	Establish procedure for mitigation category in Capital Improvements Elements	W/SS/WF/ACC	Not known	Not known	FL Office of Insurance Regulation /Private Insurance companies, Florida Windstorm Underwriters insurance	Not Known	Deferred, change in flood maps, change in hurricane evacuation zones require more study	More than 12 months	N/A
	Duval County		Discount program on property owners insurance for mitigation construction/ retrofit features	W/SS/WF/ACC	Not Known	Not Known	FL Office of Insurance Regulation /Private Insurance companies, Florida Windstorm Underwriters insurance	Not Known	Deferred, changes require more study	More than 12 months	N/A
	Florida State College at Jacksonville (FSCJ)	Critical infrastructure hardening	FSCJ Campus Buildings – North Campus Health, and Bartram Springs	W	Multiple/ Local/ State/ Federal (include post disaster funding)	Y	FSCJ	1,000,000+	Deferred – capital campaign halted	More than 12 months	N
	Florida State College at	Critical infrastructure	FSCJ Campus Buildings –	W	Multiple/ Local/	Y	FSCJ	1,000,000+	Deferred – capital campaign halted	More than 12 months	N

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
	Jacksonville (FSCJ)	e hardening	North Campus Health, and Bartram Springs		State/ Federal (include post disaster funding)						
	DELETED PROJECTS										
	City of Jacksonville Beach	Generator project	portable generators for lift stations	F/SS/CID	Post Disaster Funding	Y	Jacksonville Beach	Not Known	Deleted at request of City of Jacksonville Beach	More than 12 months	E
	City of Jacksonville Beach	Alternate EOC build-out	emergency generator for alternate EOC	F/SS/CID	Post Disaster Funding	Y	Jacksonville Beach	100,000	Not yet submitted	More than 12 months	E
	City of Jacksonville Beach	Data Records Retention	City-wide imaging of records	F/SS/CID	Post Disaster Funding	Y	Jacksonville Beach	300,000	Not yet submitted	More than 12 months	
	City of Atlantic Beach	Public Safety Building	Code plus construction of new Public Safety Building	F/SS/W/T/WF	Pre Disaster Mitigation	Y	Atlantic Beach and Director of Public Safety	1,500,000	Deleted at request of City of Atlantic Beach, when project did not meet FEMA criteria for BCR	More than 12 months	N
	JEA		Retrofit water wells - alternative electric source	F/SS/W	Post Disaster Funding	Y	JEA	400,000	Project deleted at JEA's request	More than 12 months	E
	City of Jacksonville		6850 Bakersfield Drive acquisition/ demolition; Wills Branch Creek	F/SS	SRL 2010	Y	Division of Emergency Preparedness/Property Owner	200,000	Never started. Property owner abandoned the project. Bank assumed ownership default. No owner voluntary participation. Delete from LMS	More than 12 months	E
	City of Jacksonville		5123 Martha Ann Drive minor flood control;	F/SS	FMAP 2010	Y	Division of Emergency Preparedness/Property	256,000	After consultation, property owner declined to complete	More than 12 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
			Pottsburg Creek				Owner		voluntary participation forms. Delete from LMS		
	City of Jacksonville		6889 Bakersfield Drive, Wills Branch Creek Acquisition/ demolition	F/SS	FEMA SRL program	Y	Jacksonville/ EPD/property owner	205,000	Delete – property owner sold property. New owner will not accept the FEMA award offer.	24 months	E
	City of Jacksonville		5104 Martha Ann Drive Minor Flood Control; Pottsburg Creek	F/SS	FMAP 2010	Y	Emergency Preparedness/Property Owner	320,000	After consultation, property owner declined to complete voluntary participation forms. Delete from LMS	More than 12 months	E
	City of Jacksonville		4902 Rhode Island Drive acquisition/ demolition; Ribault River	F/SS	FMAP 2010	Y	Emergency Preparedness/Property Owner	275,000	Submitted to the State; BCR less than 1.0. Delete from LMS.	More than 12 months	E
	City of Jacksonville		9653 Carbondale Drive East Elevation, demolition; Trout River	F/SS/W	FMAP 2010	Y	Emergency Preparedness/Property Owner	209,000	Preliminary review; BCR less than 1.0 Delete from LMS	More than 12 months	E
	City of Jacksonville		4130 Leonard Circle acquisition/ demolition; street flooding Moncrief basin	F/SS	FMAP 2010	Y	Emergency Preparedness/Property Owner	130,000	Preliminary review; BCR less than 1.0 Delete from LMS	More than 12 months	E
	City of Jacksonville		4347 Ortega Farms Circle Acquisition/ Demolition; Ortega River	F/SS	SRL 2010	Y	Emergency Preparedness/Property Owner	1,300,000	Preliminary review; BCR less than 1.0 Delete from LMS	More than 12 months	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
	City of Jacksonville		1231 Ribault Circle Dr. Acquisition/ Demolition; Ribault River	F/SS	FMAP	Y	Emergency Preparedness/Property Owner	275,000	Preliminary review; BCR less than 1.0 Delete from LMS	More than 12 months	E
	City of Jacksonville		1237 Ribault Circle Dr Acquisition; Ribault River	F/SS	FMAP	Y	Emergency Preparedness/Property Owner	275,000	Preliminary review; BCR less than 1.0 Delete from LMS	More than 12 months	E
	City of Jacksonville		2748 Sam Hardwick Blvd. Acquisition/ demolition; street flooding after TS Fay	F/SS	FMAP	Y	Emergency Preparedness/Property Owner	202,000	Preliminary review; BCR less than 1.0 Delete from LMS	More than 12 months	E
	City of Jacksonville		6910 New Kings Road Minor Flood Control	F/SS	FMAP	Y	Emergency Preparedness/Property Owner	136,000	Preliminary review; BCR less than 1.0 Delete from LMS	More than 12 months	E
	City of Jacksonville		1430 Belleshore Circle acquisition/ Demolition; St. Johns River	F/SS	FMAP	Y	Emergency Preparedness/Property Owner	Not Known	After consultation, property owner declined to complete voluntary participation forms. Delete from LMS	More than 12 months	E
	City of Jacksonville		4041 Sunbeam Road acquisition	F/SS	Pre or post disaster funds	Y	Emergency Preparedness/Property Owner	Not Known	Deferred – no action from property owner or Department of Public Works	More than 12 months	E
	City of Jacksonville		7038 Seneca Ave. Acquisition demolition; Wills Branch Creek	F/SS	FMAP	Y	Emergency Preparedness/Property Owner	250,000	Preliminary review; BCR less than 1.0 Delete from LMS	More than 12 months	E
	JEA	Community	Develop site	CID/HazMat	Not	Not Known	JEA/	Not Known	Deleted – changed	JEA and EPD	E

Project Number	Jurisdiction (Location)	Project Name	Project Description	Hazards To Be Mitigated	Funding Source	Match (if applicable)	Responsible Agency	Estimated Cost	Status (New/Completed/Ongoing/Deferred /If Deferred – Why?)	Completion Timeframe	Mitigate New or Existing? (N/E)
		Response Plans	specific community response plans for potential water & wastewater facility chemical release		Known		Emergency Preparedness		of approach	modified strategy to address this vulnerability, using Duty Watch Officer and State Warning Point for monitoring of conditions	
	Episcopal Diocese		Beaver St. Enterprise Center Retrofit	W	HMGP Tier III	Y	City of Jacksonville/ Episcopal Diocese of Florida/Fresh Ministries	150,000	Deleted. Applied for HMGP Tier III funds for Hurricane Isaac. DEM did not select for further review.	More than 12 months	E

Legend : See Glossary for Terms

D. Duval County Completed, Deleted and Deferred Projects Summary

Progress through the completion of 2010 Mitigation Current Initiatives has been made in the following areas:

1. Hurricane risk shelter capacity increased in Duval County to offset the Hurricane Flood/Storm Surge/Wind hazard vulnerability. More than 12,000 hurricane risk shelter spaces have been added since 2007 in Duval County to offset a hurricane shelter capacity deficit as recorded by the State of Florida DEM. Through FEMA post-disaster funding in the Hazard Mitigation Grant Program (HMGP), Community Development Block Grant (CDBG) funds and other City of Jacksonville and Duval County Public Schools (DCPS) funding sources, DCPS has hardened new construction, and retrofitted existing schools outside of established evacuation zones, to increase Jacksonville's resiliency in disaster in sheltering our most vulnerable citizens. New shelter partners are emerging with one shelter construction project at the Florida State College at Jacksonville (formerly known as the Florida Community College at Jacksonville) and the construction of a City of Jacksonville Parks and Recreation Department Center, the Legends, in an area of Jacksonville with a high percentage of vulnerable population. Duval County remains a shelter-deficient county.
2. Critical infrastructure through Jacksonville Fire and Rescue Department fire stations and City of Jacksonville, and City of Jacksonville Beach, successfully shuttered critical buildings needed in response to disaster to minimize hazards from wind. JEA continues to make progress in burying underground electrical lines, where feasible. This initiative reaped huge dividends for the City of Jacksonville, after the rare EF2 Tornado event in Arlington in 2013, as JEA damages were assessed to be below \$20,000 for the event, due to the buried power lines in the district.
3. Stormwater Improvements have been commissioned at City of Jacksonville Beach, City of Atlantic Beach, City of Neptune Beach, JEA, and Town of Baldwin, to improve stormwater runoff conditions and minimize drainage issues from flooding and storm surge hazards. More than 95 percent of the City of Atlantic Beach's drainage system has been replaced through effective use of Hazard Mitigation Program Grant (HMGP) Tier I funding after the disaster declarations of Tropical Storm Fay in 2008 and Tropical Storm Debby in 2012.
4. Effective 2005, and continuing to present day, the Consolidated City of Jacksonville has successfully worked with the State of Florida Division of Emergency Management (DEM), the Federal Emergency Management Agency (FEMA) and the National Flood Insurance Program (NFIP) to mitigate flooding hazards through the acquisition, elevation or relocation mitigation alternative. Utilizing such programs as the Flood Mitigation Assistance Program (FMAP), Repetitive Flood Claims (RFC) and Severe Repetitive Loss (SRL), the City has completed numerous projects across different mitigation alternatives, including standard elevations, minor flood control, acquisition and demolition of structures and one code-plus fire station mitigation project. To date, the City of Jacksonville has completed the only mitigation project received by a business in Florida, a popular seafood restaurant. The incorporation of the business community into hardening and elevation strategies would appear to be a promising mitigation approach.

The economic downturn beginning in 2008, bottomed out in 2011. Many projects introduced in the LMS after the 2010 Update, were deferred or discontinued due to the inability of a jurisdiction to identify a funding source for even the match dollars to apply for pre- or post-disaster funding. As the County moves into 2015, economic conditions and the tax base are beginning to demonstrate recovery; hopefully allowing jurisdictions to pursue the many worthwhile projects introduced in the past five years.

SECTION V - Funding Sources

A. Funding Sources

The following section, Potential Funding Sources, provides current information on sources of available funding that is used for hazard mitigation projects. The section includes the name of the grant, the sponsoring agency, type of assistance available and eligibility requirements as well as the website, if available. As additional or updated information becomes available the list will be amended accordingly.

B. Potential Funding Sources

State and federal agencies provide funds for a variety of local programs that may be used to support development of the Local Mitigation Strategy. The following is a list and description of just a few of the programs available. This list is not exhaustive, and therefore much more effort needs to be put in to examine all of the opportunities that exist. Communities in Duval County should be able to apply for many of the funding opportunities.

Table 30: Potential Funding Sources

Funding Source	Purpose	Contact	Application period
Federal grant programs	Certain programs enabling small businesses, stormwater utilities, fire departments and educational entities to fund construction. Federal grant opportunities can be found at: http://www.grants.gov/web/grants/home.html https://www.cfda.gov/	Varies by agency	Varies by grant
Assistance to Firefighters Grant (AFG)	The Assistance to Firefighters Grant (AFG) is to meet the firefighting and emergency response needs of fire departments and nonaffiliated emergency medical service organizations. Since 2001, AFG has helped firefighters and other first responders to obtain critically needed equipment, protective gear, emergency vehicles, training and other resources needed to protect the public and emergency personnel from fire and related hazards. https://www.fema.gov/welcome-assistance-firefighters-grant-program https://www.fema.gov/fire-prevention-safety-grants		Currently closed
Beach Management Funding Assistance (BMFA) Program (Formerly the Beach Erosion Control Program - BECP)	To develop and implement a long term regional proactive beach management program for the state of Florida. The primary vehicle for implementing the beach management planning recommendations is the Florida Beach Management Funding Assistance Program, which is a program established for the purpose of working in concert with local, state and federal governmental entities to achieve the protection, preservation and restoration of the coastal sandy beach resources of the state. http://www.dep.state.fl.us/beaches/programs/becp/	Northeast District 8800 Baymeadows Way West, Suite 100 Jacksonville, Florida 32256 (904) 256-1700 (904) 256-1588 fax	Closed for current year

Funding Source	Purpose	Contact	Application period
Brownfields Economic Development Initiative	<p>The Brownfields Economic Development Initiative (BEDI) is a key competitive grant program that HUD administers to stimulate and promote economic and community development. BEDI is designed to assist cities with the redevelopment of abandoned, idled and underused industrial and commercial facilities where expansion and redevelopment is burdened by real or potential environmental contamination. BEDI grants must be used in conjunction with a new Section 108-guaranteed loan commitment. Section 108 is the loan guarantee provision of the Community Development Block Grant (CDBG) Program. The BEDI funds minimize the potential loss of future CDBG allocations.</p> <p>https://www.hudexchange.info/bedi/ http://www.epa.gov/ogd/training/resources_for_communities/community_grants_table_a.htm</p>		November 2015
Catalog of Federal Domestic Assistance (CFDA)	<p>Catalog of Federal Domestic Assistance (CFDA) provides a full listing of all Federal programs available to State and local governments (including the District of Columbia); federally-recognized Indian tribal governments; Territories (and possessions) of the United States; domestic public, quasi-public, and private profit and nonprofit organizations and institutions; specialized groups; and individuals.</p> <p>https://www.cfda.gov/</p>		
Citizen Corps	<p>The mission of Citizen Corps is to harness the power of every individual through education, training, and volunteer service to make communities safer, stronger, and better prepared to respond to the threats of terrorism, crime, public health issues, and disasters of all kinds.</p> <p>http://www.dhs.gov/citizen-corps</p>		

Funding Source	Purpose	Contact	Application period
Coastal Partnership Initiative	<p>Through the Coastal Partnership Initiative, the Florida Coastal Management Program makes federal (NOAA) funds available, on a competitive basis, to Florida's 35 coastal counties and all municipalities within their boundaries that are required to include a coastal element in their comprehensive plan. Florida's public colleges and universities, regional planning councils, national estuary programs and nonprofit groups may also apply for CPI funds if an eligible local government agrees to participate as a partner.</p> <p>http://www.dep.state.fl.us/cmp/grants/fcpmgrants.htm</p>	<p>Department of Environmental Protection Florida Coastal Management Program, MS 235 3900 Commonwealth Boulevard Tallahassee, Florida 32399-3000 Phone: (850) 245-2094</p>	
Community Assistance Program (CAP) – State Support Services Element	<p>This program provides funding to states to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities. In this way, CAP-SSSE helps to:</p> <ul style="list-style-type: none"> •Ensure that the flood loss reduction goals of the NFIP are met, •Build state and community floodplain management expertise and capability and •Leverage state knowledge and expertise in working with their communities. <p>The National Flood Insurance Act of 1968 prohibits the Director from providing flood insurance in a community unless that community adopts and enforces floodplain management measures that meet or exceed minimum criteria in 44 CFR Part 60.3. These floodplain management measures can take the form of floodplain management ordinances, building codes or zoning provisions. https://www.fema.gov/floodplain-management/community-assistance-program-state-support-services-element https://www.fema.gov/floodplain-management/community-assistance-program-state-support-services-element</p>	<p>R4 Mitigation Division CAP-SSSE Coordinator 770.220.5471</p>	<p>See Funding Opportunity Announcement (FOA) on www.grants.gov</p>

Funding Source	Purpose	Contact	Application period
Economic Development Administration	<p>Following a disaster, EDA responds by first coordinating with its sister bureaus and other agencies engaged in disaster recovery efforts to share information and data on the ramifications of the disaster. In addition, EDA reaches out to its economic development practitioner network (particularly its network of Economic Development Districts (EDD) District Organizations) to collect on-the-ground information on the economic impacts of the disaster event.</p> <p>http://www.eda.gov/about/disaster-recovery.htm http://www.eda.gov/funding-opportunities/</p>	<p>401 West Peachtree Street, NW Suite 1820 Atlanta, GA 30308-3510 P: (404) 730-3023</p>	
Environmental Protection Agency	<p>Clean Water Act (CWA) established the Section 319 Nonpoint Source Management Program. Section 319 addresses the need for greater federal leadership to help focus state and local nonpoint source efforts. Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects.</p> <p>http://water.epa.gov/polwaste/nps/cwact.cfm Link to other watershed funding sources: http://water.epa.gov/aboutow/owow/funding.cfm</p>	<p>U.S. Environmental Protection Agency Office of Water (4100T) 1200 Pennsylvania Avenue, N.W. Washington, D.C. 20460</p>	
Federal Highway Administration (FHWA) Transportation Enhancements	<p>The Transportation Enhancement (TE) Activities offer funding opportunities to help expand transportation choices and enhance the transportation experience through 12 eligible TE activities related to surface transportation, including pedestrian and bicycle infrastructure and safety programs, scenic and historic highway programs, landscaping, historic preservation, and environmental mitigation. TE projects must relate to surface transportation and must qualify under one or more of the 12 eligible categories.</p> <p>http://www.fhwa.dot.gov/environment/transportation_enhancements/brief.cfm</p>	<p>State TAP Manager ph: 813-975-6427 Florida Department of Transportation 11201 N. Malcolm McKinley Dr. Tampa, FL 33612</p>	

Funding Source	Purpose	Contact	Application period
Federal Transit Administration (FTA) Grant Programs	Moving Ahead for Progress in the 21st Century (MAP-21) provides capital funds for fixed guideways (new starts, extensions, and rehabilitation), bus procurements, and acquisition or rehabilitation of major facilities. http://www.fta.dot.gov/grants.html	FTA Region 4 Office 230 Peachtree, NW Suite 800 Atlanta, GA 30303 Telephone: (404) 865-5600 Fax: (404) 865-5605	
Federal Transit Administration (FTA) Urbanized Area Formula Program (5307)	Funding for capital investments in bus and bus-related activities such as replacement of buses, overhaul of buses, rebuilding of buses, crime prevention and security equipment and construction of maintenance and passenger facilities; and capital investments in new and existing fixed guideway systems including rolling stock, overhaul and rebuilding of vehicles, track, signals, communications, and computer hardware and software. All preventive maintenance and some Americans with Disabilities Act complementary paratransit service costs http://www.fta.dot.gov/grants/13093_3561.html	FTA Region 4 Office 230 Peachtree, NW Suite 800 Atlanta, GA 30303 Telephone: (404) 865-5600 Fax: (404) 865-5605	
Florida Division of Emergency Management Preparedness and Assistance Trust Fund (EMPA) Competitive Grant Program	In the past this This program has provided technical and financial resources to homeowners for hurricane retrofitting. Currently there is no funding for the program http://www.floridadisaster.org/Grants/index.htm#Competitive Grant		Not currently accepting grant applications.
Fire Prevention and Safety (FP&S) Grants	The Fire Prevention and Safety (FP&S) Grants are part of the Assistance to Firefighters Grants (AFG) and support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to reduce injury and prevent death among high-risk populations. In 2005, Congress reauthorized funding for FP&S and expanded the eligible uses of funds to include Firefighter Safety Research and Development.	https://www.fema.gov/fire-prevention-safety-grants	Application period is tentatively scheduled to begin on March 16, 2015 and end on April 17, 2015.

Funding Source	Purpose	Contact	Application period
Fish and Wildlife Service Land Acquisition Planning (Habitat Restoration Programs)	<p>Numerous laws, not including refuge-specific legislation, give the Service authority for acquisition of land and water to conserve fish, plant, and wildlife habitat. The resource purposes of these laws include migratory birds, wetlands, endangered species, fisheries, wilderness, and general fish and wildlife habitat. The Refuge Recreation Act added wildlife-oriented recreation as an additional purpose for acquisition. The 1997 Refuge Improvement Act charges the Secretary of the Interior with planning and directing the growth of the System to accomplish its mission, to contribute to Ecosystem conservation of the United States, to complement state and other agency efforts, and to increase support from partners and the public.</p> <p>http://www.fws.gov/southeast/planning/LandAcquisitionHome.html</p>	http://www.fws.gov/northflorida/	
Flood Mitigation Assistance Program (FMA)	<p>The Flood Mitigation Assistance (FMA) program provides funds for projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP) on an annual basis.</p> <p>There are three types of FMA grants available to applicants:</p> <ul style="list-style-type: none"> •Planning Grants - to prepare flood mitigation plans •Project Grants - to implement measures to reduce flood losses, such as elevation, acquisition or relocation of NFIP-insured structures •Management Cost Grants - for the grantee to help administer the FMA program and activities <p>https://www.fema.gov/flood-mitigation-assistance-program</p>	<p>FEMA Regional Office Federal Emergency Management Agency 3003 Chamblee Tucker Road Atlanta, GA 30341 Main Number: 770-220-5200 Fax Number: 770-220-5230</p>	<p>See Funding Opportunity Announcement (FOA) on www.grants.gov</p>

Funding Source	Purpose	Contact	Application period
FEMA's Homeland Security Grant Program (HSGP)	<p>HSGP plays an important role in the implementation of the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal (the Goal) of a secure and resilient Nation. The building, sustainment, and delivery of these core capabilities are not exclusive to any single level of government, organization, or community, but rather, require the combined effort of the whole community. The FY 2014 HSGP supports core capabilities across the five mission areas of Prevention, Protection, Mitigation, Response, and Recovery based on allowable costs. HSGP is comprised of three interconnected grant programs:</p> <ul style="list-style-type: none"> •State Homeland Security Program (SHSP) •Urban Areas Security Initiative (UASI) •Operation Stonegarden (OPSG) <p>Together, these grant programs fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, and management and administration. https://www.fema.gov/fy-2014-homeland-security-grant-program-hsgp</p>	<p>Federal Emergency Management Agency U.S. Department of Homeland Security 500 C Street SW, Washington, DC 20472 General Operator: (202) 646-2500</p>	
FEMA Preparedness (Non-Disaster) Grants and other federal grants	<p>https://www.fema.gov/preparedness-non-disaster-grants www.Grants.Gov http://www.dhs.gov/how-do-i/find-and-apply-grants</p>	<p>Grants.gov Customer Support Hotline at (800) 518-4726.</p>	

Funding Source	Purpose	Contact	Application period
FEMA National Flood Insurance Program (NFIP)	The program is based on an agreement between local communities and the federal government. Federal flood insurance is available within the community if the community implements floodplain management measures to reduce future flood risks. The program is administered in Florida by the Department of Community Affairs (DCA). DCA also assists local governments in joining the Community Rating System program that may result in reduced annual flood insurance premiums. https://www.fema.gov/national-flood-insurance-program	P.O. Box 1046 Zephyrhills, FL 33539-1046 W- 813-788-2624 C-813-404-8782 F- 813-788-2710 Region IV Liaison P. O. Box 10 Buford, GA 30515 W- 770-614-0865 C- 813-767-5355	
FEMA National Hurricane Program – Mitigating Against Hurricane Losses	Mitigation against hurricane losses can lessen the impacts these powerful storms have on people's lives and property through damage prevention and proper insurance. Through measures such as building safely within hurricane vulnerable areas and creating and enforcing effective building codes, the impact on lives and communities is greatly reduced. Web site provides links to other various opportunities. https://www.fema.gov/region-iii-mitigation-division/national-hurricane-program	Federal Emergency Management Agency 3003 Chamblee Tucker Road Atlanta, GA 30341	
Florida Division of Emergency Management	The Bureau of Mitigation administers several federal mitigation grant programs including the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Flood Mitigation Assistance Program, Severe Repetitive Loss Program and the Repetitive Flood Claims Program. The Bureau also administers the Residential Construction Mitigation Program, a state mitigation grant program. http://www.floridadisaster.org/Mitigation/index.htm		
Florida Department of Environmental Protection	List various programs provided http://www.dep.state.fl.us/mainpage/programs/default.htm		

Funding Source	Purpose	Contact	Application period
Florida Forever	Florida's premier conservation and recreation lands acquisition program, a blueprint for conserving natural resources and renewing Florida's commitment to conserve the state's natural and cultural heritage. Florida Forever replaces Preservation 2000 (P2000), the largest public land acquisition program of its kind in the United States. With approximately 9.9 million acres managed for conservation in Florida, more than 2.5 million acres were purchased under the Florida Forever and P2000 programs. http://www.dep.state.fl.us/lands/fl_forever.htm	3900 Commonwealth Blvd. MS 100 Tallahassee, FL 32399 Phone: 850-245-2555 Fax: 850-245-2572 http://www.dep.state.fl.us/lands/contacts.htm	
Florida League of Cities online resource book	Florida League of Cities, Inc., Financial and Technical Assistance for Florida Municipalities contain information on grants, loans, technical assistance and other resources available to Florida municipalities. http://www.floridaleagueofcities.com/Publications.aspx?CNID=8942		
Florida Fish & Wildlife Conservation Commission	Various projects and grants available to restore and protect wildlife management area including coastal habitats. Grants also available for boating infrastructure and abandoned vessel removal. http://myfwc.com/		Based on available funding.
Florida Inland Navigation District (FIND) Waterway Assistance Program & Cooperative Assistance Program	Financially cooperating with state and regional governments to alleviate problems associated with the Atlantic Intracoastal Waterway. Waterway related projects must be located on natural, navigable waterways within the district. Eligible waterway related projects include navigation channel dredging, channel markers, navigation signs or buoys, boat ramps, docking facilities, fishing & viewing piers, waterfront boardwalks, inlet management, environmental education, law enforcement equipment, boating safety programs, beach re-nourishment, dredge material management, environmental mitigation, and shoreline stabilization. http://www.aicw.org/index.jsp		Eligible governmental agencies will be notified of the application process and provided an application package on January 1st of each year. Applications are then due at the District office by April 1st.

Funding Source	Purpose	Contact	Application period
Firehouse Subs	Firehouse Subs Public Safety Foundation is dedicated to improving the life-saving capabilities of first responders and public safety organizations in communities served by Firehouse Subs by providing funding, resources and support http://www.firehousesubs.com/support-our-foundation/	http://grants.firehousesubs.com/	
Hazard Mitigation Grant Program (HMGP)	The Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. https://www.fema.gov/hazard-mitigation-grant-program	FEMA Regional Office Federal Emergency Management Agency 3003 Chamblee Tucker Road Atlanta, GA 30341 Main Number: 770-220-5200 Fax Number: 770-220-5230	See Funding Opportunity Announcement (FOA) on www.grants.gov
Hospital Preparedness Program (HPP)	Provides leadership and funding through grants and cooperative agreements to States, territories, and eligible municipalities to improve surge capacity and enhance community and hospital preparedness for public health emergencies. To date, states, territories, and large metropolitan areas have received HPP grants totaling over \$4 billion to help Healthcare Coalitions, hospitals and other healthcare organizations strengthen medical surge and other Healthcare Preparedness Capabilities across the nation. http://www.phe.gov/PPAREDNESS/PLANNING/HPP/Pages/default.aspx	U.S. Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response 200 Independence Avenue, S.W. Room 638G Washington, D.C. 20201 HPP@hhs.gov	
HUD Community Development Block Grant Entitlement Program	Program provides annual grants on a formula basis to entitled cities and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons. The program is authorized under Title 1 of the Housing and Community Development Act of 1974, Public Law 93-383, as amended; 42 U.S.C.-5301 et seq. https://www.hudexchange.info/cdbg-entitlement/cdbg-entitlement-program-eligibility-requirements/	HUD Jacksonville Field Office Charles Bennett Federal Building, 400 W. Bay Street, Suite 1015 Jacksonville, FL 32202 904-208-6077	

Funding Source	Purpose	Contact	Application period
HUD Community Development Block Grant Disaster Recovery Program	Provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations. In response to Presidentially declared disasters, Congress may appropriate additional funding for the Community Development Block Grant (CDBG) program as Disaster Recovery grants to rebuild the affected areas and provide crucial seed money to start the recovery process. Since CDBG Disaster Recovery (CDBG-DR) assistance may fund a broad range of recovery activities, HUD can help communities and neighborhoods that otherwise might not recover due to limited resources https://www.hudexchange.info/cdbg-dr/	HUD Jacksonville Field Office Charles Bennett Federal Building, 400 W. Bay Street, Suite 1015 Jacksonville, FL 32202 904-208-6077	
HUD State Community Development Block Grant Program	Under the State CDBG Program, states award grants to smaller units of general local government that develop and preserve decent affordable housing, to provide services to the most vulnerable in our communities, and to create and retain jobs. Annually, each State develops funding priorities and criteria for selecting projects. https://www.hudexchange.info/cdbg-state/state-cdbg-program-eligibility-requirements/	HUD Jacksonville Field Office Charles Bennett Federal Building, 400 W. Bay Street, Suite 1015 Jacksonville, FL 32202 904-208-6077	
HUD HOME Investment Partnerships Program (HOME)	Provides formula grants to States and localities that communities use - often in partnership with local nonprofit groups - to fund a wide range of activities including building, buying, and/or rehabilitating affordable housing for rent or homeownership or providing direct rental assistance to low-income people. HOME is the largest Federal block grant to state and local governments designed exclusively to create affordable housing for low-income households http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/programs/home	HUD Jacksonville Field Office Charles Bennett Federal Building, 400 W. Bay Street, Suite 1015 Jacksonville, FL 32202 904-208-6077	

Funding Source	Purpose	Contact	Application period
Office Depot Foundation Listen Learn Care	Office Depot is known throughout the world as a company with a heart. Throughout our history, we have distinguished ourselves through our support of charitable organizations and worthy causes on a local and national scale. We also continue our legacy of helping out when disasters strike, and doing what we can not only to speed the process of rebuilding, but also to mitigate the impact of future disasters http://officedepotfoundation.org/	http://officedepotfoundation.org/?page_id=418	
Partners for Fish & Wildlife program	Restores, improves, and protects fish and wildlife habitat on private lands through alliances between the U.S. Fish and Wildlife Service, other organizations, and individuals, while leaving the land in private ownership. http://www.fws.gov/southeast/es/partners/	U.S. Fish and Wildlife Service Partners for Fish & Wildlife Program 1875 Century Boulevard Atlanta, Georgia 30345 (404) 679-7138	
Partnership for Sustainable Communities	The Partnership for Sustainable Communities works to coordinate federal housing, transportation, water, and other infrastructure investments to make neighborhoods more prosperous, allow people to live closer to jobs, save households' time and money, and reduce pollution. The partnership agencies incorporate six principles of livability into federal funding programs, policies, and future legislative proposals. http://www.sustainablecommunities.gov/	Office of Safety, Energy and the Environment Asst. Secretary for Transportation Policy 1200 New Jersey Ave SE Washington, DC 21509. United States livability@dot.gov Phone: 202-366-4416	
Payments in Lieu of Taxes (PILT)	Payments help local governments carry out such vital services as firefighting and police protection, construction of public schools and roads, and search-and-rescue operations. The payments are made annually for tax-exempt Federal lands administered by the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service (all agencies of the Interior Department), the U.S. Forest Service (part of the U.S. Department of Agriculture), and for Federal water projects and some military installations. PILT payments are one of the ways the Federal Government can fulfill its role of being a good neighbor to local communities.		

	http://www.doi.gov//pilt/index.cfm		
Funding Source	Purpose	Contact	Application period
Pre-Disaster Mitigation Program (PDM)	The Pre-Disaster Mitigation (PDM) program provides funds for hazard mitigation planning and projects on an annual basis. The PDM program was put in place to reduce overall risk to people and structures, while at the same time, also reducing reliance on federal funding if an actual disaster were to occur. https://www.fema.gov/pre-disaster-mitigation-grant-program	FEMA Regional Office Federal Emergency Management Agency 3003 Chamblee Tucker Road Atlanta, GA 30341 Main Number: 770-220-5200 Fax Number: 770-220-5230	See Funding Opportunity Announcement (FOA) on www.grants.gov
Residential Construction Mitigation Program (RCMP)	Program for homeowners to improve the wind resistance of residences through loans, subsidies, grants, demonstration projects, direct assistance, and cooperative programs with local and federal governments. http://www.floridadisaster.org/mitigation/rcmp/#products		
Rivers, Trails and Conservation Assistance Program	Extends and expands the benefits of the National Park Service throughout the nation to connect all Americans to their parks, trails, rivers, and other special places. Our staff helps community groups, nonprofits, state and local governments, and tribes plan parks and trails, conserve and improve access to rivers and natural areas, and create recreation opportunities through locally led partnerships. http://www.nps.gov/orgs/rtca/index.htm	RTCA, Florida Field Office 5342 Clark Rd., PMB 123 Sarasota, FL 34233 Fax (941) 373-9067 (941) 685-5912	
Staffing for Adequate Fire and Emergency Response Grants (SAFER)	The Staffing for Adequate Fire and Emergency Response Grants (SAFER) was created to provide funding directly to fire departments and volunteer firefighter interest organizations to help them increase or maintain the number of trained, "front line" firefighters available in their communities. The goal of SAFER is to enhance the local fire departments' abilities to comply with staffing, response and operational standards established by the NFPA (NFPA 1710 and/or NFPA 1720). For	Regional Fire Program Specialist Assistance to Firefighters Grant Program Federal Regional Center 436 South Pinetree Blvd. Thomasville, GA 31792 Ph: (229) 225-4965 Fax: (229) 225-4966	

	details visit http://www.nfpa.org/freeaccess		
Funding Source	Purpose	Contact	Application period
State Revolving Fund (SRF) Florida Department of Environmental Protection	Provides financial savings for projects that benefit the environment, including protection of public health and conservation of local watersheds. Federal and state contributions fund loans for a wide variety of water quality projects including all types of stormwater, watershed protection or restoration, and estuary management projects, as well as more traditional municipal wastewater treatment projects including water reuse and conservation projects. http://www.dep.state.fl.us/water/wff/index.htm	Drinking Water State Revolving Loan Program 2600 Blair Stone Road, MS 3505 Tallahassee, FL 32399-2400 P Clean Water State Revolving Fund Loan Program 2600 Blair Stone Road, MS 3505 Tallahassee, FL 32399-2400	
Superfund Amendments and Reauthorization Act (SARA), Title III	Provides funding for training in emergency planning, preparedness, mitigation, response, and recovery capabilities associated with hazardous chemicals. Individuals who would be eligible for this training include public officials, fire and police personnel, medical personnel, first responders, and other tribal response and planning personnel. Funding is available to federally recognized Tribal Nations. https://www.fema.gov/grants-administration/superfund-amendments-and-reauthorization-act-sara-title-iii		
Tax Incentives for Preserving Historic Properties	The Federal Historic Preservation Tax Incentives program encourages private sector investment in the rehabilitation and re-use of historic buildings. http://www.ncshpo.org/ http://www.nps.gov/tps/tax-incentives.htm	Division of Historical Resources 500 South Bronough Street R.A. Gray Building, Room 305 Tallahassee, FL 32399-0250 Phone: 850-245-6300	
U.S. Army Corps of Engineers (USACE) Shoreline Erosion Control Projects	Development and Demonstration Program (Section 227 Program) is aimed at advancing the state-of-the-art in coastal shoreline protection	Coastal and Hydraulics Laboratory Engineer Research and Development Center	

	http://chl.erdc.usace.army.mil/chl.aspx?p=s&a=ARTICLES;139	3909 Halls Ferry Road Vicksburg, MS 39180 Email: chl-info@erdc.usace.army.mil	
Funding Source	Purpose	Contact	Application period
U.S. Army Corps of Engineers (USACE) Aquatic Ecosystem Restoration	The Corps of Engineers can carry out aquatic ecosystem restoration and protection projects. Such projects generally include manipulation of the hydrology in and along bodies of water, including wetlands and riparian areas. A project is adopted for construction only after a detailed investigation determines that the project will improve the quality of the environment and is in the best interest of the public. http://www.mvr.usace.army.mil/BusinessWithUs/OutreachCustomerService/EcosystemRestoration/Section206.aspx	cemvr-outreach-web@usace.army.mil.	
U.S. Army Corps of Engineers (USACE) Flood Plain Management Services	The Corps of Engineers can provide General Technical Services: The program develops or interprets site-specific data on obstructions to flood flows; flood formation and timing; flood depths or stages; floodwater velocities; and the extent, duration, and frequency of flooding. It also provides information on natural and cultural floodplain resources before and after the use of floodplain management measures. General Planning Guidance: On a larger scale, the program provides assistance and guidance in the form of "Special Studies" on all aspects of floodplain management planning, including the possible impacts of off-floodplain land use changes on the physical, socio-economic, and environmental conditions of the floodplain. Special Studies are accomplished at 100% Federal cost. However, funding for these studies is very limited and competitive. http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/WaysWeHelp.aspx	Flood Control Section U.S. Army Corps of Engineers, Jacksonville District P.O. Box 4970 Jacksonville, Florida 32232-0019 Chief, Flood Control Section 904-232-2459	

Funding Source	Purpose	Contact	Application period
U.S. Army Corps of Engineers (USACE) Planning Assistance to States	Section 22 of the Water Resources Development Act (WRDA) of 1974, as amended, provides authority for the Corps of Engineers to assist the States, local governments, and other non-Federal entities, in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. Section 208 of the Water Resources Development Act of 1992 amended the WRDA of 1974 to include Native American Tribes as equivalent to a State. http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/WaysWeHelp.aspx	U.S. Army Corps of Engineers, Jacksonville District P.O. Box 4970 Jacksonville, Florida 32232-0019	
U.S. Army Corps of Engineers (USACE) Policies, Authorities and Standard Operation Procedures	Flood Control and Coastal Emergencies describes the authority to provide emergency response and disaster assistance. It authorizes disaster preparedness, advance measures, emergency operations (disaster response and post flood response), rehabilitation of flood control works (FCW) threatened or destroyed by flood, protection or repair of federally authorized shore protection works threatened or destroyed by coastal storm, provision of emergency water due to drought or contaminated sources, emergency dredging, and flood related rescue operations. Contact District office for specifics on each program. http://www.saj.usace.army.mil/Missions/EmergencyOperations/ProgramsPolicies.aspx	U.S. Army Corps of Engineers, Jacksonville District P.O. Box 4970 Jacksonville, Florida 32232-0019	

Funding Source	Purpose	Contact	Application period
<p>U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Emergency Watershed Protection (EWP) Program</p>	<p>Responds to emergencies created by natural disasters. It is not necessary for a national emergency to be declared for an area to be eligible for assistance.</p> <p>The program is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences. EWP is an emergency recovery program. All projects undertaken, with the exception of the purchase of floodplain easements, must have a project sponsor.</p> <p>NRCS may purchase EWPP easements "in lieu of recovery" on any floodplain lands that have been impaired within the last 12 months or that have a history of repeated flooding (i.e., flooded at least two times during the past 10 years).</p> <p>NRCS may bear up to 75 percent of the construction cost of emergency measures. The remaining 25 percent must come from local sources and can be in the form of cash or in-kind services. Funding is subject to Congressional approval. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/</p>	<p>Fred Reaves, National Emergency Watershed Protection Program Manager at 202-690-0793.</p>	
<p>U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Watershed Surveys and Planning</p>	<p>The purpose of the program is to assist Federal, State, and local agencies and tribal governments to protect watersheds from damage caused by erosion, floodwater, and sediment and to conserve and develop water and land resources. Resource concerns addressed by the program include water quality, opportunities for water conservation, wetland and water storage capacity, agricultural drought problems, rural development, municipal and industrial water needs, upstream</p>		<p>No funding has been authorized since FY 2008.</p>

	flood damages, and water needs for fish, wildlife, and forest-based industries. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wsp/		
Funding Source	Purpose	Contact	Application period
U.S. Department of Agriculture's Community Facility Direct Loans and Grants Program	Community Programs provides grants to assist in the development of essential community facilities in rural areas and towns of up to 20,000 in population. Grants are authorized on a graduated scale. Applicants located in small communities with low populations and low incomes will receive a higher percentage of grants. Grants are available to public entities such as municipalities, counties, and special-purpose districts, as well as non-profit corporations and tribal governments. http://www.rurdev.usda.gov/had-cf_grants.html	LAKE CITY RURAL DEVELOPMENT AREA OFFICE 971 W DUVAL ST LAKE CITY, FL 32055-3736 (386) 719-5590 (855) 474-6983 Fax	
U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Watershed and Flood Prevention Operations Programs	Assistance may be provided in authorized watershed projects to install conservation practices and project measures (works of improvement) throughout the watershed project area. The planned works of improvement are described in watershed project plans and are normally scheduled to be installed over multiple years. All works of improvement, including floodwater retarding dams and reservoirs, are owned and operated by the sponsoring local organizations and participating individuals. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wfpo/	Operations Program Specialist, 202-690-2819.	
U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Watershed	Rehabilitation needs of watershed dams across the nation to address critical public health and safety issues of communities. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/pro	Watershed Rehabilitation Specialist, at 202-205-4098.	

Rehabilitation	grams/landscape/wr/		
Funding Source	Purpose	Contact	Application period
U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Financial Assistance	NRCS offers voluntary programs to eligible landowners and agricultural producers to provide financial and technical assistance to help manage natural resources in a sustainable manner. Through these programs the agency approves contracts to provide financial assistance to help plan and implement conservation practices that address natural resource concerns or opportunities to help save energy, improve soil, water, plant, air, animal and related resources on agricultural lands and non-industrial private forest land. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/	See web site for individual programs	
Welfare-to-Work Initiative	Capital/vehicle grant program, contingent on receipt of nationally-competitive Welfare-to-Work funds from the Department of Labor. https://www.workforce3one.org/ws/www/pages/grants_toolkit.aspx?pparams=		See Funding Opportunity Announcement (FOA) on www.grants.gov
Office Depot Foundation Listen Learn Care	Office Depot is known throughout the world as a company with a heart. Throughout our history, we have distinguished ourselves through our support of charitable organizations and worthy causes on a local and national scale. We also continue our legacy of helping out when disasters strike, and doing what we can not only to speed the process of rebuilding, but also to mitigate the impact of future disasters http://officedepotfoundation.org/	http://officedepotfoundation.org/?page_id=418	
Partners for Fish & Wildlife program	Restores, improves, and protects fish and wildlife habitat on private lands through alliances between the U.S. Fish	U.S. Fish and Wildlife Service Partners for Fish & Wildlife Program	

	and Wildlife Service, other organizations, and individuals, while leaving the land in private ownership. http://www.fws.gov/southeast/es/partners/	1875 Century Boulevard Atlanta, Georgia 30345 (404) 679-7138	
Funding Source	Purpose	Contact	Application period
Partnership for Sustainable Communities	The Partnership for Sustainable Communities works to coordinate federal housing, transportation, water, and other infrastructure investments to make neighborhoods more prosperous, allow people to live closer to jobs, save households' time and money, and reduce pollution. The partnership agencies incorporate six principles of livability into federal funding programs, policies, and future legislative proposals. http://www.sustainablecommunities.gov/	Office of Safety, Energy and the Environment Asst. Secretary for Transportation Policy 1200 New Jersey Ave SE Washington, DC 21509. United States livability@dot.gov Phone: 202-366-4416	
Payments in Lieu of Taxes (PILT)	Payments help local governments carry out such vital services as firefighting and police protection, construction of public schools and roads, and search-and-rescue operations. The payments are made annually for tax-exempt Federal lands administered by the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service (all agencies of the Interior Department), the U.S. Forest Service (part of the U.S. Department of Agriculture), and for Federal water projects and some military installations. PILT payments are one of the ways the Federal Government can fulfill its role of being a good neighbor to local communities. http://www.doi.gov/pilt/index.cfm		
Pre-Disaster Mitigation Program (PDM)	The Pre-Disaster Mitigation (PDM) program provides funds for hazard mitigation planning and projects on an annual basis. The PDM program was put in place to reduce overall risk to people and structures, while at the same	FEMA Regional Office Federal Emergency Management Agency 3003 Chamblee Tucker Road	See Funding Opportunity Announcement (FOA) on www.grants.gov

	<p>time, also reducing reliance on federal funding if an actual disaster were to occur.</p> <p>https://www.fema.gov/pre-disaster-mitigation-grant-program</p>	<p>Atlanta, GA 30341 Main Number: 770-220-5200 Fax Number: 770-220-5230</p>	
Funding Source	Purpose	Contact	Application period
Residential Construction Mitigation Program (RCMP)	<p>Program for homeowners to improve the wind resistance of residences through loans, subsidies, grants, demonstration projects, direct assistance, and cooperative programs with local and federal governments.</p> <p>http://www.floridadisaster.org/mitigation/rcmp/#products</p>		
Rivers, Trails and Conservation Assistance Program	<p>Extends and expands the benefits of the National Park Service throughout the nation to connect all Americans to their parks, trails, rivers, and other special places. Our staff helps community groups, nonprofits, state and local governments, and tribes plan parks and trails, conserve and improve access to rivers and natural areas, and create recreation opportunities through locally led partnerships.</p> <p>http://www.nps.gov/orgs/rtca/index.htm</p>	<p>RTCA, Florida Field Office 5342 Clark Rd., PMB 123 Sarasota, FL 34233 Fax (941) 373-9067 (941) 685-5912</p>	
Staffing for Adequate Fire and Emergency Response Grants (SAFER)	<p>The Staffing for Adequate Fire and Emergency Response Grants (SAFER) was created to provide funding directly to fire departments and volunteer firefighter interest organizations to help them increase or maintain the number of trained, "front line" firefighters available in their communities. The goal of SAFER is to enhance the local fire departments' abilities to comply with staffing, response and operational standards established by the NFPA (NFPA 1710 and/or NFPA 1720). For details visit http://www.nfpa.org/freeaccess</p>	<p>Regional Fire Program Specialist Assistance to Firefighters Grant Program Federal Regional Center 436 South Pinetree Blvd. Thomasville, GA 31792 Ph: (229) 225-4965 Fax: (229) 225-4966</p>	
State Revolving Fund (SRF) Florida Department of Environmental Protection	<p>Provides financial savings for projects that benefit the environment, including protection of public health and conservation of local watersheds. Federal and state contributions fund loans for a wide variety of water</p>	<p>Drinking Water State Revolving Loan Program 2600 Blair Stone Road, MS 3505 Tallahassee, FL 32399-2400 P</p>	

	<p>quality projects including all types of stormwater, watershed protection or restoration, and estuary management projects, as well as more traditional municipal wastewater treatment projects including water reuse and conservation projects.</p> <p>http://www.dep.state.fl.us/water/wff/index.htm</p>	<p>Clean Water State Revolving Fund Loan Program 2600 Blair Stone Road, MS 3505 Tallahassee, FL 32399-2400</p>	
Funding Source	Purpose	Contact	Application period
Superfund Amendments and Reauthorization Act (SARA), Title III	<p>Provides funding for training in emergency planning, preparedness, mitigation, response, and recovery capabilities associated with hazardous chemicals. Individuals who would be eligible for this training include public officials, fire and police personnel, medical personnel, first responders, and other tribal response and planning personnel. Funding is available to federally recognized Tribal Nations.</p> <p>https://www.fema.gov/grants-administration/superfund-amendments-and-reauthorization-act-sara-title-iii</p>		
Tax Incentives for Preserving Historic Properties	<p>The Federal Historic Preservation Tax Incentives program encourages private sector investment in the rehabilitation and re-use of historic buildings.</p> <p>http://www.ncshpo.org/ http://www.nps.gov/tps/tax-incentives.htm</p>	<p>Division of Historical Resources 500 South Bronough Street R.A. Gray Building, Room 305 Tallahassee, FL 32399-0250 Phone: 850-245-6300</p>	
U.S. Army Corps of Engineers (USACE) Shoreline Erosion Control Projects	<p>Development and Demonstration Program (Section 227 Program) is aimed at advancing the state-of-the-art in coastal shoreline protection</p> <p>http://chl.erd.usace.army.mil/chl.aspx?p=s&a=ARTICLES;139</p>	<p>Coastal and Hydraulics Laboratory Engineer Research and Development Center 3909 Halls Ferry Road Vicksburg, MS 39180 Email: chl-info@erd.usace.army.mil</p>	
U.S. Army Corps of Engineers (USACE) Aquatic Ecosystem Restoration	<p>The Corps of Engineers can carry out aquatic ecosystem restoration and protection projects. Such projects generally include manipulation of the hydrology in and along bodies of water, including wetlands and riparian areas. A project is adopted for construction only after</p>	<p>cemvr-outreach-web@usace.army.mil.</p>	

	<p>a detailed investigation determines that the project will improve the quality of the environment and is in the best interest of the public.</p> <p>http://www.mvr.usace.army.mil/BusinessWithUs/OutreachCustomerService/EcosystemRestoration/Section206.aspx</p>		
Funding Source	Purpose	Contact	Application period
U.S. Army Corps of Engineers (USACE) Flood Plain Management Services	<p>The Corps of Engineers can provide General Technical Services: The program develops or interprets site-specific data on obstructions to flood flows; flood formation and timing; flood depths or stages; floodwater velocities; and the extent, duration, and frequency of flooding. It also provides information on natural and cultural floodplain resources before and after the use of floodplain management measures.</p> <p>General Planning Guidance: On a larger scale, the program provides assistance and guidance in the form of “Special Studies” on all aspects of floodplain management planning, including the possible impacts of off-floodplain land use changes on the physical, socio-economic, and environmental conditions of the floodplain. Special Studies are accomplished at 100% Federal cost. However, funding for these studies is very limited and competitive.</p> <p>http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/WaysWeHelp.aspx</p>	<p>Flood Control Section U.S. Army Corps of Engineers, Jacksonville District P.O. Box 4970 Jacksonville, Florida 32232-0019 Chief, Flood Control Section 904-232-2459</p>	
U.S. Army Corps of Engineers (USACE) Planning Assistance to States	<p>Section 22 of the Water Resources Development Act (WRDA) of 1974, as amended, provides authority for the Corps of Engineers to assist the States, local governments, and other non-Federal entities, in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. Section 208 of the Water Resources Development Act of 1992 amended the WRDA of 1974 to include Native American Tribes as equivalent to a State.</p>	<p>U.S. Army Corps of Engineers, Jacksonville District P.O. Box 4970 Jacksonville, Florida 32232-0019</p>	

	http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/WaysWeHelp.aspx		
Funding Source	Purpose	Contact	Application period
U.S. Army Corps of Engineers (USACE) Policies, Authorities and Standard Operation Procedures	Flood Control and Coastal Emergencies describes the authority to provide emergency response and disaster assistance. It authorizes disaster preparedness, advance measures, emergency operations (disaster response and post flood response), rehabilitation of flood control works (FCW) threatened or destroyed by flood, protection or repair of federally authorized shore protection works threatened or destroyed by coastal storm, provision of emergency water due to drought or contaminated sources, emergency dredging, and flood related rescue operations. Contact District office for specifics on each program. http://www.saj.usace.army.mil/Missions/EmergencyOperations/ProgramsPolicies.aspx	U.S. Army Corps of Engineers, Jacksonville District P.O. Box 4970 Jacksonville, Florida 32232-0019	
U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Emergency Watershed Protection (EWP) Program	<ul style="list-style-type: none"> • Responds to emergencies created by natural disasters. It is not necessary for a national emergency to be declared for an area to be eligible for assistance. The program is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences. EWP is an emergency recovery program. All projects undertaken, with the exception of the purchase of floodplain easements, must have a project sponsor. • NRCS may purchase EWPP easements "in lieu of recovery" on any floodplain lands that have been impaired within the last 12 months or that have a history of repeated flooding (i.e., flooded at least two times during the past 10 years). • NRCS may bear up to 75 percent of the construction cost of 	Fred Reaves, National Emergency Watershed Protection Program Manager at 202-690-0793.	

	<p>emergency measures. The remaining 25 percent must come from local sources and can be in the form of cash or in-kind services. Funding is subject to Congressional approval.</p> <p>http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/</p>		
Funding Source	Purpose	Contact	Application period
U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Watershed Surveys and Planning	<p>The purpose of the program is to assist Federal, State, and local agencies and tribal governments to protect watersheds from damage caused by erosion, floodwater, and sediment and to conserve and develop water and land resources. Resource concerns addressed by the program include water quality, opportunities for water conservation, wetland and water storage capacity, agricultural drought problems, rural development, municipal and industrial water needs, upstream flood damages, and water needs for fish, wildlife, and forest-based industries.</p> <p>http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wsp/</p>		No funding has been authorized since FY 2008.
U.S. Department of Agriculture's Community Facility Direct Loans and Grants Program	<p>Community Programs provides grants to assist in the development of essential community facilities in rural areas and towns of up to 20,000 in population. Grants are authorized on a graduated scale. Applicants located in small communities with low populations and low incomes will receive a higher percentage of grants. Grants are available to public entities such as municipalities, counties, and special-purpose districts, as well as non-profit corporations and tribal governments.</p> <p>http://www.rurdev.usda.gov/had-cf_grants.html</p>	<p>LAKE CITY RURAL DEVELOPMENT AREA OFFICE 971 W DUVAL ST LAKE CITY, FL 32055-3736</p> <p>(386) 719-5590 (855) 474-6983 Fax</p>	
U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Watershed and Flood Prevention Operations Programs	<p>Assistance may be provided in authorized watershed projects to install conservation practices and project measures (works of improvement) throughout the watershed project area. The planned works of improvement are described in watershed project plans and are normally scheduled to be installed over multiple years. All works of improvement, including floodwater retarding dams</p>	Operations Program Specialist, 202-690-2819.	

	<p>and reservoirs, are owned and operated by the sponsoring local organizations and participating individuals.</p> <p>http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wfpo/</p>		
Funding Source	Purpose	Contact	Application period
U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Watershed Rehabilitation	<p>Rehabilitation needs of watershed dams across the nation to address critical public health and safety issues of communities.</p> <p>http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wr/</p>	Watershed Rehabilitation Specialist, at 202-205-4098.	
U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Financial Assistance	<p>NRCS offers voluntary programs to eligible landowners and agricultural producers to provide financial and technical assistance to help manage natural resources in a sustainable manner. Through these programs the agency approves contracts to provide financial assistance to help plan and implement conservation practices that address natural resource concerns or opportunities to help save energy, improve soil, water, plant, air, animal and related resources on agricultural lands and non-industrial private forest land.</p> <p>http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/</p>	See web site for individual programs	
Welfare-to-Work Initiative	<p>Capital/vehicle grant program, contingent on receipt of nationally-competitive Welfare-to-Work funds from the Department of Labor.</p> <p>https://www.workforce3one.org/ws/www/pages/grants_toolkit.aspx?pparams=</p>		See Funding Opportunity Announcement (FOA) on www.grants.gov

APPENDICES

Appendix A Resolutions

To be added after DEM/FEMA approvals

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Roster 2015

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updated 2-18-2015

Appendix C: 2015 LMS Update Schedule

DATE	2015 LMS Update Activity	Participation
January 6, 2014	Contacted partners to update the 2014 roster	Duval Prepares membership as a whole
January 13, 2014	City of Jacksonville requests the updated crosswalk from the State	COJ plans supervisor and State lead mitigation planner.
January 27, 2014	Inform the SEPPC of the upcoming update.	Mayor's SEPPC membership as a whole – presentation.
March 10, 2014	Review hazards and assessment and ask partners to review 2010 LMS for updates	Duval Prepares membership as a whole and risk assessment committee
April 8, 2014	Review of projects and goals	Business sustainability committee
May 5, 2014	State sends out the new LMS plan review tool	SHMPAT
May 6, 2014	Letter requested participating jurisdictions to comply with FEMA directives for this process.	Mayor's SEPPC membership as a whole – presentation
May 27, 2014	Created scope of work to secure a grant to bid out solicitation for consultant to assist with 2015 update	Emergency management plans supervisor, grants manager, and planner
June 10, 2014	Discussion of consultant contract for LMS update scope of work and business input into the 2015 update	Business sustainability committee
June 23, 2014	Receive mitigation guide and wildfire risk assessment from state mitigation planner. City begins comparing work completed with the mitigation guide and gathering documentation.	Emergency management plans supervisor and planner
July 8, 2014	Compare goals and objectives of the 2015 LMS update with the current CRS update	Emergency management plans supervisor, emergency management planner, and city planners
July 11, 2014	Email sent to Duval Prepares reminding all partners to look over the 2010 LMS and identify areas needing updates	Duval Prepares membership as a whole
July 15, 2014	Dept. of Forestry send email regarding wildfire assessment tool and plans to present to Dual Prepares group	DOF Mitigation Specialist and Emergency Management Planners
July 24, 2014	Confirmed timeline for 2015 LMS Update	Emergency management planner and State lead mitigation planner.

DATE	2015 LMS Update Activity	Participation
August 7, 2014	Emergency management tries to bring on an intern to assist with the 2015 LMS Update. No interns were available.	Emergency management planners and grants manager
August 12, 2014	Review progress with State	Emergency management planner and State lead mitigation planner.
August 14, 2014	Meeting to review LMS update	Business Sustainability Committee
September 16, 2014	City planning reviews 2010 LMS and provides feedback in regards to compatibility with CRS and 2030 Comprehensive plan	City planners and emergency management planner
October 1, 2014	State sends out memo that the LMS approval process is now under Program Administration by State (PAS)	State lead mitigation planner
November 18, 2014	Request to NOAA/Local NWS to look over 2010 LMS for updates	Local NWS and emergency management planners
December 9, 2014	Duval Prepares meeting is held and updates from members is received	Duval Prepares membership as a whole
January 5, 2015	State lead mitigation planner approves using data that is currently readily available for hazard update	State lead mitigation planner and emergency management planners
January 13, 2015	Duval Prepares meeting is held and goals and objectives are reviewed	Duval Prepares membership as a whole
January 15, 2015	Goals and objectives updates from 1/13/15 meeting is emailed to Duval Prepares partnership for review and comments	Duval Prepares membership as a whole
January 20, 2015	Duval Prepares meets and reviews comments from goals and objectives updates and the group updates the ranking process	Duval Prepares membership as a whole
January 21, 2015	Emergency management planners continue to update the LMS seeking information from subject matter experts	Emergency management planners
January 25, 2015	Sent table 21 to Duval Prepares for review of projects	Duval Prepares membership as a whole
February 2, 2015	Emergency Management reviews initial draft and makes edits	Emergency management planners

Timeline Narrative for LMS Update Process

The requirements of the Disaster Mitigation Act of 2000 (DMA2K) imposed significant plan revisions many of which concerned the need to better integrate mitigation policy into other local land-use related plans. Consistent with the established evaluation and revision procedures, the Advisory Committee/*Duval Prepares* contracted with the Northeast Florida Regional Council, who serves as the regional planning agency for the northeast area and as such have a great deal of expertise in both the development and execution of a range of local plans. Under the terms of the contract, the Regional Council staff in conjunction with County Emergency Management representatives served to facilitate particular meetings during the 2002-2005 planning and updating of the Local Mitigation Strategy. These planning efforts included expanding the list of people and organizations invited to participate, expanding the list of participants actively encouraged to participate, and revising portions of the local mitigation strategy that did not meet requirements set by the Disaster Mitigation Act of 2000.

On March 27, 2003 the Advisory Committee/*Duval Prepares* met to review the requirements of the Disaster Mitigation Act of 2000 (DMA2K) and discuss any necessary revisions to the LMS. In addition, they reviewed and updated the goals. The Regional Council then began drafting the necessary revisions. The Committee met again on July 17, 2003, September 18, 2003 and January 9, 2004 to review and update the hazards analysis, the maps of the vulnerable areas and the projects list. In each case, the necessary revisions were made by the Regional Council staff and presented at the next meeting of the Committee. All of these meetings were public meetings and noticed on a public notice board in each municipal City Hall as standard procedure. Unfortunately, public attendance was usually low at these meetings but increased through additional efforts as described in section C below. At the meeting on February 16, 2004 the final draft was reviewed, approved and forwarded for state and FEMA review. On July 16, 2004, the Committee received a letter with the joint state/FEMA final comments.

The revisions were made by Council staff and the revised plan was placed on both the Council and *Duval Prepares* websites to facilitate public input and to allow Council members a final comment period without the need for a general meeting over very minor changes. No comments were received and the corrected final draft was again forwarded to the state and FEMA for review. The Committee continued to use this approach in conjunction with planning and informational workshops to gain public input.

A final copy of the document was presented to all participating jurisdictions to the Duval County/Jacksonville City Council, City of Atlantic Beach City Commission, Town of Baldwin Town Council, City of Jacksonville Beach City Council, and the Neptune Beach City Council for their approval and adoption. There have been no changes to the jurisdictions participating in this process.

The LMS was subsequently reapproved in 2010 after a process of review and validation by the Duval Prepares Advisory Committee and public hearings regarding the update process. The 2010 LMS was subsequently approved by the City of Council of City of Jacksonville, the City Commissions of the City of Atlantic Beach, City of Jacksonville Beach, City of Neptune Beach, and the Town of Baldwin. There were no changes to the jurisdictions and the hazards were evaluated to be at the same level of risk as in the 2004 LMS update. As a new directive from FEMA, extensive mapping of the vulnerabilities of the county to its major hazards and the impacts to its building values was incorporated into the LMS.

In January 2014, the *Duval Prepares* partners kicked off the planning cycle for the five year update of the 2015 Local Mitigation Strategy. Concurrently, the LMS Working Group membership received notification from the Director of Emergency Preparedness for the Consolidated City of Jacksonville/Duval County that the mitigation planning update process is in progress, inclusive of an all-hazard identification and vulnerability assessment. All members and stakeholders were invited to participate in the process to (1) identify and confirm the hazard identification and the supporting vulnerability analysis and to (2) participate and support the decision making process and adoption of projects for the 2015 update, while reporting on the status of completed, deferred, or deleted projects.

To ensure the development of a functional document that will facilitate hazard mitigation activities in Duval County, the LMS Advisory Committee members who are subject matter experts, and representatives of the jurisdictions within Duval County, conducted an all-county Hazard Identification and Vulnerability Assessment (HIVA) which considered natural and man-made/technological hazards, and their impacts, which could be reduced or eliminated through mitigation. This assessment built upon the initial LMS adopted in 1998, and ratified in the subsequent 2005 and 2010 updates. This comprehensive process provides a pre-disaster analysis for post-disaster planning and recovery by identifying all local hazards and hazard areas, defining all areas of vulnerability - both geographic and demographic - and assessing the capacity of the community to mitigate the effects of those hazards. In addition, this assessment addresses the probability of occurrence of each hazard.

Duval Prepares, the LMS Advisory Committee, affirmed the hazards listed below as priorities as the top priorities for the 2015 LMS Update at the January 20, 2015 hazard prioritization meeting. One new hazard was identified, which will be called “Adaptation to Climate Change” in light of the findings in scientific literature, the State of Florida Enhanced Hazard Mitigation Plan which addresses this issue, and the forthcoming work in the resilience arena, as championed by The Rockefeller Foundation 100 Resilient Cities Initiative, in which the City of Jacksonville is an inaugural member.

Wind from Tropical Cyclones
Storm Surge
Floods
Brush, Wildfires, Forest Fires
Thunderstorms (TH) & Tornadoes (T)
Hazardous Materials Accidents
Critical Infrastructure Disruption
Terrorism –inclusive of Cyber Terrorism/ Active Shooter/Lone Offender/Biological Disease Outbreak
Extreme Temperatures
Drought
Adaptation to Climate Change

Appendix D: Local Mitigation Strategy Glossary

100 RC – 100 Resilient Cities Initiative, The Rockefeller Foundation
ACC – Adaptation to Climate Change
ACE – Army Corps of Engineers
ARC – American Red Cross
BCA – Benefit Cost Analysis
BCR – Benefit Cost Ratio
BFE – Base Flood Elevation
CCOJ – Consolidated City of Jacksonville
CDBG – Community Development Block Grant
CHHA -- Coastal High Hazard Area
CEMP - Comprehensive Emergency Management Plan
CID – Critical Infrastructure Disruption
COJ - City of Jacksonville
CRF – City Resilience Framework
CRS – Community Rating System
DCPS – Duval County Public Schools
EAR – Evaluation and Appraisal Report
EPD – Emergency Preparedness Division
F – Flooding
FDEM – Florida Division of Emergency Management
FFE – Finished Floor Elevation
FFS – Florida Forest Service
FDOH – Florida Department of Health
FDOT – Florida Department of Transportation
FEMA -- Federal Emergency Management
FIRM – Flood Insurance Rate Map
FMAP – Flood Mitigation Assistance Program
FLUM – Future Land Use Map
FOUO – For Official Use Only
GIS -- Geographic Information Systems
HAZUS-MH – Hazards U.S. Multi-Hazard planning tool
HIVA - Hazard Identification and Vulnerability Assessment
HMA – Hazard Mitigation Assistance
HMGP – Hazard Mitigation Grant Program
JEA – Electric, Water, Sewer Utility serving majority of Duval County
JPPD – Jacksonville Planning and Development Department
LMS – Local Mitigation Strategy
N/A – Not Applicable
N/K – Not Known
NWS – National Weather Service
NEFRC – Northeast Florida Regional Council
NFIP – National Flood Insurance Program
NOAA – National Oceanographic Atmospheric Agency
PDRP -- Post Disaster Redevelopment Plan
RL – Repetitive Loss

SJWMD – St. Johns Water Management District
SLR – Sea Level Rise
SRL –Severe Repetitive Loss
SLOSH – Sea, Lake, Overland Surge from Hurricanes
SS – Storm Surge
SHMPAT -- State Hazard Mitigation Plan Advisory Team
TH – Thunderstorm
T – Tornado
TBD – To be Determined
TSFW – Tropical Storm Force Winds
USMC – United States Marine Corps
USGS – U.S. Geologic Survey
W – Wind/Tropical Cyclone/Hurricane
WF – Wildfire

**DUVAL PREPARES
LMS ADVISORY GROUP**

**Agenda
August 16, 2010**

Welcome/Introductions	Jane Wahl, Chair
Duval County 2010 LMS	Laura D’Alisera, Planner
Town of Baldwin Firewise Program	Janis Fleet, Baldwin Liaison Annalease Winter, DOF
Grant Updates	
EMAP Re-accreditation Program	
Citizen Corps Update	Laura Black, Mitigation & Recovery Coordinator
New Business – 2011 Grant Cycle	
Announcements	
Adjourn	

**DUVAL PREPARES
LMS ADVISORY GROUP**

**Agenda
August 22, 2011**

Welcome/Introductions

Chief Martin Senterfitt,
Division of Emergency Preparedness

New Business

LMS Annual Maintenance

- a) Review Completed Projects Recommended for Removal
- b) Change Mitigation Strategy for 1873 Powell Place, Jacksonville
- c) Addition of New Projects –

Donner Waste Water Project David Thompson, Chair City of
Atlantic Beach Risk Assessment &
Planning Committee

Mitigation in the News

**Wills Branch Creek Mitigation &
2010 Grants Update**

Laura Black, Mitigation Coordinator

Notice of FEMA Grant Application 2012 Laura D'Alisera, Mitigation Planner

1. Group IV Fire Stations Wind Retrofit Project (Pre-Disaster Mitigation)
2. Property Acquisitions/Demolition of Structures (Flood Mitigation Assistance)

Adjourn

Next LMS Quarterly Meeting Scheduled for Monday, November 21, 2011

**DUVAL PREPARES
LMS ADVISORY GROUP**

**Agenda
August 20, 2012**

- **Welcome & Introductions**
- **TS DEBBY 8046-DR-FL Update**
- **Annual Maintenance of Current Mitigation Initiatives**
 - a. **Add New Projects**
 - b. **Retire Old Projects**
- **Announcements - Adjourn**

**DUVAL PREPARES
LMS ADVISORY GROUP**

**Agenda
August 26, 2013**

- **Welcome & Introductions – Steve Letro, Co-Chair**
- **Add Projects to LMS –JEA , Atlantic Beach**
 - **Motion to Adopt New Projects**
- **Project Updates – Bakersfield Drive – Laura Black**
- **2013 FEMA Flood Grant Program**
- **CRS Five-Year Update – Planning Department**
- **Notable Events – TS Andrea , East Arlington Tornado**
- **Annual LMS Plan Maintenance**
 - Motion to retire completed projects or amend projects**
- **Announcements - Adjourn**

**DUVAL PREPARES
LMS ADVISORY GROUP**

**Agenda
August 11, 2014**

- **Welcome & Introductions – Steve Letro, Co-Chair**
- **Special Presentation: ISO Maps – Lt. Scott Kornegay**
- **2015 LMS Plan Update – Laura Black**
- **HMGP / FMA Project Updates – Laura Black**
- **Announcements - Adjourn**

**DUVAL PREPARES
LMS ADVISORY GROUP**

**Agenda
April 29, 2015**

- **Welcome & Introductions – Steve Letro, Co-Chair**
- **Southside Tornado – Steve Woodard**
- **2015 LMS Plan Update – Laura Black**
- **Motion to Adopt LMS Update**
- **Announcements - Adjourn**