



DUVAL COUNTY

2010

LOCAL MITIGATION STRATEGY

PREPARED BY:

Duval Prepares/LMS Advisory Committee
(Adopted 2010 LMS Update as Of August 24, 2009)
Duval County Local Mitigation Strategy Working Group
(Adopted 2010 LMS Update as Of September 8, 2009)

City Of Jacksonville Emergency Preparedness

Participating Agencies

Local Mitigation Strategy Working Group

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

Local Mitigation Strategy Advisory Committee

City of Jacksonville Emergency Preparedness
Planning & Development Department
Public Works
Property Appraiser
Neighborhoods & Housing Services
Housing Services
Risk Management
Jacksonville Electric Authority
Jacksonville Port Authority
Jacksonville Transportation Authority
City of Jacksonville Beach
City of Atlantic Beach
City of Neptune Beach
Blue Cross Blue Shield Florida
Town of Baldwin

Duval County Public Schools
Jacksonville Chamber of Commerce
Northeast Florida Builders Association
Northeast Florida Regional Council
St. Johns River Water Management District
Florida Division of Forestry
Florida Department of Environmental Protection
US Army Corps of Engineers
Bank of America
AT&T
Chamber Alliance for Small Enterprises
Federal Emergency Management Agency
Wachovia/Wells Fargo
Fleet & Associates Architects/Planners Incorporated
Federal Alliance for Safe Homes
Florida Department of Community Affairs/Florida Division of Emergency Management
Florida State University
Institute for Business and Home Safety
Jacksonville Airports Authority
JM Family Enterprises Incorporated
National Oceanic and Atmospheric Administration/National Weather Service Northeast
Northeast Florida Chapter American Red Cross
PBS&J
The Small Business Center, Chamber of Commerce
State Farm Insurance Companies
Sunbelt Coffee & Water Service
U.S. Army Corps of Engineers
University of North Florida Small Business Development Center
URS
Florida Department of Transportation
Gamma Brands
Jacksonville Port Authority
Florida State College at Jacksonville
Florida Department of Emergency Management
National Flood Insurance Program
Sunnyland Roofing
Northeast Florida Coalition on Recovery
St. Johns Water Management District
Edward Waters College
Florida Association of Contingency Planners
GM Consulting

Risk Assessment Sub-Committee

Jacksonville, Jacksonville Beach, Neptune Beach, Atlantic Beach and Baldwin Planning Department representatives, engineers, and other planning and technical specialists

TABLE OF CONTENTS
DUVAL COUNTY LOCAL MITIGATION STRATEGY

Section I - Introduction 1

 A. Local Mitigation Strategy 1

 B. Planning Process 2

 C. Community Participation 8

 D. Private Participation 9

 E. Use and Incorporation of Existing Documents..... 10

 F. Incorporation of LMS into other Documents and Update Process 10

 G. Conflict Resolution 12

 H. Evaluation Process 13

 I. Review and Maintenance 15

 J. Continued Public Participation 15

 K. Current Description of the Jurisdiction(s) 16

 L. Demographics..... 18

 M. NFIP Participation.....23

Section II – Guiding Principles and Goals 29

 A. Guiding Principles 29

 B. Goals & Objectives 29

 C. Policies, Ordinances, and Programs 35

Section III - Hazard Identification & Vulnerability Analysis 57

 A. Identifying Hazards..... 57

 B. Geography and Relationship to Hazards..... 58

 C. Land Use and Development Patterns in the Jurisdictions of Duval County..... 62

 D. Hazards..... 66

 1. Thunderstorms/Tornadoes Hazard 66

 2. Winds from Tropical Cyclones (Hurricane) Hazard 68

 3. Storm Surge (Associated with Tropical Cyclone) Hazard..... 74

 4. Flooding 76

 5. Extreme Temperature Hazard..... 84

 6. Drought Hazard..... 85

 7. Wild Fire Hazard (Brush Wildfire & Forest Fire) 86

 E. Probability of Occurrence - Summary..... 93

 F. Vulnerability and Loss Estimates - Summary 95

 1. Geographic Areas Vulnerable To Hazards..... 95

 2. Vulnerable Critical Facilities 97

 3. Vulnerable Populations 99

 3. a.- h Impacts..... 113

 G. Hazard Vulnerabilities 108

 1. Areas Vulnerable to Wind from Tropical Cyclone 108

 2. Areas Vulnerable to Wildfire 109

 3. Areas Vulnerable to Hazardous Materials..... 109

 4. Areas Vulnerable to Flooding and Storm Surge..... 109

5. Areas Vulnerable to Thunderstorms and Tornadoes.....	109
Areas Vulnerable to Extreme Temperature.....	109
7. Areas Vulnerable to Drought	109
H. Hazard Prioritization Process	110
I. Multi-Hazard Maps.....	111
Section IV- Mitigation Initiatives	125
A. Project Selection	140
B. Prioritization Criteria and Process	140
C. 1999 Mitigation Initiative Prioritization Results	146
D. 2002 Mitigation Initiative Prioritization Results	146
E. 2004/2005 Mitigation Initiative Prioritization Result	147
F. 2010 Mitigation Prioritization Results.....	148
Duval County LMS Project Submission Form	149
SECTION V - Funding Sources.....	179
A. Funding Sources	179
B. Potential Funding Sources	179
APPENDICES	190
Appendix A Resolutions.....	190
Appendix B Roster of Current Participants	191
Appendix C Work Schedule – 2010 LMS Update	192

List of Figures

Figure 1: LMS Planning Process Flow Chart.....	2
Figure 2: Mitigation Organizational Structure	5
Figure 3: Age Distribution of People in Duval County.....	19
Figure 4: Duval County Population Density & Distribution.....	20
Figure 5: Duval County Future Land Use Map	65
Figure 6: Saffir-Simpson Hurricane Wind Scale	69
Figure 7: Duval County Wind Speed Zones	70
Figure 8: All Major Hurricanes Within 65 nm of Duval Co. 1851-2008	72
Figure 9: All Hurricanes within 65 nm of Duval Co. 1851-2008	72
Figure 10: Population vs. Hurricanes	73
Figure 11: Northeast Florida Hurricanes 1565-1899	75
Figure 12: 100-Year Floodplain	77
Figure 13: Coastal High Hazard Areas.....	80
Figure 14: Hurricane Evacuation Zones	81
Figure 15: Jacksonville Daily Temperatures.....	85
Figure 16: Duval County Wildfire Levels of Concern	88
Figure 17: Hazard Identification Table.....	91
Figure 18: Map of vulnerable critical facilities within Duval County	98
Figure 19: Category 1 Storm Surge Event	115
Figure 20: Category One Wind Event.....	116

Figure 21: Category 3 Storm Surge Event	118
Figure 22: Category 3 Wind Event	118
Figure 23: Category 5 Storm Surge Event	120
Figure 24: Category 5 Wind Event	118
Figure 25: 100 year & 500 Year Flood Event	121
Figure 26: FEMA FIRM Flood Zone	122
Figure 27: Tornado Risk Frequency.....	123
Figure 28: Wildfire Potential	124
Figure 29: Repetitive Flood Loss in Duval County.....	130
Figure 30: Category 1 Storm Surge – Zip Code Analysis for Impact.....	114
Figure 30a: Category 1 Wind – Zip Code Analysis for Impact	116
Figure 30b: Category 3 Storm Surge -- Zip Code Analysis for Impact	116
Figure 30c: Category 3 Wind -- Zip Code Analysis for Impact.....	117
Figure 30d: Category 5 Storm Surge -- Zip Code Analysis for Impact.....	118
Figure 30e: Category 5 Wind -- Zip Code Analysis for Impact.....	119
Figure 30f: 100YR/500 YR Flood Zones --Zip Code Analysis for Impact.....	120
Figure 30g: FEMA FIRM Flood Zone - Zip Code Analysis for Impact.....	121
Figure 30h: Tornado Risk Frequency -- Zip Code Analysis for Impact	122
Figure 30i: Wildfire Potential-- Zip Code Analysis for Impact.....	123
Figure 31: LMS Prioritization Results	146

List of Tables

Table 1: LMS Jurisdictional Incorporation	12
Table 2: Demographic Description of Duval County's Population.....	21
Table 3: Population of Duval County by Municipalities.....	22
Table 4: Description of RL Structures in Consolidated City of Jacksonville.....	26
Table 5: Jurisdictional Report of Repetitive Loss	658
Table 6: Mitigation Policies.....	36
Table 7: Number of Hurricanes Passing within 100 Nautical Miles of Duval County by Category of Hurricane, 1851-2007... ..	89
Table 8: Population at risk for FDOF Fire Risk LOC.....	96
Table 9: Structures at risk for FDOF Fire Risk LOC.....	726
Table 10: Existing Land Use Categories in Duval County	97
Table 11: Duval County Hazard Analysis	101
Table 12: 2006 Florida Hurricane Catastrophe Fund Exposure Concentration for Selected Counties (in thousands of dollars)	103
Table 13: Real Property Values in Duval County, Florida (in thousands of dollars)	103
Table 14: Value of Residential Construction in Atlantic, Jacksonville, Neptune Beaches and Town of Baldwin (includes both single and multi-family units in thousands of dollars)	104

Table 15: Evacuation and Shelter Estimates by Category (All estimates current to 2005)	106
Table 16: Value of Structures by DOR Use for FDOF Fire Risk LOC	109
Table 17: Duval County Property Values	111
Table 18: Potential Impact as % of Population in Duval County and Jurisdictions	111
Table 19: Vulnerability, Probability, Risk Assessment Table (1998-2008) Vulnerability to Hazard by Community	98
Table 19a: Vulnerability Analysis for Impact in Duval County and Jurisdictions.....	136
Table 20: Duval County Local Mitigation Strategy Prioritization Point Scale for Mitigation Initiatives	133
Table 21: Current Mitigation Initiatives	142
Table 22: Extent of Hazards	198

Section I - Introduction

A. Local Mitigation Strategy

Duval County is risking significant loss of life and hundreds of millions of dollars in property damage and business disruption for a category 2 or 3 hurricane. In 2008, Tropical Storm Fay resulted in \$50 million in damage to public infrastructure (Source: Emergency Preparedness Division estimates), an estimated \$100 million in business disruption (First Coast Manufacturers' Council), and a presidential disaster declaration (FEMA-1785-DR-FL). In addition, Tropical Storm Fay resulted in insurance payments of \$24,834,188 in Duval County (more information on page 111). Since it is plainly more cost effective to prevent losses than to recover from them, Duval County has developed a Local Mitigation Strategy.

The Local Mitigation Strategy is the major component of a state wide permanent process of community-based hazard mitigation planning (initiated through a partnership between the Department of Community Affairs, 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 Working Group of public and private sector officials working in collaboration with the Advisory Committee, also known as Duval Prepares.

The Local Mitigation Strategy will be reviewed, revised and updated every year by the Advisory Committee/Duval Prepares and approved by the Working Group according to established criteria including 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, 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.

This assessment indicates that Duval County is most vulnerable and has the highest levels of risks for 1) wind and storm surge from tropical cyclones, 2) floods, 3) terrorism, 4) hazardous materials accidents, 5) wildfires in the urban interface, and 6) tornadoes.

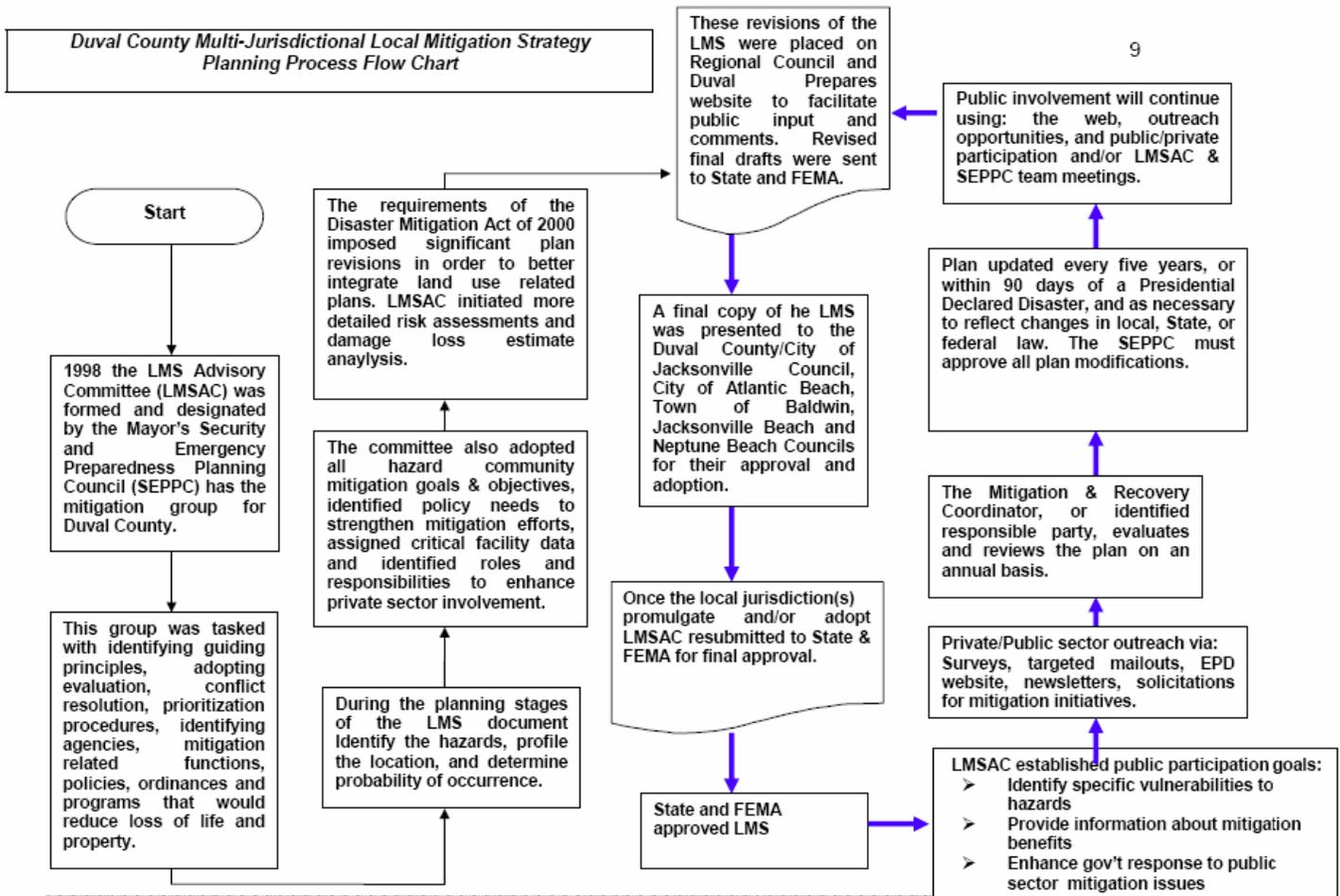
The top 12 mitigation initiatives as prioritized in the original 1999 plan by the Working Group include retrofitting water, sewer and electrical facilities to protect against failure caused by flooding, fully implementing stormwater management plans, purchasing emergency generators for municipalities, 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, 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, and developing a plan for underground utilities.

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. 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 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 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 has 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, revising portions of the local mitigation strategy that did not meet requirements set by the Disaster Mitigation Act of 2000, performing a more detailed risk assessment and damage loss estimate analysis, facilitating meetings approximately every 60 days, and setting up public information workshops and meetings among other planning activities.

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 is usually low at these meetings but has increased through additional efforts as described in paragraph 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 will continue to use this approach in conjunction with planning and informational workshops to gain public input over time.

The minutes and attendance records of these meetings are on file with the Advisory Committee/Duval Prepares, through the Division of Emergency Preparedness (EPD), City of Jacksonville, which staffs this body. However, the Committee decided to defer setting formal criteria for active participation at this time as they are still engaged in recruiting new members and felt such a move would be premature. Formal criteria will be adopted prior to the five-year update of the plan.

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 now that the revisions have been made to meet the newly set requirements. There have been no changes to the jurisdictions participating in this process.

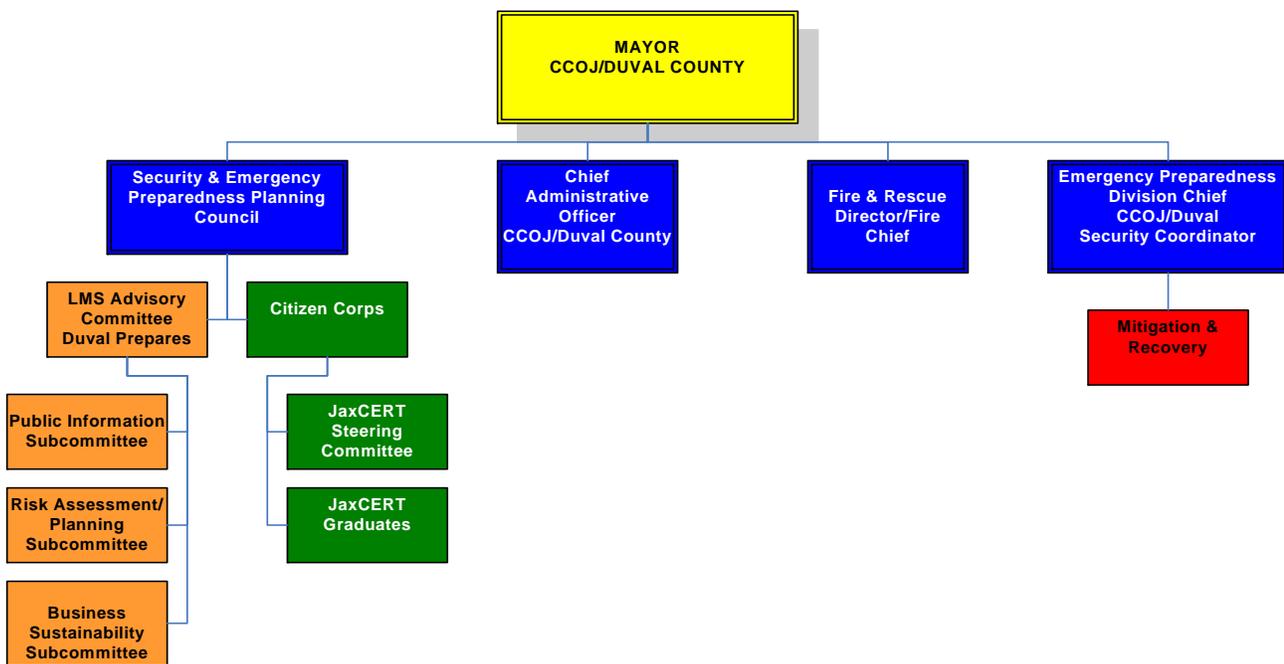
2010 Planning Process

The 2010 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 November 17, 2008, Duval Prepares invited a State Division of Emergency Management senior representative to brief the advisory group on the process. A timeline was established from the November 2008 meeting 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 sections of the Plan were reviewed and adopted to be forwarded to Duval Prepares and SEPPC for approval to send to the State of Florida and FEMA for approval, please see Appendix C. 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



Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 153

From January to June 2009, 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, inclusive of such entities as the Northeast Florida Regional Council, State DOT and US Army Corps of Engineers regional offices, the Duval County Public Schools, University of North Florida and the Florida State College at Jacksonville. Staff 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 2010 LMS Update which was posted for public comment on July 20 – August 20, 2009. The Duval Prepares advisory group voted at their quarterly meeting of August 24, 2009 to adopt the 2010 LMS Update and forward the document to the SEPPC for ratification as of September 8, 2009 to forward to the State of Florida and FEMA. Please see Appendix C for timeline on Plan review of each section of the LMS Update and approval process.

A copy of the revision comment form is on the following page, to reflect how the Risk Assessment and Planning Committee members were instructed to submit their revisions.

**Duval County Local Mitigation Strategy 2010 Plan Update
COMMENT FORM**

Name of Reviewer: _____

Page, Section & Paragraph #	Comment and Suggested Changes
--------------------------------	-------------------------------

During the 2010 Planning Update process, the multi-jurisdictional entities within Duval County which are participating 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

All of these entities are jurisdictions which continue to participate in the LMS. The primary difference between the LMS approved in 2005 and the 2010 LMS Update, is the clarification of the Consolidated City of Jacksonville as a participant. In the 2005 LMS, City

of Jacksonville was referenced to as “Duval County (unincorporated areas).” The reference to as “Duval County (unincorporated areas)” is eliminated in the 2010 Update.

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 and 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 Neighborhood’s Department, 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. Presentations to five of the six CPACs during August and September of 1998 informed them of the recently completed Hazard Mitigation Baseline Study (UNF, 1998) and introduced the scope and goals of the LMS process.

In addition, the Duval Prepares Partnership, the group of public and private organizations and agencies, which serves as the LMS Advisory Committee, advertises their meetings as open to the public. The notices are put on public display and the public is encouraged to attend and participate. When a draft of the plan resulting from the 2002-2005 revision process was completed a process was put in place to get it placed on the Northeast Florida Regional Council website and the Duval Prepares website. This will allow the public and all other interested people to view the document. A public workshop/informational meeting was held prior to completion of the final LMS so that comments could be gathered from the general public as well as the Advisory Committee/Duval Prepares, and the Working Group members that are consistently involved. The public is also always welcome, 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 2010 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. A formal public comment period was established from July 20 through August 20, 2009 for the citizens of Duval County and was formally noticed by the municipalities within the county. The plan was made available at the of City of Jacksonville website, www.coj.net during the July and August 2009 timeframe.

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 including Northeast Florida Builder's Association. In addition, a business representative on the Working Group through the Advisory Committee is the current 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 employer's in the area.

The extensive list of partners in the Duval Prepares Partnership includes: APL Logistics; AT&T; Bank of America; Blue Cross Blue Shield Florida; Chamber Alliance for Small Enterprises; Citizens Property Insurance Corporation; Construction Dynamics Group; Convergys Corporation; Duval County Public Schools; Edward Waters College; Federal Emergency Management Agency; Fleet & Associates Architects/Planners Incorporated; Federal Alliance for Safe Homes (FLASH); Florida Department of Community Affairs/Florida Division of Emergency Management; Florida Department of Financial Services; Florida Division of Forestry; Florida State College at Jacksonville; Florida State University; Institute for Business and Home Safety; GM Consulting, Inc.; Jacksonville Aviation Authority; Jacksonville Port Authority; JEA; JM Family Enterprises Incorporated; Langton Associates; National Oceanic and Atmospheric Administration/National Weather Service; Northeast Florida Association of Contingency Planners; Non Profit Center of Northeast Florida; Northeast Florida Builders Association; Northeast Florida Chapter American Red Cross; Northeast Florida Regional Council; PBS&J; The Small Business Center; State Farm Insurance Companies; Sunniland Roofing; The City of Atlantic Beach; The City of Jacksonville; The City of Jacksonville Beach; The City of Neptune Beach; The Town of Baldwin; U.S. Army Corps of Engineers; United Way of Northeast Florida, 211 Program; URS Corporation; The University of North Florida Small Business Development Center; Wachovia/Wells Fargo; Watershed Concepts; and Winn Dixie Corporation.

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 to attend. Efforts are also continuously being made to recruit new members into the Duval Prepares group. As new groups, businesses, organizations, and individuals

decide to attend the meetings, their names will be added to the email list to notify them of upcoming meetings as well.

A copy of the reviewer's commentary form is attached, to reflect how revisions were requested from the members of the LMS Advisory Group and stakeholders in the update process.

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 recognize the gaps in certain issues. 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 Comprehensive Plan, City of Jacksonville Flood Map Modernization Plan (in progress), 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 2005 (with updated 2009 information from the study update now in progress—however, NEFRC has instructed the City to utilize 2005 Hurricane Evacuation Study data, as the completed study will not be available until June 2010).

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 and Update Process

Through the process described above, existing documents, such as the CEMP and the City of Jacksonville 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. During 2007, the 2005 Local Mitigation Strategy, as part of the monitoring and process evaluation steps, was formally incorporated into the City of Jacksonville Comprehensive Plan, Element VII, Conservation/Coastal Management under Policy, 7.5.6, "As part of its Local Mitigation Strategy, the City shall adopt prior to October 1, 1999 a formal decision making process to evaluate redevelopment options, considering such factors as cost to construct, cost to maintain, repetitive damage, impacts on land use, impacts on the environment, and public safety."

As part of the planning process, the Advisory Committee identifies current plans, programs, policies/ordinances, and studies/reports that will augment or help support mitigation planning efforts. The LMS Working Group will be the mechanism for ensuring that entities integrate hazard mitigation into its future planning activities. Presently, the LMS Plan is integrated into the Duval County Comprehensive Emergency Management Plan (CEMP) and the Duval County Comprehensive Plan. The LMS Coordinator will continue to ensure that policies, programs and mitigation actions are consistent between the LMS Plan and the Duval County CEMP. Further, all jurisdictional CEMP's require consistency with the County CEMP.

It should be noted that most municipalities have indicated that the vulnerability assessment section of the LMS Plan has been incorporated into the Comprehensive Emergency Management Plan, and is also utilized in the same manner to help develop Continuity of Operations (COOP) Plans. Table 1 outlines how the jurisdictions have incorporated the LMS into Comprehensive Plans and other planning documents.

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 \$1000 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 10 Repetitive Loss Areas identified by the Consolidated City of Jacksonville CRS Plan.

Table 1: LMS Jurisdictional Incorporation

Local Mitigation Strategy Incorporation into Plans Matrix		
Jurisdiction	Incorporation of LMS into Jurisdictional Comprehensive Plan	Incorporation into other Planning Document
Consolidated City of Jacksonville	X	X (Consolidated City of Jacksonville/Duval County Comprehensive Emergency Management Plan-CEMP)
City of Jacksonville Beach	X	
City of Atlantic Beach	X	
City of Neptune Beach	X*	
Town of Baldwin	X*	

**Neptune Beach and Baldwin have written LMS into jurisdictional Comprehensive Plan through the 2009 Evaluation and Appraisal Report (EAR)*

G. 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. 1

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.

H. 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

1 Northeast Florida Regional Council document, Conflict Resolution -- Clay County LMS, and SB360er Section 3 amendments to Section 163.177, Florida Statutes

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

- I. 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.)*
- II. Ongoing communication
- III. Notification of funding cycles/solicitation of projects
- IV. Collection of projects; coordination of potential funding sources
- V. Plan/project analysis
- VI. Plan/projects forwarded for approval
- VII. Approval process monitored
- VIII. Projects recycled
- IX. Planning, study, revision

Schedule of 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.

I. Review and Maintenance

The Local Mitigation Strategy will be reviewed a minimum of every 5 years by the Advisory Committee, and changes and updates must be approved by the SEPPC. Review and maintenance of the 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 2010 LMS Update resides with the Division of Emergency Preparedness, City of Jacksonville, on behalf of the LMS Working Group and the LMS Advisory Group, also known as Duval Prepares. 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. Upon adoption of the Local Mitigation Strategy Update, these existing mechanisms will have hazard mitigation strategies integrated into them. The 2005 Local Mitigation Strategy set forth six guiding principals, 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.

In the 2010 LMS Update, the Duval Prepares, LMS Advisory Committee, formally adopted a measure to review the plan and current mitigation initiatives, and remove the completed mitigation projects as they are completed, rather than wait to the end of the five-year review period.

J. 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.

K. 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 complete 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 199 feet above sea level. 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. 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, 2009, pgs. 37-38)

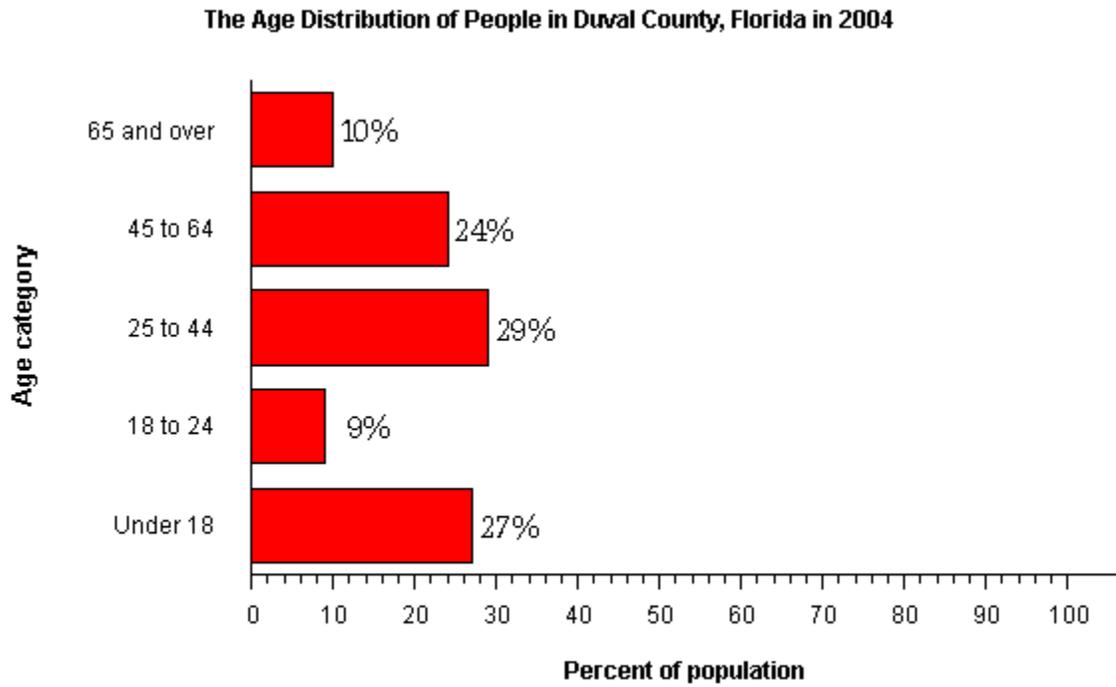
L. Demographics

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 combine to a 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 45 years old. The Consolidated City of Jacksonville/Duval County has an average of 1.429 persons per acre or 915 people per square mile.

The population of the Consolidated City of Jacksonville/Duval County in 2004 was 805,000; 417,000 (52%) females and 388,000 (48%) males. The median age was 35.1 years. 27% of the population were under 18 years and 10% were 65 years and older.

Figure 3: Age Distribution of People in Duval County



Source: American Community Survey, 2004

Source: Consolidated City of Jacksonville/Duval County CEMP, pg. 41-42

Figure 4: Duval County Population Density & Distribution

Table 1.9 Planning District Population Estimates—Linear by Planning District

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, Florida Office of Vital Statistics, City Of Jacksonville Planning and Development

Source: Consolidated City of Jacksonville/Duval County CEMP, pg. 43

Table 2: Demographic Description of Duval County's Population

Characteristic	Estimate	Percent	U.S. avg.
Total population	805,002	N/A	N/A
Male	388,043	48.2	48.90%
Female	416,959	51.8	51.10%
Median age (years)	35.1	N/A	36.2
Under 5 years	63,234	7.9	7.00%
18 years and over	585,847	72.8	74.50%
65 years and over	82,146	10.2	12.00%
White	519,608	64.5	75.60%
Black or African American	233,200	29	12.20%
Hispanic or Latino (of any race)	41,124	5.1	14.20%
American Indian and Alaska Native	2,923	0.4	0.80%
Asian	27,432	3.4	4.20%
Native Hawaiian and Other Pacific Islander	636	0.1	0.10%
Some other race	8,617	1.1	5.20%
Two or more races	12,586	1.6	1.90%
Social characteristics			
Population 25 years and over	513,622	N/A	N/A
High school graduate or higher	N/A	88.4	83.90%
Bachelor's degree or higher	N/A	24.3	27.00%
Civilian veterans (civilian pop. 18 yrs. and over)	106,225	18.3	11.20%
Disability status (population 5 years and over)	110,420	15	14.30%
Foreign born	55,664	6.9	12.00%
Male, Now married, except separated (population 15 years and over)	159,070	53.8	56.40%
Female, Now married, except separated (population 15 years and over)	151,195	46.5	51.40%
Speak a language other than English at home (population 5 years and over)	64,386	8.7	18.70%
Economic Characteristics			
In labor force (population 16 years and over)	421,901	69.4	65.90%
Mean travel time to work in minutes (workers 16 years and over)	23.4	N/A	24.7
Median household income (in 2004 inflation-adjusted dollars)	42,161	N/A	44,684
Median family income (in 2004 inflation-adjusted dollars)	52,235	N/A	53,692
Per capita income (in 2004 inflation-adjusted dollars)	22,760	N/A	24,020
Families below poverty level	N/A	10	10.10%
Individuals below poverty level	N/A	13.2	13.10%

Housing Characteristics			
Average household size	2.49	N/A	2.6
Average family size	3.1	N/A	3.18
Total housing units	357,721	N/A	N/A
Occupied housing units	323,166	90.3	89.60%
Owner-occupied housing units	205,122	63.5	67.10%
Renter-occupied housing units	118,044	36.5	32.90%
Vacant housing units	34,555	9.7	10.40%
Owner-occupied homes	205,122	N/A	N/A
Median value (dollars)	126,739	N/A	151,366
Median of selected monthly owner costs	N/A	N/A	N/A
With a mortgage (dollars)	1,058	N/A	1,212
Not mortgaged (dollars)	292	N/A	345
Source: U.S. Census Bureau, 2004 American Community Survey			

Source: Consolidated City of Jacksonville/ Duval County CEMP, page 47-48

Jurisdictional Demographic Data

The estimated population of Duval County for 2008 is 850,962 (United States Census Bureau, 2008 Population Estimates, Census 2000). 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 for Jacksonville, the beach communities and Baldwin are shown in Table 3.

Table 3: Population of Duval County by Municipalities

<i>Municipality</i>	<i>2010 Estimates</i>
Atlantic Beach	14,086
Baldwin	1,617
City of Jacksonville	876,627
Jacksonville Beach	24,196
Neptune Beach	7,377

SOURCE: Neptune Beach population records; 2008 Evaluation and Appraisal Report, City of Jacksonville Beach; Florida Housing Data Clearinghouse Population Projection by Age for 1990-2030 (Estimates listed only for 2010).

The Florida Housing Data Clearinghouse projects that Duval County will have approximately 1,051,211 residents by the year 2020, an increase of 272,332 persons or 35% from the 2000 Census. Of this total projected population for 2020, nearly 48,747 are anticipated to be living in other municipalities, mainly the beach communities (Source: Florida Housing Data Clearinghouse Population Projection by Age for 1990-2030). 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 may to be stationed at Naval Station Mayport, in the northeastern corner of Duval County. The additional Naval and civilian personnel that will arrive in Mayport with the aircraft carrier could be close to 5,000.

As the county's population reached near full employment in the late nineties, economic activity in the area surged, leading to significant growth in both residential and nonresidential construction. 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).

M. 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) and has a Community Rating System score of 7. A certified Floodplain Manager in the Engineering Division of the Public Works Department coordinates the Consolidated City of Jacksonville/Duval County's participation. The Consolidated City of Jacksonville/Duval County citizens may receive flood zone determinations or Community Rating System information from the Engineering Division of the Department of Public Works and the Development Management Group office within the Planning and Development Department. The City of Atlantic Beach, the City of Jacksonville Beach, and the City of Neptune Beach also participate in the NFIP as Class 8 communities. The Town of Baldwin does not participate in the NFIP, and as such, has a class 10 ranking. 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 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.

Portions of the Consolidated City of Jacksonville/Duval County are in a special hazard flood zone. Citizens cannot buy flood insurance if their local jurisdictional government does not participate in the program. The Consolidated City of Jacksonville/Duval County also

participates in the Community Rating System (CRS), which allows communities to have a discount on the 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 has a CRS rating of 7 but will be receiving a rating of 6 in the latter part of 2009. (Source, 2009 Consolidated City of Jacksonville CEMP, pg. 14)

The CRS has identified 10 repetitive loss areas within the Consolidated City of Jacksonville, as follows. Within these areas, are 179 repetitive loss (RL) properties. A general description of RL structures follows this section.

Description of the Repetitive Loss Areas

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.

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.

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 and 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.

Table 4: Description of RL Structures in Consolidated City of Jacksonville²

Property page #	No. of Bldgs. (estimated)	Residential	Commercial	Vacant Property
1-20	20	X		
21	5		X	
22-32	10	X		
33	1		X	
34-53	19	X		
54	0			X COJ owned
55-71	16	X		
72	1		X	
73-87	14	X		
88	2		X	
89	1	X		
90	1		X	
90	1		X	
91-95	4	X		
96	1		X	
97	1	X		
98	1		X	
99-116	17	X		
117	1		X	
118-126	8	X		

² Source: COJ Floodplain management, Planning & Development Division-CRS Overview, June 2008, pgs. 1-179. **Footnote: All RL properties listed are in the floodplain**

127	1		X	
128-138	10	X		
139	1		X	
140-142	2	X		
143	1		X	
144-149	5	X		
150	1		X	
151-158	7	X		
160	0			X
161	1		X	
162-164	2	X		
165 - 166	2		X	
167-170	3	X		
171	0		X	
172-	1	X		
173	1		X	
174	1	X		
175-177	0			X
178-179	2	X		

Source: COJ Floodplain management, Planning & Development Division-CRS Overview, June 2008, pgs. 1-179. Footnote: **All structures in this table are located in flood hazards.**

The other jurisdictions in Duval County which participate in the NFIP include City of Jacksonville Beach (CRS Rating 8), City of Atlantic Beach (CRS Rating 8), City of Neptune Beach (CRS Rating 8). The Town of Baldwin does not participate (CRS Rating 10).

The City of Jacksonville Beach, the second largest jurisdiction in Duval County, reported there are fourteen (14) repetitive loss (RL) properties within the city limits. Thirteen RL properties are residential and one RL property is classified as commercial. The City of Jacksonville Beach does not have designated repetitive loss areas. The City of Jacksonville Beach Planning Department (population 24,196) estimated that there are fourteen structures associated with the RL properties. The City of Neptune Beach (population 7,377) and the City of Atlantic Beach (population 14,086) do not have designated repetitive loss areas. Through a review of State of Florida Division of Emergency Management (DEM) and FEMA repetitive loss records made available to City of Jacksonville EPD in 2007, it is estimated there are no repetitive loss structures within the City of Neptune Beach or the City of Atlantic Beach.

Table 5: Jurisdictional Report of Repetitive Loss

City	No. of Bldgs. (estimated)	Residential	Commercial	Vacant Property
Consolidated City of Jacksonville	<i>Described in Table 4, pgs. 33-34</i>			
City of Jacksonville- Beach No specific designated repetitive loss area (class 8)	14	X 13	1 – 2305 Beach Blvd.	Not Applicable
City of Neptune Beach- No specific designated repetitive loss area (class 8)	Not Available (N/A)	N/A	N/A	N/A
City of Atlantic Beach- No specific designated repetitive loss area (class 8)	N/A	N/A	N/A	N/A
Town of Baldwin- Not a CRS Community (class 10)	N/A	N/A	N/A	N/A

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. Please see Appendix C for the timeline of the process used to reaffirm these guiding principles for the 2010 LMS Update.

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 all hazards.*
- 4. Hazard Mitigation efforts should strengthen and utilize land use guides, zoning codes, development controls, and incentives to protect vulnerable properties and vulnerable areas.*
- 5. Hazard Mitigation efforts should strive to protect business and industry by reducing their economic vulnerability and increasing their recovery capabilities.*
- 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 all 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 vulnerable properties such as mobile homes, substandard housing, etc. by using wind vulnerability maps.

Objective 2.2

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

Objective 2.3

Rehabilitate low-to-moderate income housing by retrofitting for flood and windstorm vulnerability

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 stormwater management systems.

Objective 3.3

Allow only low-density residential development in repetitive flood loss areas otherwise suitable for residential development.

GOAL 4: *Strengthen and utilize land use guides, zoning codes, development controls, and incentives to protect vulnerable properties and vulnerable areas.*

Objective 4.1

Monitor floodplain regulations and enforcement at all levels 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

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

Objective 4.4

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

Objective 4.5

Enforce regulations for new structures in 100-year flood areas to be elevated to the Base Flood Elevation.

Objective 4.6

Enact and enforce policies to restrict locations of critical facilities (schools, hospitals, etc.) in proximity to identified hazardous material facilities.

Objective 4.7

Enact development standards in urban/wildland 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 revegetation.

GOAL 5: *Strive to protect business and industry by reducing their economic vulnerability and increasing their recovery capabilities*

Objective 5.1

Develop and implement disaster planning training through collaborative programs with appropriate government agencies and community organizations.

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

Develop a set of mitigation guidelines for small 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

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

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

Objective 6.2

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

Objective 6.3

Develop and implement 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 table contains information on Policies, Ordinances and Programs of Duval County and its associated municipalities and agencies. 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 6 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 2010 LMS Update.

Table 6: Mitigation Policies

Category	Policy/ Objective	Source	Notes
Reduce Risk	City shall continue to ensure access to beaches, <u>coastal</u> shoreline, <u>and the St. John's River and its tributaries</u> available to public	Comp Plan, CCM Obj. <u>6.5</u> (COJ)	All policies under this objective either implemented or part of ongoing programs. (Objective supports maintaining <u>coastal</u> shoreline for non-development uses.)
Decrease Vulnerability	Maintenance/inspection program for water quality	Comp Plan – A.01.02, D.01.01.01, D.01.04, D.02, H.01.01 (NB); National Pollutants Discharge Elimination System (COJ)	<u>Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u> (COJ) – 5 year program with partners (USACOE, etc.)
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	FS 373.414 and FAC 62-330.200(2)(c) which adopts 40C-4.302 (DEP); Comp Plan-A.01.01.05, D.04, E.01, E.02.02 (NB)	On-going; during review process
Decrease Vulnerability	Protection of potable water sources	Comp Plan L.1.1.11 (B); A.01.01.05.4, A.01.02.02, D.01.01.01, D.02 (NB)	
Reduce Risk	Recommends underground utilities (although recommended for aesthetic reasons, would also serve mitigation function)	Growth Management Task Force Report p.17 (COJ)	

Category	Policy/ Objective	Source	Notes
Increase Recovery Capabilities	Promote more "Supply side" economic development opportunities	Growth Management Task Force Report – p. 58 (COJ)	Encourages diversification – 2 initiatives underway
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	Growth Management Task Force Report (Transportation Section)– p. 5 (COJ)	Broad transportation master planning process funded; initiated 11/13/98
Reduce Risk	Evaluate potential sensitive natural areas for protection	Growth Management Task Force Report (1997) – p. 30 (COJ)	Conservation dedications encouraged where possible with land use changes
Decrease Vulnerability	[Tree mitigation issues – No consensus on goals reached]	Growth Management Task Force Report – p. 24 (COJ)	Mayor has re-addressed issue; landscaping initiative in Neighborhoods Dept.
Decrease Vulnerability	Weekly back-up of computer data with off-site storage	Property Appraiser's Office (COJ/DC)	
Land Use/Zoning/Development Controls/Incentives	Provision for Intergovernmental coordination committee with other Duval County municipalities, to address issues of mutual concern & interest; ex. Comp plan amendments, development impact; joint funding projects for recreation, utilities, housing rehabilitation, estuarine systems, road maintenance (invite various governmental, public and private entities to participate)	Comp Plan, Obj. G.01.01-.04 (NB)	

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	City shall encourage the continuance of federally authorized Jacksonville Beach restoration Project	Comp Plan, CCM Obj. 6.2 (COJ)	All policies under this objective either implemented or part of ongoing programs. <u>Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>
Decrease Vulnerability	City shall establish construction standards that minimize the impacts of man-made structures on beach or dune systems	Com Plan, CCM Obj. 6.3 (COJ)	Implemented and regularly updated as need requires. Building codes have been adopted that include hurricane wind force standards (100 mph winds). <u>Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>
Decrease Vulnerability	City will join with adjacent local communities to coordinate local input into future beach renourishment projects performed by USCOE (also Intergovernmental Coordination)	Comp Plan, CM Pol. 5.2.2 (JB)	On-going; cyclical COE contract

Education/Awareness/ Training/Communication	EPD will coordinate education and training in mitigation-related issues concerning any actions that may save lives and property	CEMP- 1.1 (COJ); Comp Plan-G.01 (NB)	(1) Information/training coordinator on staff; disaster preparedness public information, annual training and workshops for all ESF's. City of Jacksonville conducts annually at least 1 functional full-scale training exercise (2) Mitigation Planner includes public information component on hazard mitigation On-going Programs
Education/Awareness/ Training/Communication	Public education and awareness for disaster preparedness	EPD/COJ Programs	
Education/Awareness/ Training/Communication	Enhanced procedures and routes to facilitate expedient evacuation	Hurricane Evacuation Traffic Management Plan (EPD/Duval Co./COJ)	Plan has been approved; awaiting formal acceptance/execution by City officials
Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Establishes evacuation time for Category 3 (12 hours)	Comp Plan, CM Obj. 3.2 (JB)	On-going; need to ensure ability to comply
Decrease Vulnerability	Calls for evacuation of entire city for Category 3,4, or 5 hurricanes	Emergency Operations Plan, June 1994; p.III-1.9, F (JB)	Now superseded by new Storm Surge evacuation Zone maps; on-going
Decrease Vulnerability Decrease Vulnerability	Procedures for hurricane evacuations City shall reduce excessive hurricane evacuation times within specific areas of designated Hurricane Evacuation Zones and maintain all other evacuation times with acceptable standard.	CEMP II-6 (COJ) Comp Plan, CCM Obj. 7.1 (COJ), <u>and Policy 7.1.1</u>	Procedures tested through training and exercises. Standards have been established, although actual evacuation times have yet to be tested. <u>Anticipated completion of working group policies - December 2009. Objective and policy numbers reflect that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>
Decrease Vulnerability	<u>A working group has been established to consider a set of policies that would allow for a citywide local mitigation program for proposed amendments to the FLUM impacting hurricane evacuation time.</u> Hurricane evacuation procedures for community and city government; protection of public health and welfare, critical records & facilities during evacuation, response and recovery	Hurricane Preparedness Plan, 1993 (NB)	Plan anticipates 4 day operation of government without outside assistance; reviewed each April
Decrease Vulnerability	Hurricane preparedness policies; cooperate and participate to maintain or reduce hurricane evacuation times	Comp Plan, Obj. E.01.05 (NB)	Plan has been approved; awaiting formal acceptance/execution by City officials
Decrease Vulnerability	Future improvements to Emergency Evacuation Route roads shall include remedies to reduce or eliminate hindrances likely to result from flooding	Comp Plan, CM Pol. 3.2.3 (JB)	All evacuation routes in Jacksonville Beach are under control of JTA and/or FDOT

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Work with MPO and FDOT on indentifying and finding solutions to deficiencies on State maintained road (which are also Evac. Roads)	Comp Plan, Traffic Circulation Element Pol. 1.2.3 (JB)	On-going
Prevent Repetitive Flooding Land Use/ Zoning/ Development Controls/ Incentives	Strict regulation of construction in floodplains NFIP/CRS/FIRM's standards and requirements for flood insurance policies, community discounts (updated) – The City floodplain management responsibilities through Planning Department's Development Services reports there are 179 repetitive loss properties within 10 repetitive loss areas, as of June 8, 2008. (Please see footnote at end of section regarding NFIP Participation and the repetitive loss area descriptions.	Local Ord. Ch. 652 – New Flood Damage Prevention Ordinance (COJ) FEMA Program (PW/COJ)	Adopted June 1998 City passed FEMA audit/Application submitted for CRS – 10/98 – anticipate rank of 7, possibly 6
Prevent Repetitive Flooding	Identifies floodplain management issues and recommends corrective actions to reduce new and repetitive property losses from flood events	Floodplain Management Plan – Goals – p. 20, Recommendations – p.43 (Emergency Preparedness Division, PW/COJ)	Approved by Emergency Preparedness Planning Council 9/24/98; under State review; forwarded to City Council. Chapter 674 of City Code.
Prevent Repetitive Flooding	Regulates development of land, subdivisions and areas subject to seasonal or periodic flooding	Com Plan L.1.1.6 (Town of Baldwin)	Implementation is on-going

Category	Policy/ Objective	Source	Notes
Land Use/Zoning/ Development Controls/ Incentives	Recommends protection of environmentally sensitive and unique features with Special Management Area activities (natural drainage systems)	Growth Management Task Force Report – Final Recommendations: Issue Six p.61 (COJ)	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 4 th area (Cedar Swamp) was acquired by COJ, State and SJRWMD
Reduce Risk	Wetland projects must not cause adverse flooding to on-site or off-site property	FAC 62-330.200(2)(c) which adopts 40C-4.301(1)(b) (Dept of Environmental Protection)	This requirement is evaluated and addressed during review of the permit application (Compliance and enforcement are a routine part of the Department's activities)
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.	FAC 62-701.340(4)(b) (DEP)	This requirement is evaluated and addressed during review of the permit application. (Compliance and enforcement are a routine part of the Department's activities)
Land Use/ Zoning / Development Controls/ Incentives	See #1 New Flood Plain Regulation, Flood Damage Prevention Ordinance	COJ	Meets CRS requirements

Category	Policy/ Objective	Source	Notes
Reduce Risk	Stormwater management plan	Master Stormwater management plan (1995) (COJ)	Drainage Bond Program approved
Land Use/ Zoning/ Development Controls/ Incentives	Develop, adopt, and implement comprehensive storm water management ordinance	Comp Plan – Pol. C.1.2.2 (B); A.01.02, D.01.01.01, D.01.04, D.02, H.01.01 (NB)	Has not been adopted
Land Use/ Zoning/ Development Controls/ Incentives	Land Development Regulations shall contain provisions for open space and Stormwater management	Comp Plan L.1.1.9 (B)	Included in Land Development Regulations (6.05.00.04)
Land Use/ Zoning/ Development Controls/ Incentives	City shall rigorously enforce floodplain management regulations; eliminate all septic tanks in City by 1/1/93	Comp Plan – CM Policy 1.2.1; 1.2.2 (AB); A.01.02.01, D.01.03, E.01.02 (NB)	Enforce floodplain regs; some septic tanks still exist (11/98)
Land Use/ Zoning/ Development Controls/ Incentives	Regulates permitted uses, lot intensities – Supplemental Standards for Variances in Flood Hazard Areas	Land Development Regulations, Sec. 34.287(JB); Comp Plan-A.01.01, A.01.03, A.01.04, A.01.06, E.01.04, E.01.06, E.01.10 (NB)	On-going
Land Use/ Zoning/ Development Controls/ Incentives	Regulates Stormwater performance and design standards – use natural systems to “maximum extent practicable”	Land Development Regulations 6.05.00-.04 (B); Comp Plan – D.01.01.01, D.03, D.04, E.01.02, E.02.02, H.01.01 (NB)	Implemented as development proposals are submitted for review
Land Use/ Zoning/ Development Controls/ Incentives	Requirements for minimum floor elevation of buildings within 100-year floodplains	Land Development Regulations 12.02.10(2)(b)(4) (B)	Implementing

Category	Policy/ Objective	Source	Notes
Reduce Risk	Ensure adequate storm water drainage to prevent flooding and protect water quality. New drainage systems for development with Town, assess drainage system annually, intergovernmental coordination of drainage facility capacities; protection of natural drainage, environmentally sensitive lands from development; restriction of hazardous waste sites – protection of soil and natural vegetation	Comp Plan Goal U.3, Obj. U.3.1, Pol.U.3.1.1; Obl.U.3.2; U.3.3; U.3.4; Pol.R.1.1.1; Obj.C.1.3, Pol.C.1.3.1; Obj.C.1.4 Pol.C.1.4.1, C.1.4.2; Obj.C.1.7, Pol.C.1.7.1; Obj.C.1.9, Pol.C.1.9.1 (NB)	Implementing
Land Use/ Zoning / Development Controls/ Incentives	Land development regulations shall regulate areas subject to periodic and seasonal flooding, drainage, and storm water management	Comp Plan, Pol. 01.01.05 (AB)	Hazard Mitigation Code addresses this
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	Comp Plan. Obj. D.01.01.01, D.03.01, D.04, E.01.02, E.02.02, H.01.01 (NB)	
Reduce Risk	Promote implementation of on-going stormwater management program; create dedicated funding source (long-term funding for drainage projects)	Growth Management Task Force Report – p.55, 59 (COJ); Comp Plan- D.01.01.01, D.02.01, D.03, H.01.06 (NB)	Funding for drainage improvements underway

Category	Policy/ Objective	Source	Notes
Land Use/ Zoning / Development Controls/ Incentives	Regulations for building and development in flood hazard areas – standards for variances	Land Development Regulations (JB)	On-going
Land Use/ Zoning / Development Controls/ Incentives	Regulations for building and development in Special Flood hazard areas – lowest floor elevated to above Flood Protection Elevation; provision for notification to buyers regarding Flood Hazard Warning	Land Development Regulations 5.03.02; 5.03.03 (D) (B)	Implementing
Land Use/ Zoning / Development Controls/ Incentives	Flood Hazard area development code restricts use and density	Land Development Regulations (JB)	On-going
Decrease Vulnerability	Public drinking water supply wells shall be located on ground least subject to localized flooding	FAC Chapter 62-555.312(5) (DEP)	This is addressed during permit application review. (Compliance and enforcement are a routine part of the Department's activities)
Reduce Risk	Identify and recommend to the State and SJRWMD floodplains that would warrant acquisition under CARL program	Comp Plan, Conservation Element Pol.1.3.1 (JB)	On-going, various grant program applications, i.e. Preservation 2000, SWIM, CARL
Decrease Vulnerability	Procedures, roles & responsibilities for dept. personnel pre to post storm event; provisions for off-site operation, interagency coordination with State, Federal	Tropical Storm/Hurricane Preparedness Plan (NE Dist.- FDEP); Emergency Hurricane Preparation Plan (NB)	Procedure for informing new employees; post-event revision of plan
Category	Policy/ Objective	Source	Notes
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.	Comp Plan, CM Pol. 3.1.4, 3.3.10, 3.3.11 (JB)	On-going
Decrease Vulnerability	New or expanding boat facilities shall provide adequate protection against storm surges, winds, hurricanes, petroleum, chemicals, or other hazardous material spills	Comp Plan, CCM Obj. 10.3 (COJ)	Being implemented through boat facilities citing criteria & state and federal regulations that address spills/hazardous materials. <u>Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>
Reduce Risk	Bypass provision – Industrial and domestic wastewater facilities permitted by DEP shall adhere to the emergency provisions set forth in FAC 62-620. Facility shall demonstrate that bypass (intentional diversion of waste streams from any portion of treatment works) was unavoidable, and that there were no feasible alternatives to the bypass and must comply with the other conditions set forth in the rule	FAC Chapter 62-620.610(22) (DEP)	These provisions allow for bypass under certain emergency circumstances. (Compliance and enforcement are a routine part of the Department's activities)

Category	Policy/ Objective	Source	Notes
Reduce Risk	Upset provisions – Industrial and domestic wastewater facilities permitted by DEP are required to comply with certain provisions concerning upsets (exceptional incident in which there is unintentional and temporary non-compliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee) that may occur at the facility	FAC Chapter 62-620.610(23) (DEP)	These provisions allow for a defense to be presented subsequent to a facility upset. (Compliance and enforcement are a routine part of the Department's activities)
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	Industrial Wastewater Permit Application Form 2CS (DEP)	Permit issuance is dependent upon satisfaction of all conditions in application (Compliance and enforcement are a routine part of the Department's activities)
Decrease Vulnerability	Solid waste must not be disposed of by being placed within 200 feet of any natural or artificial water body, including waters of the state, except bodies of water contained completely within the property boundaries of the disposal site, which do not discharge from the site to surface waters.	FAC Chapter 62-701-300(g), 62-701(4)(b) (DEP)	This requirement is 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	Domestic wastewater treatment plants must be sited in a manner to comply with 62-600.400(2)©	FAC Chapter 62-600.400(2)(c) (DEP)	This is addressed during permit application review (Compliance and enforcement are a routine part of the Department's activities)
Reduce Risk	Air permitting requirements	FAC Chapter 62-4 (DEP)	Compliance and enforcement are a routine part of the Department's activities
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	Comp Plan CCM Obj. 10.4 (COJ)	Being Implemented through State permitting process with SJRWMD and FDEP. <u>Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>
Decrease Vulnerability	Permitted hazardous waste facilities must meet all siting requirements of both rules before permit will be issued. 403 F.S> 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.	403.7211, Florida Statutes, and 40 CFR 264.18 (DEP)	Permits are not issued unless all conditions for siting are met. (Compliance and enforcement are a routine part of the Department's activities.)

Category	Policy/ Objective	Source	Notes
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 intensity (Density) or (3) the developer pays impact fee for all road improvements.	Comp Plan, CCM Pol. 3.2.2 (JB)	On-going
Decrease Vulnerability	Maximum feasible protection of life and property from the effects of natural disaster; review hurricane plan, evacuation time, road elevation projects, assess density impacts on evacuation times; redevelopment activities in CHHA, temporary moratoria on construction, structures suffering substantial loss, assessment of alternative redevelopment strategies (1992), def. of CHHA, directing population growth away from	Comp Plan, CM-Goal 2 (AB); A.01.01.05, A.01.06, H.01.01.05, E.01.04 (NB)	Non-conforming structures in CHHA must be rebuilt to current standards if damaged more than 50% (follows NFIP/CRS requirements)
Land Use/ Zoning / Development Controls/ Incentives	Provision to coordinate future land uses and coastal area population densities with appropriate regional hurricane plans; priority for evacuation route, evacuation time considerations	Comp Plan, Obj. A.01.01.01, A.01.06, E.01.05, E.01.06 (NB)	Land Development Regulations currently being written – anticipated completion by June 1990
Decrease Vulnerability	Hazard mitigation provisions incorporated into City's Hurricane Plan	Comp Plan Cm-Pol.1.2.5 (AB); E.01.10, A.01.06 (NB)	Completed

Category

Decrease Vulnerability

Land Use/ Zoning /
Development Controls/
Incentives

Land Use/ Zoning /
Development Controls/
Incentives
Reduce Risk

Decrease Vulnerability

Policy/ Objective

Outlines emergency procedures – Hurricane SOP calls for identification and initiation of long term mitigation strategies based on City Comprehensive Plan

Defines standards and regulations for construction in coastal building zone (1,500 landward of CCL), including minimum elevation, anchor systems, 140 mph wind standard

Conversion from single family units to duplex and multi-family in oceanfront development (Residential District A)

Adequate shelter space shall meet standard for population in Hurricane Evacuation Zones at risk under Category 3 storm event; the City should assist in providing shelter and transportation for special needs population

Habitable major structures which extend seaward of the coastal construction control line or 50-foot setback shall be designed to resist 100-year storm events

Source

Emergency Operations Plan, June, 1994; p.3-1.26 #43 (JB); Comp Plan – A.01.06.03 (NB) Ord. 25-96-28, Chapter 6 (Coastal Construction Code) (AB)

Comp Plan p.A-8 (NB)

Comp Plan CCM Obl. 7.2 (COJ), Policies 7.2.1 and 7.2.6

FAC Chapter 62B-33.0007 Structural Requirements for Permitting (DEP)

Notes

Post-disaster, on-going

140 mph standard enforced in CHHA, 100 mph standard outside CHHA

Increases density in coastal area; conflicts with policies in other beach communities to limit density increases in those areas

Implemented. Shelter criteria and standards under constant review with American Red Cross and Duval County School Board; shelter survey underway by State Engineers, Special Needs Coordinator at EPD. Policies are in place that require new residential development in CHHA to contribute to cost of emergency shelter space in existing school sites. Policies have been modified under this objective to add community centers as potential shelter sites when appropriately located, designed, and constructed. Objective number and underlying policies reflect that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.

Category

Land Use/ Zoning /
Development Controls/
Incentives

Policy/ Objective

Level of Service standard for new developments – 3 year frequency, 1 hr. Duration for pipes, 25 year/24 hour for ponds and basins

Control redevelopment activities within storm-damaged areas

Incorporate into land development regulations density ranges and development standards which will reduce to the maximum extent possible the exposure to human life and property
Multiple policies for future land use, coastal management and public utilities mitigation

Regulates development/building process

Source

Comp Plan D.01.01.01 (AB)

Comp Plan, E.01.10 (NB)

Comp Plan CM-Pol. 1.2.3 (AB)

Comp Plan- FLU, CM and PU Elements (All munic.); A.01, B.01, D.01, E.01, F.01, G.01, H.01 (NB) Land Development Regulations (COJ); Comp Plan- A.01, C.01, E.01.06.06 (NB)

Notes

Must meet St. Johns River Water Management District level of service

Adopt by 1994

Accomplished through zoning codes and land use regulations

Detailed list of mitigation-related objectives in Duval County Floodplain Management Plan, 1998, (p.20-33)

Referred to as “Red Book”

Category

Land Use/ Zoning /
Development Controls/
Incentives

Policy/ Objective

Encourage infill development; improve and maintain sound infrastructure conditions (roads, drainage, water and sewer)

Strict regulation of standards for development

Regulates building code for construction in coastal areas

For any structure damaged by more than 50% of its assessed value, the entire structure must be brought into compliance with current codes

Strict regulation of exceptions and variances

Requirement for all communication lines in new subdivisions or mobile parks underground

Source

Growth Management Task Force Report- .53 (COJ); Comp Plan- H.01.01, A.01.04 (NB)

Loc. Ord. Ch. 654 – Subdivisions (COJ)

Ch. 161.053, Florida statutes

Zoning Code (JB); CEMP, Pol. 7.5.8 (COJ)

Loc. Ord. Ch. 656 &658 – Zoning Code (COJ)

Land Development Regulations 6.04.02 (b) (B)

Notes

Incentives for infill housing investments in specified area adopted; mixed use districts being established; Springfield Zoning Overlay Study completed; funding for septic tank replacement being studied
On-going

On-going

On-going

Implementing – Regulation serves both aesthetic and mitigation purposes

Category	Policy/ Objective	Source	Notes
Land Use/ Zoning / Development Controls/ Incentives	Target economic development/growth to Northwest Duval County	Mayor's Initiative/ Jacksonville Economic Development Commission Policy, 1997-98 (COJ)	Directs new commercial/ industrial growth away from densely populated areas. Need to identify targeted area more closely to determine if it impacts flood zones or hurricane evacuation zones.
Land Use/ Zoning / Development Controls/ Incentives	Structures that suffer damage to pilings, foundations, or load bearing walls shall be required to be reconstructed landward of CCCL, or be modified to remove the areas most prone to damage.	Comp Plan – CM Element, Pol. 3.3.8; Local Flood Regs. (JB) CEMP, Pol. 7.5.9 (COJ)	
Increase Recovery Capabilities of business and industry	City shall maintain a contingency fund equal to the 10% of the value of the public facilities in the CHHA to cover local government's match funds for disaster assistance grants	Comp Plan, CM. Pol. 3.3.10 (JB)	
Decrease Vulnerability	City shall identify structures in the CHHA, inventory their assessed value, judge the utility of the land for public access, and make recommendations for acquisition when post-disaster opportunities arise	Comp PLa. Cm Pol. 3.3.11 (JB)	

Category	Policy/ Objective	Source	Notes
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”	Duval County Comprehensive Emergency Management Plan (CEMP) – Basic Plan – 31,32; Comp Plan G.01 (NB)	
Reduce Risk	City will participate in activities and programs intended to reduce the risk to lives and to minimize damage to public and private properties	CEMP – III-5 (COJ)	City's FY96-97 Business Plan required each City agency to assess/prepare a mitigation plan; EPD is facilitating development of the County/ City local mitigation strategy by 8/99; Citizen Planning Advisory Committee's completed neighborhood-based emergency preparedness plans 12/97; Consolidated City of Jacksonville participates in NFIP
Increase Recovery Capabilities of business and industry	(1) National model for training businesses in disaster planning; (2) Business & Industry Preparedness training	(1) Chamber of Commerce (2) American Red Cross	Not implemented locally
Reduce Risk	Chairman of JPA and designated representative from military participate in EPPC	Local Ord. 674, Executive Order 96-201 (COJ)	Policy level coordination of emergency activities including mitigation and post-disaster recovery

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Emergency provisions for damage of existing coastal structures – protection of public infrastructure and private structures	FAC Ch. 62B-33.0051 Coastal Armoring (DEP)	
Decrease Vulnerability	Consider steps to prevent or reduce “harmful consequences of disaster” make recommendations to City Council	Local Ordinance Chapter 674.214(a) & Mayor’s Executive Order 96-201 (COJ); Comp Plan A.01.06, E.02.04 (NB)	Establishes Emergency Preparedness Planning Council; specifies disaster preparedness, response & recovery procedures
Decrease Vulnerability	Management of federal disaster related policies and programs; National Mitigation Strategy guides federal policy	Federal Emergency Management Agency (FEMA); Comp Plan E.01.01.01, E.01.03, E.01.04, E.02.02.08 (NB)	
Increase Recovery Capabilities of business and industry	Business & Industry Preparedness Practices	American Red Cross	Training Program
Increase Recovery Capabilities of business and industry	Disaster coordinators/plans for major employers	Association of Contingency Planners	Local chapter promoting professional disaster planning for businesses
Decrease Vulnerability	Interagency Emergency Management Tams (all-disasters)	FDOF	No local team currently

Category	Policy/ Objective	Source	Notes
Land Use/ Zoning/ Development Controls/ Incentives	Post-disaster redevelopment plan policy; actions for public health and safety, identification of potential removal, relocation or structural modification; limit redevelopment in areas prone to hurricane damage; regulate construction and land uses in areas vulnerable to flooding; recommendations for Mitigation	Comp Plan, Obj. E.01.04, E.01.05, E.01.06, E.01.10 (NB)	
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	Comp Plan, CCM Obj. 7.5 (COJ)	No event to initiate implementation. <u>Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>
Decrease Vulnerability	The City shall provide immediate response to post-disaster emergency situation. Post-disaster redevelopment procedures; appointment of Recovery Task Force; coordination with Federal, State, regional, and local agencies	Comp Plan, CM – Obj. 3.3 (JB); Chapter 9G-13, Florida Administrative Code, “Post-Disaster Redevelopment Rule”	Specific procedures to initiate immediate response, establish Recovery Task Force, redevelopment procedures, emergency permitting

Category	Policy/ Objective	Source	Notes
Decrease Vulnerability	Mayor will appoint an EOC Executive Group responsible for overseeing long-term recovery and mitigation efforts, including emergency permits, analyzing redevelopment options, recommending amendments to appropriate policies and procedures, and coordinating disaster assistance with state and federal officials	CEMP – R-II-A (COJ); Comp Plan-G.01, E.01.05, A.01.06.03 (NB)	(1) No initiating event has occurred to date; (2) Recommend that Mayor appoint and activate RTF for pre-disaster assessment of post-disaster redevelopment options
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 Coastal High Hazard Area (CHHA)	Comp Plan, CCM Obj. 7.3 (COJ)	Successfully implemented under existing policies; existing codes, FEMA requirements and FDEP regulations adequate for compliance. <u>Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>

Reduce Risk	Limit development and density within CHHA; direct it outside the CHHA; mitigate impact of natural hazards in area.	Comp Plan, CCM Obj. 7.4 (COJ)	Being implemented; policy <u>in place</u> that promotes clustering; further defined facilities prohibited in CHHA. <u>Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>
Land Use/ Zoning/ Development Controls/ Incentives	Establish land use criteria giving priority to siting and development of water-dependent uses within the Coastal Area, as compared with other shoreline uses	Comp Plan, CCM Obj. 11.1 (COJ), <u>Policy 11.1.1</u>	Implemented, partially based on Future Land Use Element of 2010 Plan (gives priorities of shoreline use). Performance standards for shoreline development devised to prevent additional storm water runoff. <u>Policy modified to include proposed amendments to the FLUM as the least desirable option to protect working waterfront components. Objective number and Policy reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>
Category	Policy/Objective	Source	Notes
<u>Decrease vulnerability</u>	<u>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 upon the enactment of its Concurrency Management System in accordance with Chapter 163 (Part II), F.S.</u>	<u>Comp Plan, CIE Policy 1.1.5</u>	<u>Specific standards for each concurrency area can be found within the Capital Improvement Element (CIE) of the Comp Plan. Policy number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.</u>
<u>Reduce Risk</u>	<u>The City shall continue to promote financial support for research and planning to ensure water quality health for the St. Johns River and its tributaries, as well as to meet the City's water supply needs.</u>	<u>Comp Plan, CIE Policy 1.4.4</u>	<u>These policies are proposed in the EAR-based amendments. The EAR-based amendments are currently undergoing review by DCA. If no changes are required, the text will be adopted during fall 2009.</u>
<u>Decrease Vulnerability</u>	<u>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.</u>	<u>Comp Plan, TE Policy 3.1.2</u>	<u>A portion of this policy is new within the EAR-based amendments. The EAR-based amendments are currently undergoing review by DCA. If no changes are required, the text will be adopted during fall 2009.</u>

Category	Policy/ Objective	Source	Notes
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	Comp Plan, Coastal Management Element – Pol. 3.1.7 (JB)	On-going
Reduce Risk	City funded public facilities shall not be built in CHHA, unless facility is for public access or resource restoration	Comp Plan, CM Pol. 3.1.6 (JB)	On-going
Reduce Risk	Limits residential development to lowest density in A-zones; requires flood-proofed infrastructure in A-zones	Comp Plan, CM – p.189 (JB)	On-going
Reduce Risk	Limit to public expenditures and new public construction in coastal high hazard areas, except for restoration of natural resources	Comp Plan CM-Obj.1.1 (City of Atlantic Beach)	No action taken as of 11/98
Prevent Repetitive Flooding	Prohibit reconstruction of structures in locations experiencing repeated damage from severe storms	Comp Plan, CM-Pol. 1.2.4 (AB); E.01.04, E.01.06, E.02.02, H.01.01.05(b) (City of Neptune Beach)	No action/provisions
Reduce Risk	Limits public expenditures that subsidize development in CHHA, except for restoration of natural resources, enforce coastal construction setback lines, enforce requirements of NFIP, prohibit development in HHA, designate as CHHA areas within v-zones & seaward of CCCL	Comp Plan, Obj. E.01.04 (9J-5.012(3)(b)(5) (NB)	

Category	Policy/ Objective	Source	Notes
Reduce Risk	Minimize capital investment that subsidizes development in high-hazard coastal areas	Comp Plan, Obj. H.01.01.05, H.01.02, E.01.10 (NB)	
Reduce Risk	SLOSH model of potential storm surge and flooding from hurricanes of five different intensities	Storm Surge Atlas, July 1998 (NE Florida Regional Planning Council)	Part 1 of a 3-part Hurricane Evacuation Study for Northeast Florida
Reduce Risk	Policy that allows DOF to assess lands as fire problem areas – can burn as mitigation action	Rule 51-2; FS Chapter 590.026 (authorized by Hawkins Bill)	Conflicts – Local Ordinances discourage burning due to permit process
Land Use/ Zoning/ Development Controls/ Incentives	Policies for Forest Protection, Rural Open Burn, Open Burning	Ch. 590 F.S. Forest Protection, Ch.51.2 FAC Rural Open Burn, Ch. 62-256 Open Burning/Frost Protection (DOF)	
Reduce Risk	FDOF will identify activities required to minimize threat of wildlife in areas of new development or adjacent to wild lands	FS Chapter 590.026(6)(a) – Prescribed Burning Act (DEP)	To be completed by 2-1-91
Reduce Risk	Fire prevention and mitigation education programs for prescribed burns, establishing fire breaks	FDOF programs	
Decrease Vulnerability	Establishes pre-approved local wind load standards for single family wood frame construction	Wind Standards for Single Family Dwellings, 1994 (NE Florida Builders Association)	Promotes pre-engineered local standards for specific types of construction; under-used
Decrease Vulnerability	All buildings must be built to withstand various wind loads	1997 Southern Building Codes Congress International, Standard Building Code (JB)	Ord. 97-7721, adopted 12-15-97
Decrease Vulnerability	Establishes standards for wind load – 110 mph east of 4 th Street, 100 mph west of 4 th Street	1997 Standard Building Code – Local Code (NB)	

Category

Decrease Vulnerability

Policy/ Objective

Encourages further development and implementation of a River Restoration Plan to help protect and restore water quality health for the LSJRB and its tributaries

Source

Comp Plan, CCM Obj. 6.4 (COJ)

Notes

On-going: COJ participates in the River Accord partnership and River Alliance to promote restoration and preservation of the LSJRB. Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.

Decrease Vulnerability

Calls for implementation of the Basin Management Action Plan and restoration of health of the River and its tributaries

Comp Plan, CCM Obj. 6.6 (COJ)

Being implemented. The City continues to coordinate with FDEP and SJRWMD to implement the TMDL program. Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.

Land Use/ Zoning/ Development Controls/ Incentives

Considers the impact of development on the river and its tributaries during the land development review process

Comp Plan, CCM Obj. 6.7 (COJ)

Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.

NEW COMMENTS

Category

Decrease Vulnerability

Policy/ Objective

Emergency Preparedness Division shall participate in discussions and evaluations with FDOT, JTA, and the City of Jacksonville to identify additional roads to be included in the City's evacuation system and in the CIP.

Source

Comp Plan, CCM Policy 7.1.12

Notes

On-going: COJ participates in the River Accord partnership and River Alliance to promote restoration and preservation of the LSJRB. Objective number reflects that of the EAR-based amendments that are pending DCA review. If no changes are required, the EAR-based amendments will be adopted during fall 2009.

THIS PAGE IS INTENTIONALLY LEFT BLANK

Section III - Hazard Identification & Vulnerability Analysis

A. Identifying Hazards

To ensure the development of a functional document that will facilitate hazard mitigation activities in Duval County, the LMS Advisory Committee conducted an extensive all-county Hazard Identification and Vulnerability Assessment, adopted as a part of the 1998 LMS, that considered both natural and man-made hazards. This comprehensive process provides a pre-disaster statistical basis 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 determines the probability of occurrence of each hazard. At the February 2, 2009 meeting of the LMS Advisory Committee, the Hazard Identification and Vulnerability Analysis process was accepted to support mitigation decision-making and adoption of projects into the 2010 update.

Certain assumptions were made during the assessment process to allow committee members to focus on the level of risk from significant hazards:

- a. Although the risk assessment was conducted with an all-hazards approach, a few hazards are not addressed 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, especially through the Consolidated City of Jacksonville Duval County Comprehensive Emergency Plan (CEMP), the following hazards are eliminated from further discussion in this update—
 1. Landslide/Sinkhole
 2. Dams/Levee Failure
 3. Tsunami
 4. Earthquake

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

- b. Historically, numerous natural and man-made disaster events have impacted 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. Every effort has been taken to furnish parameters and definitions of magnitude.
- c. Past Hurricane Hazard identification in Duval County and its jurisdictions has been based upon the information from the Northeast Florida Regional Council (NEFRC)

1988, 1998 and 2005 Hurricane Evacuation Study. NEFRC has a new evacuation study in progress, but has directed the authors of this update to use the 2005 baseline data, as the study will not be released until 2010. All hurricane information is based upon the 2005 data to measure hurricane exposure in Duval County, by identifying areas vulnerable to hurricane impact and evacuation.

- d. As indicated in the 1998 and 2005 Hurricane Evacuation Study, all land in Duval County lying east of the Intracoastal Waterway will be impacted by any level of hurricane activity and is therefore extremely vulnerable to this type of hazard, inclusive of the wind, flood and storm surge elements attendant to this hazard.

As described in Section I, part of conducting a vulnerability assessment is the examination of the geography and demographics of an area. Before hazards are identified, the description of the county's geography, demographics, land use and development patterns is essential. This assessment will assist the committee in making mitigation-related decisions.

B. Geography and Relationship to Hazards

The geography of Duval County and its jurisdictions was discussed in Section I of the LMS Update, pgs.23-24.

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 199 feet above sea level. 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. 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.

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.

For more information on Jacksonville geography, please see Section One, pgs. 17-18. The following is a description of the geographic features within Duval County that contribute to the hazards with the most probability of risk and vulnerability:

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 river's mouth in the Consolidated City of Jacksonville/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.

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.

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 (Southern,

Florida East Coast, and CSX) and a major port for ocean and river traffic.

The Consolidated City of Jacksonville/Duval County contains approximately 142 miles of highways, 487 miles of arterial, and 492 miles of collector streets. (Source: Consolidated City of Jacksonville/Duval County CEMP, pgs/pg. 38-41)

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

Although close to 850,962³ persons are estimated to live in the Consolidated City of Jacksonville/Duval County in 2008, the pattern of development has left large, mostly undeveloped quarters of the county. While some areas contain scattered development of 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.

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

Land Use	% of Total
Residential	15.4%
Commercial	1.4%
Industrial	2.1%
Open Space/Recreation	1.1%
Public Facilities	11.5%
Conservation/Historic Pres.	1.7%
Agricultural	26.2%
Vacant/Undeveloped	40.8%

An early pattern of waterfront development dating back to the late eighteenth century dominated land use decisions until the advent of other transportation facilities around the time of the Civil War. Since the 1970s, the population in Duval County has continued a constant rate of growth. Residential and commercial development in recent years has extended mainly east and southeast along major roadways. The impact of more outlying neighborhoods and business centers has been felt mainly on the county's roads, increasing residents' travel time and distance. (SOURCE: 2009 Consolidated City of Jacksonville/Duval County CEMP, pg. 39)

The Consolidated City of Jacksonville Planning and Development Department reported the following initiatives in the County, where the following actions have either transpired, or are being put into motion, for long-term land use planning. These actions are predicated by the Florida Legislature amendment of Florida Statutes SB 360 (The Community Renewal Act) to eliminate the requirement for certain counties and municipalities, including Duval and

³ Source: U.S. Census Bureau, 2008 Population Estimates, Census 2000

Jacksonville, to use the concurrency approach. The impact of this removal of this requirement is certain counties, such as Duval County, are considered Dense Urban Land Areas (DULA) and the Development of Regional Impact (DRI) process has been eliminated. Therefore there are no DRIs in review at this time. There are, however, two large mixed-use developments, each in excess of 2,000 acres on the North side of Jacksonville that are preparing to be reviewed by the Planning and Development Department.

Jacksonville City Council adopted the EAR-based (Evaluation and Appraisal Report) amendments to the City's 2010 Comprehensive Plan. This adoption transitions the plan from the 2010 Plan to the 2030 Plan. The plan will, if not challenged, become effective around mid-February 2010.

The Planning Department is also working to amend the Future Land Use Categories which are reflected on the Future Land Use Map (FLUM). The Department anticipates starting the legislative process by end of January 2010 with the goal of the amendments being approved to provide greater flexibility in the FLUM categories to support/create a sustainable development pattern as well as to accommodate anticipated population growth through 2030. The changes are also called for in the city's adopted EAR. These changes are projected to be adopted in late fall of 2010.

In conjunction with the FLUM amendments, the Planning Department is also working on doing away with concurrency (focuses only on roads) as it relates to transportation impact analysis and funding. Concurrency will be replaced with a more holistic approach to increasing overall mobility (focus on all modes: bikes, pedestrians, transit and roads) in the City. The FLUM amendments are also necessary to support the mobility planning approach, as in 2009, the Florida Legislature amended the Florida Statutes (SB 360, The Community Renewal Act) to eliminate the requirement for certain counties and municipalities, including Duval and Jacksonville, to use the concurrency approach. The changes also mandate concurrency be replaced by a mobility approach within 2 years of the effective date of the legislative changes.

The City of Jacksonville Beach is the largest in land area of the three beach communities in Duval County, occupying more than eight 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 place the population at 24,196 by the year 2010. (Source: 2008 Evaluation and Appraisal Report, 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. (Source: City of Atlantic

Beach Comprehensive 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 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 Plan, Neptune Beach, p. A-1, 6)

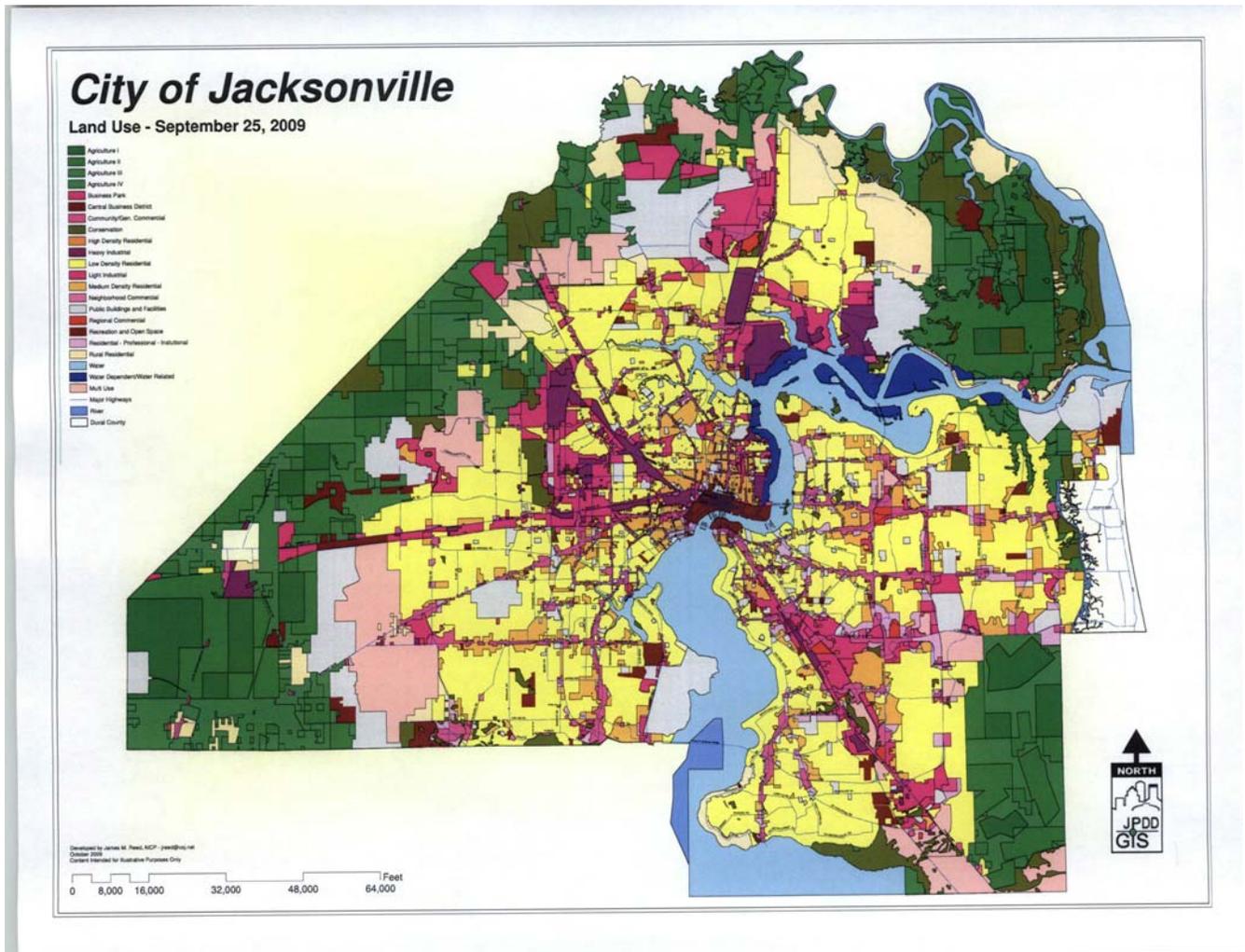
As a result of oceanfront development and attendant seawall construction, inlet improvements and similar projects, the stability of the beaches has been jeopardized along the shoreline of Duval County. Approximately 10.1 miles of shoreline in the county, which includes all three beach municipalities and a portion of Little Talbot Island north of the mouth of the St. Johns River near the Fort George Inlet, is considered critically eroding. This 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 uses. 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. (Source: JPDD, Jacksonville Economic Development Commission-JEDC) Additional industry has developed around the Jacksonville International Airport and more is expected. On the west side of Jacksonville, the JEDC was tasked to redevelop the former Naval Air Station Cecil Field for civilian and commercial usage. In 1999, the Jacksonville City Council approved the Cecil Commerce Center Operations and Business Plan. By 2002, property was conveyed to the JEDC, Jacksonville Aviation Authority, the City of Jacksonville Recreation and Community Services Department, and Clay County. Since the time of the conveyance of approximately 8,300 acres, the JEDC has worked 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 and it is ready for commercial and industrial redevelopment.

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, p. A-10; 2010 Plan-Jacksonville Beach, p. FLUM p.11)

Figure 5: Duval County Future Land Use Map



Source: Consolidated City of Jacksonville –Planning & Development Department, www.jaxgis.net

D. Hazards

Hazards Matrix

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. 31) varied parameters based upon knowledge of the potential consequences, timing and release characteristics for a spectrum of emergencies, natural and man-made are recorded. 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.

1. Thunderstorms/Tornadoes Hazard

a. Background/Frequency of Severe Thunderstorms

According to the National Weather Service Jacksonville Office, Duval County experienced 236 severe thunderstorm events from 1996 to 2007 averaging 20 per year. These storms caused a total of 42 injuries, 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 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 even property damage. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 33)

b. Background/Frequency of Tornadoes

Between 1996 and 2007 twelve (12) tornadoes were reported in Duval County. Tornadoes may be spawned by land-falling hurricanes, especially in the right-front quadrant of the storm. Hurricane-related tornadoes are not usually accompanied by hail or lightning, the usual warning signs of tornadoes. No particular area or population in the county is especially at risk from this hazard. The Consolidated City of Jacksonville/Duval County protects citizens via the implementation of the Severe Weather Hazard Specific Plan and the Tornado Hazard Specific Plan. (SOURCE: Consolidated City of Jacksonville CEMP pg. 33)

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) Florida ranked first of all states in the number of tornado-related deaths (41) in 1998, making it one of the most common hazards in the State. While storms in Duval County, including the Town of Baldwin, Atlantic Beach, Neptune Beach, and Jacksonville Beach, have traditionally not been as deadly as in other parts of the state, between 1950 and 2003, 80 tornadoes, including funnel clouds and water spouts, were reported in the county. Tornadoes are defined as violently whirling columns of air extending downward to the ground from a cumulonimbus cloud. The funnel cloud associated with a tornado may have winds of more than 300 miles per hour and an interior air pressure of 10 to 20% below that of the surrounding atmosphere. Path widths and lengths vary.

Tornadoes are classified by the Fujita Scale which measures both the path length and width, and links damage to wind speed. Tornadoes ranked as F0 to F1 are 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. An F6 storm with winds over 319 miles per hour is conceivable, but very unlikely. The small area of damage that might be produced would probably not be recognizable along with the mess produced by F4 and F5 winds that would surround the F6 winds. 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 Project, 1998)

According to the National Climatic Data Center, Duval County has experienced no greater tornado than those rated F2 since 1950, and only 8 of the 62 tornadoes recorded have been F2. All others were rated F1 or F0, weak to moderate. However, it is possible that an F5 tornado might occur ahead of a cold front or hurricane. (Source: National Climatic Data Center).

According to the National Climatic Data Center, there were 7 verified tornadoes between 2005 and 2008. The impact of the tornado hazard on Duval County and its jurisdictions, based on the historical trend of the past thirty-four years, Duval County could expect to receive one tornado a year, with a path width of approximately 90 yards and a path length of 3 miles, affecting an area measuring .25 square miles and traveling from southwest to northeast. Tornadoes and waterspouts are most likely to occur during severe thunderstorms and tropical storms. On June, 26, 2009, a water spout developed over the St. Johns River in Mandarin, causing little damage as it briefly touched down on land. (Source: www.news4jax.com/weather/19872899/detail.html)

c. Facility Vulnerability, Probability and Risk Attributable to Thunderstorms

All of Duval County is vulnerable to the affects 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.

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. (Source Consolidated City of Jacksonville/Duval County 2009, CEMP pg. 39)

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 the immediate downtown. 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.

Source: City of Jacksonville debris management records from hurricane season 2004 and August 2008 tropical storm event records.

d. Facility Vulnerability, Probability and Risk Attributable to Tornadoes

All of Duval County is vulnerable to tornadoes, with the potential for damage increasing with increased population density. Populations and properties most vulnerable to this hazard are mobile home residents and mobile homes. 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. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 39). 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.

2. Winds from Tropical Cyclones (Hurricane Hazard)

a. Background/Frequency

As a general hazard, hurricanes have historically caused a great deal of damage in the State of Florida. They usually have a regional multi-county impact, affecting the lives of thousands of citizens.

Hurricanes, the most dangerous and destructive storms on earth, are 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). In addition, mobile homes and unsafe structures throughout the county will be vulnerable to winds emanating from all categories of hurricanes. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 20)

Figure 6: Saffir-Simpson Hurricane Wind Scale



Source: National Oceanic and Atmospheric Administration (NOAA)

1 Note that whenever the severity or intensity of a hurricane is referenced throughout this Plan, the classification scale used is the Saffir-Simpson scale, even if not directly referenced. (CEMP, pg. 20)

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 coordinates the response for hurricanes, the details of this plan can be found in the Hurricane Hazard Specific Plan.

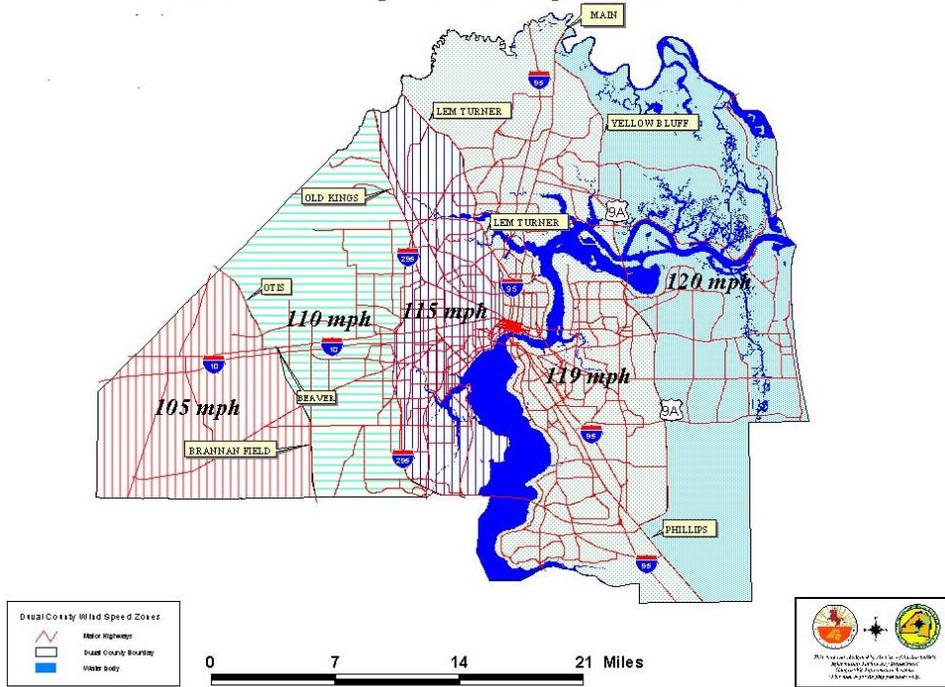
Unlike the effects of the storm surge, the high winds associated with a hurricane will have

an impact on 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.

b. Vulnerability, Probability and Risk

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 wind velocity zones established through the State of Florida Building Code establishes five zones across the county. (Source CEMP, pg. 21) The kinds of facilities in each jurisdiction of Duval County impacted by hurricane hazard events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 39). Impact to the Consolidated City of Jacksonville/Duval County and all of jurisdictions include, but is not limited to, (1) extensive damage due to the high number of older homes built before the adoption of the current State of Florida Building Code by roofs being torn off; (2) significant sections of the extensive tree canopy falling on homes and power lines which will create power and utilities disruption; (3) and the evacuation of citizens who live in inadequate non-code compliant housing or mobile homes.

Duval County Wind Speed Zones



Approximately 100,000 people live in the 120 MPH zone, 250,000 in the 119 MPH zone, another 250,000 in the 115 MPH zone, 150,000 in the 110 MPH zone and 50,000 furthest west in the 105 MPH Zone. (Source: Consolidated City of Jacksonville/Duval County CEMP, pg. 22)

Figure 8: All Major Hurricanes Within 65 nm of Duval Co. 1851-2008



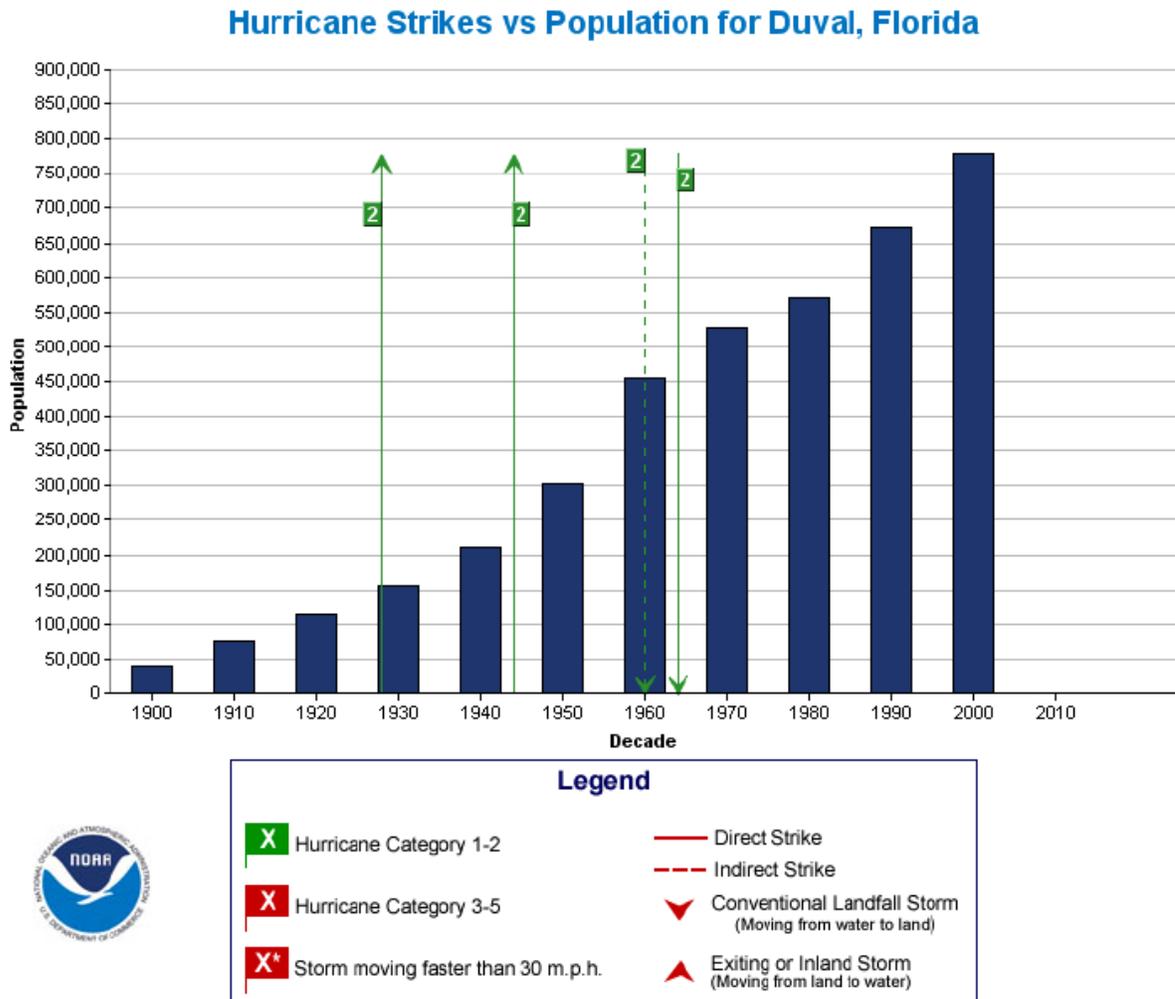
Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 22

Figure 9: All Hurricanes within 65 nm of Duval Co. 1851-2008



Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 23

Figure 10: Population vs. Hurricanes



Hurricane Strike Data: National Hurricane Center

Population Data: U.S. Census Bureau

NOTE: Population values may be missing in some counties, particularly for earlier periods. This is most often attributable to the fact that the county had not yet been established.

NOTE: There may be discrepancies between the strike data shown in this chart and the HURDAT strike data used in the Historical Hurricanes Tracks Tool. The National Hurricane Center is currently updating the strike data used for these charts.

For more information visit http://www.aoml.noaa.gov/hrd/data_sub/re_anal.html

NOTE: Population data is current as of 2000 U.S. Census. X-axis on graphs depict years through 2010 to illustrate storms that have occurred from 2000-2006.

Note the above graph compares the rising population to hurricanes that came near the Consolidated City of Jacksonville/Duval County. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 24)

3. Storm Surge (Associated with Tropical Cyclone Hazard)

a. Background/Frequency

Storm surge is considered the most destructive of the forces related to hurricanes. 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 way.

Storm surge has been found to be difficult to predict and was removed from the Saffir-Simpson Scale in 2009 as the amount of storm surge did not necessarily correspond with the category of storm, according to the National Weather Service. Hurricane size (extent of hurricane force winds), local depth of near-shore waters, and topographic forcing can also be important in forecasting storm surge. Moreover, other aspects of hurricanes, such as the system's forward speed and angle to the coast, also impact the storm surge that is produced. For example, the very large Hurricane Ike (with hurricane force winds extending as much as 125 miles from the center) in 2008 made landfall in Texas as a Category 2 hurricane and had peak storm surge values of 15-20 feet. In contrast, tiny Hurricane Charley (with hurricane force winds extending at most 25 miles from the center) struck Florida in 2004 as a Category 4 hurricane and produced a peak storm surge of only 6-7 feet.

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. 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. (Source: Consolidated City of Jacksonville CEMP 2009, pg. 39).

b. Vulnerability, Probability and Risk

Areas most at risk from storm surge are those zones designated for Category 1, 2 and 3 hurricanes as shown on the map in Figure 14 on page 91. Estimates from the Northeast Florida Regional Council (NEFRC) for expected numbers of people evacuating those areas are in the neighborhood of 214,000 persons. The NEFRC is in the process of updating the Northeast Florida Hurricane Evacuation Study and new numbers will be available in 2010; however, the data was not yet available for the update to the CEMP or the Local Mitigation Strategy.

Figure 11: Northeast Florida Hurricanes 1565-1899

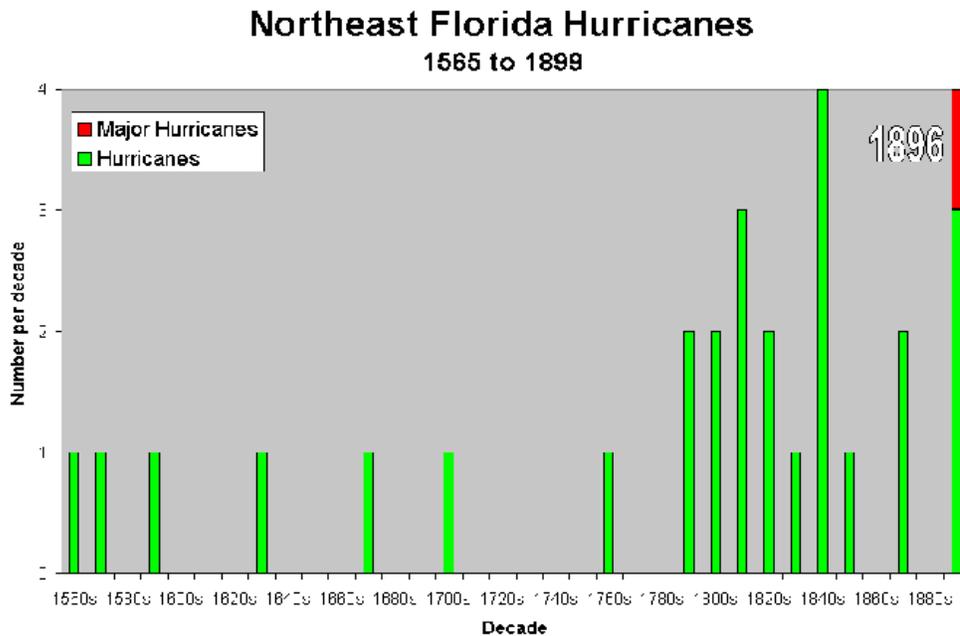


Figure 2. Timeseries of Northeast Florida hurricanes from 1565 to 1899. Green bars indicate hurricane intensity, while the red bars indicate major hurricane intensity. (Note that for the 16th through the 18th centuries, it is difficult to ascertain the actual magnitude of landfalling hurricanes.)

Although the evacuation of 850,962 (2008 Census Bureau population projection for Duval County) residents and a variable number of visitors is achievable, the clearance times for a fast moving Category 4 or 5 could require evacuation start times which are beyond our current ability to accurately predict a storm's actual landfall and intensity. The clearance time situation becomes even worse 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 the 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. (Source: 2009 Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 26)

4. Flooding

a. Background/Frequency

All of the Consolidated City of Jacksonville/Duval County is vulnerable to damage from wind driven rain and flooding from rain. The Regional Hurricane Evacuation Study also provided data on vulnerable populations for the year 2005, for each storm category. Included in the vulnerable population is a section on special needs population, hospitals and nursing homes. The Consolidated City of Jacksonville/Duval County is divided into evacuation zones. This is done in order to provide sufficient division 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 chapter are also used for estimating evacuation clearance times in the transportation analysis. Clearance times for both 2005 and 2010 have also been estimated in later sections.

Rain ranks 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. (Source, Consolidated City of Jacksonville/Duval County CEMP, p. 27)

Flooding of sufficient severity that resulted in Presidential Disaster declarations within Duval County or in counties with adjoining borders to Duval County, are recorded as follows. Nine out of ten events in the past decade, from 1999-2009 are related to flooding, wind,

storm surge associated disasters. One event is associated with a freeze (severe temperature). Hurricane Dora, FEMA-176, which was the last direct impact hurricane to Duval County, is included for historic reference as it took place 45 years ago.

History of FEMA Presidential Disaster Declarations for Duval County Disaster (1999-2009)

Date	Year	Hazard Type	Event Name	Declaration #	Jurisdiction Impacted
09/10	1964	Hurricane	Dora	176*	Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town of Baldwin
09/22	1999	Hurricane	Floyd	1300	Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town of Baldwin
02/06	2001	Severe Temperature	Severe Freeze	1359	Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town of Baldwin
09/28	2001	Tropical Storm	Gabrielle	13934	Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town of Baldwin
08/13	2004	Hurricane/Tropical Storm	Charley/Bonnie	1539	Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town of Baldwin
09/04	2004	Hurricane	Frances	1545	Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town of Baldwin
09/16	2004	Hurricane	Ivan	1551	Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town of Baldwin
09/26	2004	Hurricane	Jeanne	1561	Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town

* 4 Declared for adjoining counties- St. Johns, Putnam, Flagler. Duval not part of declaration but impacted by storm.

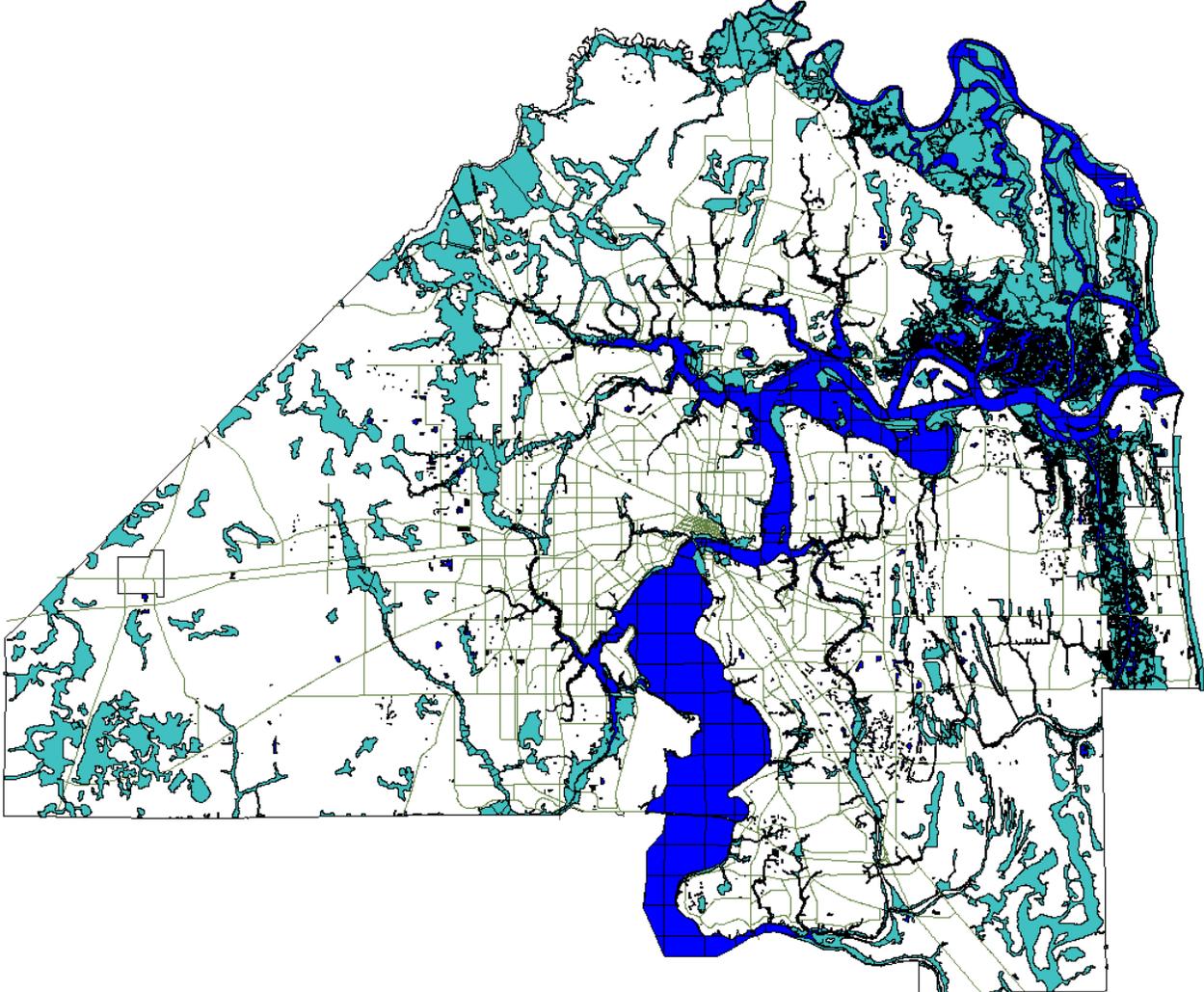
08/24	2008	Tropical Storm	Fay	1785	of Baldwin Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town of Baldwin
05/27	2009	Severe Storms, Flooding Tornadoes, Wind	Severe Storms, Flooding Tornadoes, Straight-Line Winds	18405	Jacksonville, Neptune, Atlantic and Jacksonville Beaches, Town of Baldwin

* Historic info, the last recorded direct impact CAT 1 Hurricane, entering at St. Johns County, immediately south of Duval County line

Source: www.fema.gov/news/disasters_fema

5 Declared for adjoining counties- Baker, Clay, Flagler and Putnam. Duval not part of declaration but impacted by storm.

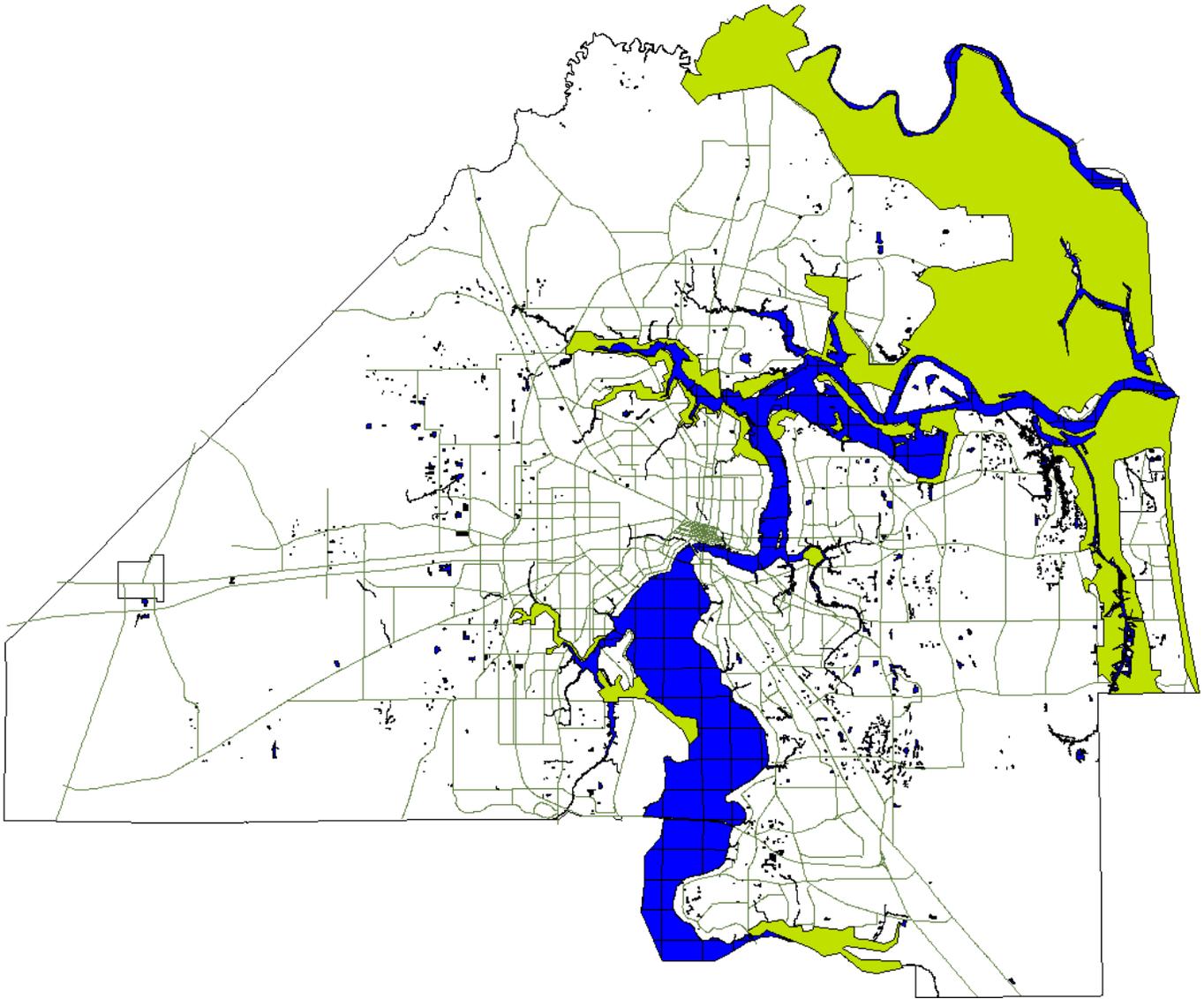
Figure 12: 100-Year Floodplain



Source: Federal Emergency Management Agency, Flood Zones

Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 28

Figure 13: Coastal High Hazard Areas



Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 29

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.⁶ Recent events, such as Hurricane Katrina, have made some impression that disaster mitigation is necessary.

From 1851 to 2007, 48 hurricanes have passed within 100 nautical miles of Jacksonville, an average of approximately one hurricane every 3 years. During this same time period, major hurricanes (Category 3 or higher) have averaged one every 17 years. Table 7 relates Duval County’s historical hurricane events:

Table 7: Number of Hurricanes Passing within 100 Nautical Miles of Duval County by Category of Hurricane, 1851-2007

<i>Category 1 (74-95 mph)</i>	<i>Category 2 (96-110 mph)</i>	<i>Category 3 (111-130 mph)</i>	<i>Category 4 (131-155 mph)</i>	<i>Category 5 (155+ mph)</i>
32	7	8	1	0

SOURCE: NOAA; Coastal Services Center; Historical Hurricane Tracks

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 Attributable to Flooding Hazard

The Flooding Hazard associated with storm surge and wind 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 is expected to

sustain significant destruction. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009, BP-6)

The 2005 *Hurricane Evacuation Study* (Northeast Florida Regional Council) identified populations vulnerable to the effects of hurricanes and analyzed the behavioral patterns of those people. New data indicates much larger areas of impact from all levels of storm surge than were previously noted and therefore requires a more extensive evacuation for hurricanes. Based on the recent storm surge data, and also due to planned bridge closures at onset of gale force winds, all land east of the Intracoastal Waterway is included in the evacuation zone for Category 1 or higher.

In addition to residents living in low-lying or flood-prone areas, residents living in mobile homes and non-compliant structures are also vulnerable to hurricanes and other wind events. In 2005, there were approximately 24,384 mobile homes in Duval County, out of 329,401 households (Source: 2005 Hurricane Evacuation Study, Northeast Florida Regional Council). The Northeast Florida Regional Council estimates that in 2010, there will be 26,283 mobile homes out of 355,059 households in the county. Federal law, passed after Hurricane Andrew struck in 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 800,000 Florida mobile homes 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 reasonable assume that a Category 1 hurricane would result in even more millions of dollars worth of damage.

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.

What is perhaps of greater concern with a hurricane hitting Duval County is severe 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 insufficient to insure the integrity of buildings against sustained high winds are two significant wind-risk factors in hurricanes.

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 none of these hurricanes directly hit Duval County, each of them caused enough damage for the county to be designated Tier One for FEMA grant cycles.

As in windstorms, trees are generally vulnerable to widespread damage from hurricanes and are a major contributor to post-storm clean-up costs. Duval County has an especially extensive tree canopy, which is highly vulnerable. The kinds of facilities in each jurisdiction of Duval County impacted by flood events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 39).

5. Extreme Temperature Hazard

a. Background/Frequency

According to data provided by the National Weather Service – Jacksonville Office, temperatures rarely rise above 100 degrees or fall below 20 degrees. 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.

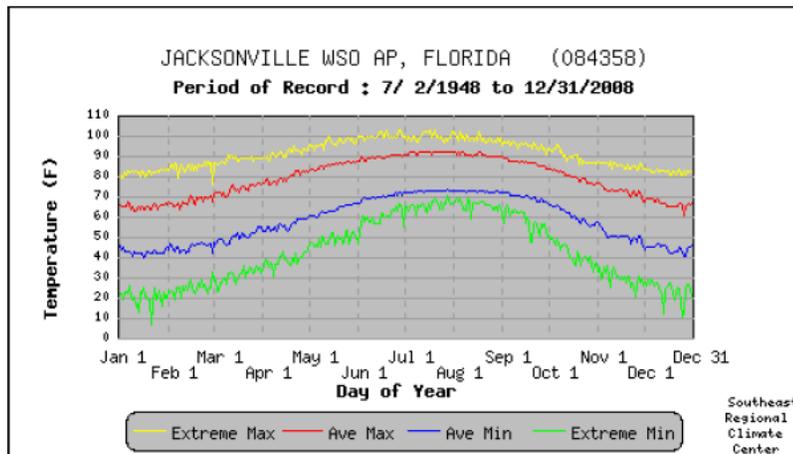
b. Vulnerability, Probability and Risk

Extreme cold temperatures are also a potential threat. The elderly and people with medical conditions, such as diabetes, are especially at risk to extreme temperatures 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: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 32) The kinds of facilities in each jurisdiction of Duval County impacted by severe temperature hazard events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites. (Source: 2009 Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 39).

Figure 15: Jacksonville Daily Temperatures

JACKSONVILLE WSO AP, FLORIDA

POR - Daily Temperature Averages and Extremes



- - Extreme Max. is the maximum of all daily maximum temperatures recorded for the day of the year.
- - Ave. Max. is the average of all daily maximum temperatures recorded for the day of the year.
- - Ave. Min. is the average of all daily minimum temperatures recorded for the day of the year.
- - Extreme Min. is the minimum of all daily minimum temperatures recorded for the day of the year.

Source: NWS, Jacksonville Office – Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 32

6. Drought Hazard

a. Background/Frequency

Drought is defined as a prolonged period with no rain, particularly during the planting or growing season in agricultural areas. While Duval County, including the Town of Baldwin, Atlantic Beach, Neptune Beach, and Jacksonville Beach, does 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 lead to the restriction of water use to certain amounts and types of uses. Also, increased pumping of groundwater and surface irrigation occurring in drought periods can result in severe land subsidence problems. 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 those of June 1998 - urban wildfires - can occur and intensify the difficulty in responding to the fires.

b. Vulnerability, Probability and Risk

On April 15-29, 1999, the Consolidated City of Jacksonville/Duval County was incorporated into a Major Disaster Declaration by the President of the United States for Fire and Drought for Emergency Protective Measures under FEMA Public Assistance Category B. No particular area or population in the county is especially at risk from this hazard. (Source: Consolidated City of Jacksonville/Duval County CEMP, pg. 33) The kinds of facilities in each jurisdiction of Duval County impacted by drought events include residential, commercial, industrial, public facilities, agricultural, recreational, and historic preservation sites. (Source 2009 Consolidated City of Jacksonville/Duval County CEMP, pg. 39).

7. Wild Fire Hazard (Brush Wildfire & Forest Fire)

a. Background/Frequency

This kind of event is common (99 times per year) in the Consolidated City of Jacksonville/Duval County but not large in scope (average 16 acres). The Consolidated City of Jacksonville/Duval County does not have great numbers of residents living in urban interface zones with forests. The rapid western development of Duval County increases the vulnerability of the population to wildfires. Due to new construction the fires can spread rapidly from traditionally rural and unpopulated regions of west Duval County into new high density residential neighborhoods. More details on this hazard can be found in the Consolidated City of Jacksonville/Duval County Wildfire Hazard Specific Plan (Source: 2009 Consolidated City of Jacksonville/Duval County CEMP, pg. 32).

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 (Source: Florida Division of Forestry). On an average year Florida will experience an average of 5,000 wildfires burning nearly 200,000 acres. Duval County, including the Town of Baldwin, Atlantic Beach, Neptune Beach, and Jacksonville Beach, has an average of 98 wildfire events annually that burn, on average, 1,325 acres. Significant wildfire events were recorded in Duval County during 1998 when 400 wildfires burned 7,873 acres; in 1989 when 154 wildfires burned 2,353 acres; 1990 when 193 wildfire burned 2,031 acres; in 1998 when 140 wildfires burned 8,730 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 1st through July 2nd half a million acres burned statewide. Wildfires were reported burning in everyone 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 JT Butler Boulevard. As Duval County's growth continues to push into areas that were previously agricultural, more homes will be threatened by wildfires every year. 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 Bay Yard, 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. Lightning causes only 16% of total fires in Duval County; the remaining 84% are human-caused. Years with a higher number of hard freezes followed by windy springs also contribute to increased wildfire activity.

b. Vulnerability, Probability and Risk

Risk analysis for wildfires takes into account fuel types and density, fire history, and dwellings within the area. These factors as well as others are combined in the Florida Fire Risk Analysis System (FRAS) developed by the Florida Division of Forestry. FRAS displays maps depicting the greatest areas of concern in Duval County.

The Level of Concern (LOC) is an integer scaled from 0 to 9 indicating the relative risk of Wildland Fire, and is an output of the Florida Division of Forestry Fire Risk Assessment System (FRAS). The Level of Concern Scale runs from low concern (1) to high concern (9). More information on FRAS and the LOC value is available at:

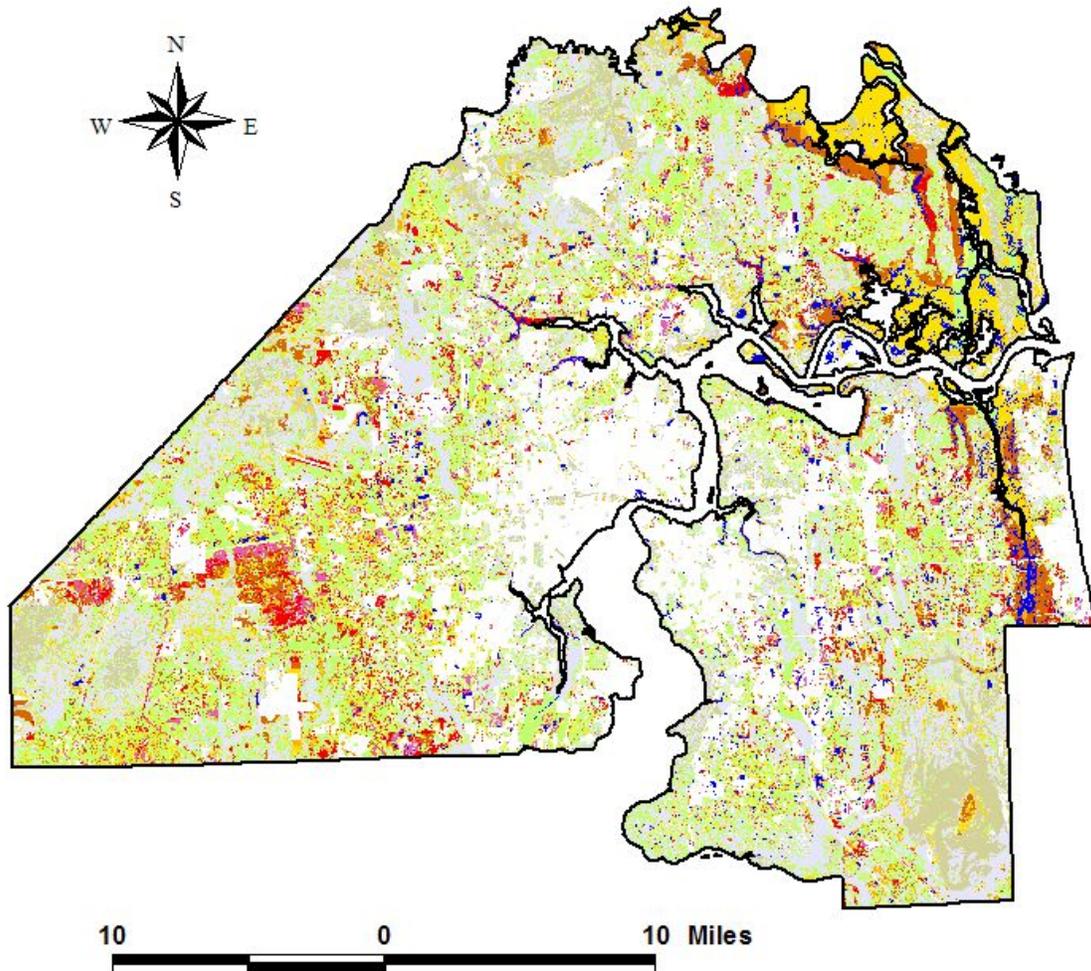
http://www.fl-dof.com/wildfire/wf_pdfs/FRAS_User_Guide.pdf

This data set is courtesy of the Florida Division of Forestry, and comes with the following disclaimer:

The user assumes the entire risk related to their use of the FRAS published maps. The Florida Department of Agriculture and Consumer Services is providing these data as is and disclaims any and all warranties, whether expressed or implied, including (without limitation) any implied warranties of merchantability or fitness for any particular purpose. In no event will the Florida Department of Agriculture and Consumer Services be liable to you or to any third party for any direct, indirect, incidental, consequential, special, or exemplary damages or lost profit resulting from any use of misuse of this data.

Figure 16: Duval County Wildfire Levels of Concern

Duval County Wildfire Levels of Concern



Levels of Concern is a compilation of fire history, urban interface and critical facility locations, fuel types, soil types, accessibility, and resource locations. Level one is the lowest and level nine is the highest level of concern for a given area.

This map was produced by the Florida Division of Forestry

- County Line
- Duval Water
- Duval Levels of Concern
 - Non - Burnable
 - Level 1
 - Level 2
 - Level 3
 - Level 4
 - Level 5
 - Level 6
 - Level 7
 - Level 8
 - Level 9

Source: Division of Forestry Florida, 2009 report to update the 2010 Duval County LMS

Tables 8, 9 and 10 break down the population at risk in each of the nine Division of Forestry Levels of Concern zones, the structures at risk in each zone by category and lastly the values at risk in each zone and category.

Table 8: Population at risk for FDOF Fire Risk LOC *

LOC Zone	Total	Minority	Over 65	Disabled	Poverty	Lang Iso	Sing Pnt
Level 1 (low)	6895	1458	1471	2188	656	93	447
Level 2	120311	32516	11740	31841	9976	440	7217
Level 3	107117	28856	10218	35283	10729	522	7409
Level 4	27460	7848	2422	8792	2500	207	1866
Level 5 (medium)	20231	4589	2049	5618	1185	128	1253
Level 6	2720	877	191	857	388	0	222
Level 7	48797	10600	3585	12661	3795	387	2445
Level 8	18520	6585	1693	6060	2092	20	1547
Level 9 (high)	6351	2165	846	2232	750	0	500

Table 9: Structures at risk for FDOF Fire Risk LOC

LOC Zone	Total	SF Res	Mob Home	MF Res	Commercial	Agriculture	Gov/Instit
Level 1 (low)	12767	5144	5091	1182	818	391	141
Level 2	42414	31247	4855	2800	2248	791	471
Level 3	52534	38762	6445	2293	3176	1052	815
Level 4	7612	5833	588	555	427	100	109
Level 5 (medium)	8315	6648	550	384	486	145	102
Level 6	2972	2383	154	174	184	36	41
Level 7	7779	5091	1182	818	391	141	156
Level 8	11277	4855	2800	2248	791	471	112
Level 9 (high)	13818	6445	2293	3167	1052	815	46

* Source:
MEMPHIS (Mapping for Emergency Management, Parallel Hazard Information System)
An Assessment of Natural Hazards in Florida for creating Local Mitigation Strategies
Duval Hazard Report Index: Duval County FDOF Wildland Fire Levels of Concern

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 in Table 10. The land uses in red within Duval County encompass 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 in Table 5. The land uses in red indicate a higher risk from wildland fires. Of the half million acres of land in Duval County, 319,350.7 acres 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 and 9A loop. The

kinds of facilities in each jurisdiction of Duval County impacted by brush, wildfire and forest fire include residential, commercial, industrial, public facilities, agricultural, recreational, and conservation/historic preservation sites. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 39).

Population projections through 2030 indicate another 356,384 persons will take up residence in Duval County over the next 20 years. These new residents will put extreme pressures on the rural land use categories to supply the necessary housing. As more homes are constructed in the wildland/urban interface, more homes will be threatened by wildfire and the potential for property loss will increase. The number of persons at risk from wildfire will also increase, as will the economic values of their structures. Both will require more funds to cover suppression costs unless effective mitigation strategies are implemented throughout the County.

Table 10: Existing Land Use Categories in Duval County

Land Use	Acres
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
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)	1,232.2
Total	545,174.2

Figure 17: Hazard Identification Table

Hazard (from Natural Causes)	Records for Identification	Why Identified
Wind from Tropical Cyclones (Hurricane Hazard)	<ul style="list-style-type: none"> • Review of Emergency Preparedness Division Event Files • National Weather Service (NWS) Data Risk Assessments 	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • Sea, Lake and Overland Surges from Hurricanes (SLOSH) Model Review • NWS data • Review of FEMA FIRM maps 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • EPD Event files • Review of FEMA FIRM maps • Floodplain Manager's Data on repetitive loss areas 	<ul style="list-style-type: none"> • 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°	<ul style="list-style-type: none"> • EPD event files • Small Business Administration (SBA) disaster declarations • NWS Jacksonville Office records • Jacksonville Electric Authority (JEA) records 	<ul style="list-style-type: none"> • Impact upon sensitive populations, such as elderly, special needs or homeless • Potential dollar damage to agricultural concerns in County • 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)	<ul style="list-style-type: none"> • Fla. Division of Forestry and Fire Marshal incident records • Jacksonville Fire & Rescue Dept. incident records 	<ul style="list-style-type: none"> • Increasing impact upon urban/rural interface of population in County, particularly to west side of County • Potential dollar damage to interface populations and agricultural concerns
Thunderstorms & Tornadoes	<ul style="list-style-type: none"> • NWS data • EPD Event Records 	<ul style="list-style-type: none"> • Entire county is at risk for these events • Impact is to an immediate area of touchdown, although dollar damage may not be particularly high
Drought	<ul style="list-style-type: none"> • NWS data • Fl. Dept of Agriculture records 	<ul style="list-style-type: none"> • Entire county is at risk for these events • Impact upon agricultural interests
Man Made or Technological Cause		
Hazardous Materials Accidents	<ul style="list-style-type: none"> • Review of Consolidated City of Jacksonville HazMAT Hazard Specific Plan • EPD event files 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Media reports of events around the country • Heightened awareness since 2001 	<ul style="list-style-type: none"> • Department of Homeland Security designated Jacksonville as Tier II Urban Area Security Initiative (UASI) City • Public Concern • JAXPORT is located in Jacksonville as a deep-water port

Hazard (from Natural Causes)	Records for Identification	Why Identified
Critical Infrastructure Disruption	<ul style="list-style-type: none"> • JEA records • EPD event files 	<ul style="list-style-type: none"> • 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 to this event

E. Probability of Occurrence - Summary

Determining the probability of occurrence of hazardous events is a complex and difficult process that analyzes 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 be a Category 1 or 2, 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 Duval County Building Department established wind speed zones to aid in the mitigation of this risk. East of 9A, the wind speed zone is 119 mph all the way to the coast, and west of 9A, the wind speed zone is 110 mph.

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 in the area complacent in assessing the possibility of being exposed to a hurricane. The population growth also greatly complicates evacuation measures.

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 Association], and a presidential disaster declaration [FEMA-1785-DR-FL].

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 up to a month 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 11 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 the Consolidated City of Jacksonville/Duval County CEMP. This analysis indicates that of all hazards studied, hurricanes and tropical storms can have the largest impact and the third highest frequency, making it the best target for cost-effective mitigation efforts. The fire hazard for Duval County is the second highest priority with the single highest frequency and the fourth highest impact. Hazardous material accidents and flooding are the third and fourth level priorities. There are no changes in the probability of vulnerability since the 2005 LMS was adopted.

Table 11: Duval County Hazard Analysis

Hazard	Probability	Severity	Vulnerable Population	Vulnerable Population Note	Frequency/#No of Occurrences*
Wind from Tropical Cyclones	0.19 storms/yr	90 MPH	778,800 (100%)	Entire County	14
Storm Surge	0.12 storms/yr	110 MPH	150,000 (19%)	Population estimate of CAT 1-3	1.2
Floods	7 events/yr	>6"	1,000 (.00001%)	Less than 1000 persons	70
Hazardous Materials Accidents	2 events/yr	Clean up required	778,800 (.00001%)	Less than 1000 persons	20
Extreme Temperatures	8 events/yr.	<28° or .99°	92,677 (11.9%)	No. of households in poverty	94
Brush, Wildfires, Forest Fires	99 events/yr	16 Acres	5,000 (.0064%)	Urban Interface Tract Population	99+
Thunderstorms & Tornadoes	26/5.5/yr.	Warning issued	778,800 (100%)	Entire County	231 Thunderstorms 11 Tornadoes
Drought	1/15 yr.	> 6 months	778,800 (100%)	Entire County	2
Terrorism	0.01 events/yr.	Injury/Death	778,800 (100%)	Entire County	0
Critical Infrastructure Disruption	1/10 yr.	>12 hrs.	778,800 (100%)	Entire County	1

Excerpted from Duval County Hazard Analysis, Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 37

* Frequency/ # of Occurrences excerpted from Table 19- Number of events from 1998-2008

F. Vulnerability and Loss Estimates – Summary

1. 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.

The 2010 LMS Update is reviewed with impacts upon structures and property values through a zip code analysis with a natural hazard overlay within the jurisdictions for determination of impacts, and associated assumptions about the potential dollar amount of damage.

a. 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.

b. 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 have a specific track, and the damage is localized to specific areas of impact. The Tornado Project Online, www.tornadoproject.com, records tornadoes associated with tropical cyclone events. The website notes that F2-F5 tornadoes have been recorded in Florida with Tropical Storm Fay (2008), Hurricane Frances (Sept. 4, 2004), Tropical Storm Bonnie (August 12, 2004), and Hurricane Ivan (Sept. 25, 2004), the storms which resulted in Presidential Disaster Declarations within Duval County. The City of Jacksonville Division of Emergency Preparedness does not presently have the software

or data collection ability to present damage estimates specific to this hazard.

c. Wind from Tropical Cyclone (Hurricane) Impact

According to data provided by the insurance industry to the Florida Hurricane Catastrophe Fund, Duval County stands as seventh among Florida counties in terms of exposure of property at risk from hurricanes, with some \$33 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, the just value of property in the County somewhat differently than the estimate indicated in Table 12 by the Hurricane Catastrophe Fund's data. Table 13 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 12
2006 Florida Hurricane Catastrophe Fund
Exposure Concentration for Selected Counties
(In thousands of dollars)

<i>County (Rank)</i>	<i>Residential</i>	<i>Commercial</i>	<i>Mobile Home</i>	<i>Total</i>	<i>Percent of Florida Total</i>
Palm Beach (1)	\$135,813,865	\$20,886,893	\$541,119	\$173,360,791	9.68%
Broward (2)	\$123,726,835	\$21,076,112	\$650,789	\$157,028,118	8.77%
Miami-Dade (3)	\$119,775,213	\$25,658,327	\$257,806	\$155,511,348	8.69%
Duval (8)	\$68,466,560	\$1,965,645	\$587,165	\$73,375,476	4.1%

Source: Paragon Strategic Services, Inc. 2006 Hurricane Catastrophe Fund Exposure Concentration by County, December 31, 2006.

Table 13
Real Property Values in Duval County, Florida
(in thousands of dollars)

<i>Residential and Multi-Family Dwellings</i>	<i>Mobile Homes</i>	<i>Commercial and Industrial Property</i>	<i>Other</i>	<i>Total</i>
\$58,752,309	\$669,618	\$17,679,291	\$10,262,579	\$87,363,797

Source: 2008 Final Tax Roll Certification, Duval County Property Appraiser Office; updated Feb. 2, 2009

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 14
Value of Residential Construction in
Atlantic, Jacksonville, Neptune Beach and Town of Baldwin
(Includes both single and multi-family units)
(in thousands of dollars)

	<i>Land Value</i>	<i>Improved Value</i>
Atlantic Beach	\$984,266	\$1,129,711
Jacksonville Beach	\$1,146,292	\$2,344,235
Neptune Beach	\$469,031	\$556,961
Town of Baldwin	\$11,562	\$40,571

Source: Duval County Property Appraisers Office, 2008 Database

2. Vulnerable Critical Facilities

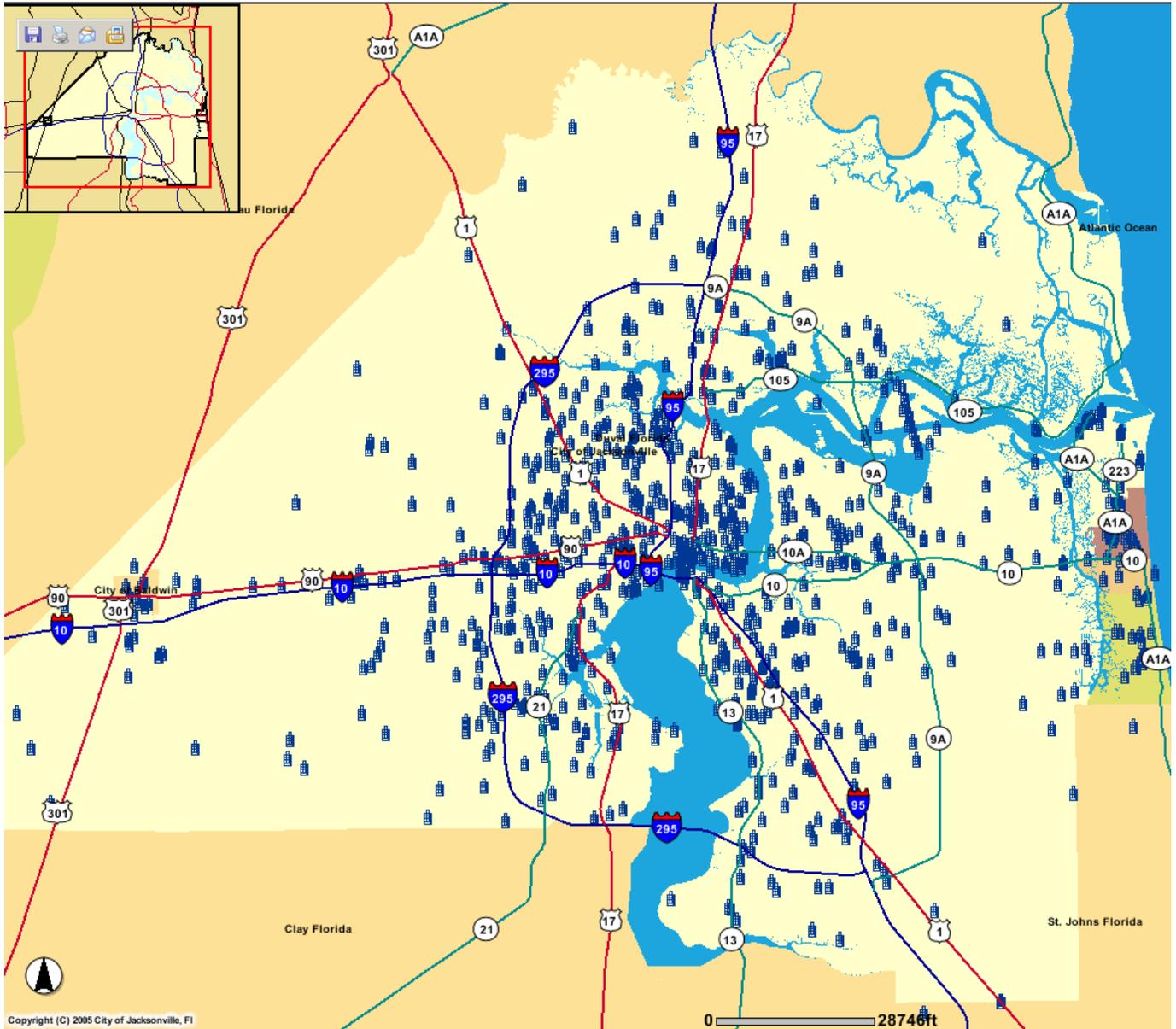
There are hundreds of vulnerable critical facilities within Duval County. Assessments have been conducted to determine the vulnerability of critical facilities to the different hazards that threaten the area. The Consolidated City of Jacksonville Division of Emergency Preparedness used GIS and other modeling tools to map the County's critical facilities and determined which are most likely to be affected by hazards. The dollar impact from varied natural and man-made hazards to these critical facilities would be in the millions of dollars.

The following facilities are included in the critical facilities inventory:

1. Fire Stations

2. Hospitals
3. Hurricane Risk Shelters
4. Host Shelters
5. Public Schools, Colleges and Universities
6. Evacuation Routes
7. Water Treatment Plants
8. Sewage Treatment Plans
9. Electric Substations
10. Government Buildings
11. Emergency Response Facilities

Figure 18: Map of vulnerable critical facilities within Duval County



City of Jacksonville GIS database, www.jaxgis.com

3. 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. Especially vulnerable populations are those living in mobile homes, those living in flood hazard zones, and those who are physically or mentally disabled. According to the Northeast Florida Regional Council, mobile homes make up 6.8% of Duval County housing; these structures are more vulnerable to high winds than other structures. Additionally, 9.1% of Duval County households do not have a car, making them more vulnerable during an evacuation (Source: NFRC Hurricane Evacuation Study 2005).

With respect to storm surge, the Northeast Florida Regional Council's 2005 update of its hurricane evacuation study provides the following data:

**Table 15
Evacuation and Shelter Estimates by Category
(All estimates current to 2005)**

Category of Hurricane	Permanent Population	Maximum Number Evacuating (People / Vehicles)	Maximum Shelter Demand (People)	Local Public Shelter Capacity (People)
Category 1	844,663	136,919 / 64,821	8,368	12,481*
Category 2		204,565 / 96,606	13,569	
Category 3		324,568 / 149,514	35,413	
Category 4		351,909 / 160,162	42,481	
Category 5		460,170 / 206,548	65,258	

SOURCE: Northeast Florida Regional Council (NEFRC) 2005 Hurricane Evacuation Study; Shelter Analysis, Table S-1

A critical caveat to the table above is from the direction provided by the NEFRC to the preparers of the 2010 LMS Update. NEFRC instructed the preparers of the Updated LMS to use 2005 Hurricane Evacuation Study Data, however, the shelter capacity in the County has increased from 12,481 to 31,481 in local planned usage as of June 2009 Division of Emergency Preparedness records.

According to these data, 136,919 people are expected to evacuate in the case of a Category 1 hurricane, and the county's shelter capacity will be insufficient in the case of a Category 2 hurricane. Regardless of the increases in shelter capacity from 2005 to 2009, the shelter capacity for Duval County remains insufficient for the population anticipated to evacuate in case of a CAT 1 or CAT 2 Hurricane. Compounding the challenges is the cost to retrofit or construct public school infrastructure which is required by the State Department of Education and Department of Community Affairs to provide enhanced hurricane protection area (EHPA) in at 50% of a structure which meets American Red Cross 4496 Standards for hurricane risk sheltering.

The Duval County Public Schools (DCPS) Facilities Construction Division in 2007 provided an estimate that each new school or public building requires approximately \$1.5M of additional funding to make it a shelter, 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 obviously will not remain static. Population increases east of the Intracoastal Waterway will result increase the number of people evacuating during hurricanes; although, population growth has slowed in recent years. In recent years, development has picked up pace in the Coastal High Hazard Area (CHHA) of Duval County, as defined by the State of Florida. The economic slowdown experienced in 2008 has brought a temporary reprieve to development in this area; however, once the economy improves, it is anticipated that development will resume in this ecologically sensitive and flood/storm 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.

However, as the historical experience suggests (Hurricane Dora in 1964 and more recently Hurricanes Charley, Frances, Ivan and Jeanne in 2004), storm surge analyses based on a worst-case scenario may significantly overestimate this particular category of risk. What remains largely understudied is the potential economic loss due to wind damage, which, as Hurricane Andrew demonstrated in 1992, can be extremely high even in the absence of significant flooding. Put another way, 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.

Hazards maps with a zip code analysis for vulnerability impacts associated with the location of structures and property values within Duval County are located on pages 114- 123.

- a. **Storm Surge Impact** - Storm Surge is associated with hurricane hazard events, therefore the impact as related to financial impact upon the jurisdictions of Duval County are presented in the information under hurricane event, pages 83-87. 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 reasonable assume that a Category 1 hurricane would result in even more millions of dollars worth of damage.
- b. **Flood Hazard Impact** - 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 Manufactures' Council], and a presidential disaster declaration [FEMA-1785-DR-FL], primarily from flood and wind exposure.

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 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 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. A long awaited drainage improvement project under the US Army Corps of Engineers was initiated in 2001 to resolve flooding issues. The City of Jacksonville is now responsible for ongoing dredging and maintenance 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 successful dredging project. The remaining flood prone properties will benefit from improved maintenance of existing drainage improvements and the initiative of the City to assist flood-insured property owners in mitigating the flood hazard attendant to their property. According to NFIP records used by the Division of Emergency Preparedness to assist Duval County property owners in preparing flood mitigation grants, the combined total of flood insurance claims payouts as of 2005 was \$11,813,538 or \$16,257,441, adjusted to Fiscal Year 2009 dollars using the FEMA Benefit-Cost Analysis BCA inflation calculator module (Version 3.0) for all flood-insured properties. The probability of future flood damage to jurisdictions within Duval County is high, based on flood event probability reviewed in the hazard identification

- c. **Extreme Temperature Hazard Impact** - The physical effects of extreme temperature hazards disproportionally 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. There is no impact to structures.
- d. **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. Current 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. There is increasing decline in the total amount of agricultural acreage in the County. This decline can be attributed to the purchase of acreage by public entities as public lands and also the shift of this acreage from agriculture to residential use through private development. 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 US Small Business Administration (SBA) and ecological impacts to businesses in 2007. The US Drought Monitor indicates Northeast Florida, inclusive of Duval County and its jurisdictions as ranked as D0, "Abnormally Dry." This trend is expected to continue. The probability of the occurrence of a drought is high, given historical weather patterns. The economic impact from these events has not been high, as other reasons have been cited for the decrease in agricultural land uses. Therefore, the probability of economic impact is selective, based upon the above considerations, and considered low due to the number of people impacted. There is no impact to structures.

- e. **Wild Fire Hazard (Brush Wildfire & Forest Fire) Impact** - The Florida Division of Forestry has assessed the values of structures associated with fire hazards to jurisdictions in Duval County.

Table 16: Value of Structures by DOR Use for FDOF Fire Risk LOC *

LOC Zone	Total	SF Res	Mob Home	MF Res	Commercial	Agriculture	Gov/Inst.
Level 1 (low)	\$ 6.95	\$ 2.10	\$ 2.01	\$ 419.69	\$ 849.75	\$ 854.89	\$ 716.72
Level 2	\$ 24.81	\$ 12.95	\$ 1.43	\$ 1.44	\$ 2.68	\$ 5.66	\$ 647.11
Level 3	\$ 27.10	\$ 14.25	\$ 1.32	\$ 1.01	\$ 7.62	\$ 1.67	\$ 1.24
Level 4	\$ 2.99	\$ 2.00	\$ 43.77	\$ 302.89	\$ 485.59	\$ 50.67	\$ 109.19
Level 5 (medium)	\$ 3.92	\$ 2.70	\$ 39.16	\$ 164.63	\$ 823.63	\$ 79.08	\$ 118.58
Level 6	\$ 2.08	\$ 984.98	\$ 9.99	\$ 130.44	\$ 693.93	\$ 146.20	\$ 109.66
Level 7	\$ 5.00	\$ 2.01	\$ 416.69	\$ 849.75	\$ 854.89	\$ 716.72	\$ 146.10
Level 8	\$ 12.20	\$ 1.43	\$ 1.44	\$ 2.68	\$ 5.66	\$ 647.11	\$ 345.50
Level 9 (high)	\$ 12.90	\$ 1.32	\$ 1.01	\$ 7.62	\$ 1.67	\$ 1.24	\$ 54.15
			(\$ Billion)	(\$ Million)			

* Source:
MEMPHIS (Mapping for Emergency Management, Parallel Hazard Information System)
An Assessment of Natural Hazards in Florida for creating Local Mitigation Strategies
Duval Hazard Report Index: Duval County FDOF Wildland Fire Levels of Concern

Man-Made or other Non-Natural Hazard Impacts

- f. **Hazardous Materials Hazard Impact: (Not a Natural Hazard)** - All properties

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. (Source: Consolidated City of Jacksonville CEMP 2009, pgs. 30-31). 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. There is an interstate/rail corridor which transverses the County from north to south along its entire length and many residential properties lie within the 2000-foot highest danger zone. The wildcard variable though with this hazard is the weather condition factor at the time of accident. The plumes from such events vary greatly depending on wind speed and precipitation.

- g. **Terrorism Impact (Not a Natural Hazard)** - No particular area or population in the county is especially at risk from this hazard. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009 CEMP, pg. 33) No economic data is available for this impact.

- h. **Critical Infrastructure Disruption Impact (Not a Natural Hazard)** - Such an event is only expected 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 durations. No particular area or population in the county is especially at risk from this hazard. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009, pg. 34) No economic data is available for this impact.

Estimated Losses – Summary

The next Local Mitigation Strategy update should contain more definitive descriptions of potential dollar loss volume to vulnerable structures within Duval County. The analysis will include, and is not limited to, in addition to methodology descriptions, hazard area maps, and data tables that provide the outcomes information for each analysis. The Hazards U.S./Multi-Hazard (HAZUS-MH) software includes a regional inventory of assets, supports advanced analysis functions and provides 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.

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 (pgs.

108 and 111). Using a comparative analysis, the Florida Statistical Abstract 2008 provides data on assessed property values and percentage of land use within the County, as shown in the following chart:

Table 17: Duval County Property Values

DUVAL COUNTY	Residential	Commercial	Industrial	Agricultural	Institutional	Government	Total
Value (in millions of dollars)	44,374.73	12,784.84	3,901.25	178.22	2,358.71	5,404.97	69,002.72
Percentage (of total value)	64.3	18.5	5.7	0.3	3.4	7.8	100.0

Source: Florida Statistical Abstract, 2008; Table 23.97

Table 18: Potential Impact as % of Population in Duval County and Jurisdictions

Hazard	Duval County (850,962 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)	71%	71%	<5%	100%	100%	100%
Extreme Temperatures (<28° or >99°)	<20%	13%	13%	13%	13%	13%
Wildfire						
Thunderstorms & Tornadoes	100%	100%	100%	100%	100%	100%
Drought	100%	100%	100%	100%	100%	100%
Natural or Man-Made Hazard						
Critical Infrastructure Disruption	100%	100%	100%	100%	100%	100%
Man-made Hazard						
Hazardous Materials Accidents	100%	>50%	100%	>25%	>25%	>25%
Terrorism	100%	100%	100%	100%	100%	100%

Sources: Consolidated City of Jacksonville/Duval County Comprehensive Emergency Management Plan, 2009; National Weather Service; Fl. Division of Forestry, Northeast Florida Regional Council SLOSH model maps

The City of Jacksonville conducted an structures vulnerability assessment to determine community impact using zip code analysis, inclusive of generating the Duval County Property Appraisers parcel layers for numbers of structures and associated total building values to approximate the impact of the natural hazards associated with Duval County, which were created using MEMPHIS data furnished by the Northeast Florida Regional Planning Council.

The following maps and matrix provide data to help planners derive probable impacts to structures based on their location in the County and its jurisdictions.

Hazards Formula

Wind from Tropical Storm Force Winds (greater than 39 MPH): Duval County is considered a coastal county and is divided into five wind speed zones - 120 MPH (the Beaches Community) = 100,000 population; 119 MPH (East Jacksonville) = 250,000 population; 115 MPH (west of St. Johns River) = 250,000 population; 110 MPH (West Jacksonville) = 150,000 population; 105 MPH (neighborhoods Maxville, Whitehouse and Town of Baldwin) = 50,000 population. The total county population is 850,962. All wind speed zones are subject to Tropical Storm Force Winds (TSFW). [CEMP, pg. 22]

Storm Surge: Duval County is a coastal county off of the Atlantic Ocean in the upper St. Johns River watershed. 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. Formulas are based on SLOSH modeling and Duval County evacuation zones 1-5 using the population numbers associated with the Wind Speed Zones in the CEMP (pg 22) which correlate with CAT 1-5 evacuation zones.

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 is based on evacuation zones 1-5 and FEMA FIRM maps to correlate with population numbers associated with the Wind Speed Zones in the CEMP (pg. 22).

Extreme Temperatures: Families living in poverty are most susceptible to this hazard. The CEMP gives an estimate that 10% of families and 13% of individuals are in poverty (pg. 48).

Drought: All of the county and jurisdictions are susceptible to this hazard. Formula uses CEMP and National Weather Service data.

Critical Infrastructure Disruption: All of the county and jurisdictions are susceptible to this hazard. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009).

Hazardous Materials Accidents: All properties 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. All of the County and jurisdictions are susceptible to this hazard. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009).

Terrorism: All of the county and jurisdictions are susceptible to this hazard. (Source: Consolidated City of Jacksonville/Duval County CEMP 2009).

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

per the CEMP (Source: Consolidated City of Jacksonville/Duval County CEMP 2009).

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. 31) 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.

1. Areas Vulnerable to Winds from Tropical Cyclone (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 Heckshire 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.

2. 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 is nearby most developed land throughout the county. 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.

3. Areas Vulnerable to Hazardous Materials

All properties 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.

There is an interstate/rail corridor which transverses the County from north to south along its entire length and many residential properties lie within the 2000-foot highest danger zone. The wildcard variable though with this hazard is the weather condition factor at the time of accident. The plumes from such events vary greatly depending on wind speed and precipitation.

4. Areas Vulnerable to Flooding and Storm Surge

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 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 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. A long awaited drainage improvement project under the US Army Corps of Engineers was initiated in 2001 to resolve flooding issues. The City of Jacksonville is now responsible for ongoing dredging and maintenance 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 successful dredging project. The remaining flood prone properties will benefit from improved maintenance of existing drainage improvements.

6. 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. Duval County was included in the U.S. Small Business Administration (SBA) disaster of May 10, - June 5, 2009 for excessive rain, flooding, flash flooding and high winds, FL-#11828.

7. Areas Vulnerable to Extreme Temperatures

As described in previous sections of the Update, all of Duval County and its jurisdictions are susceptible to the effects of extreme temperatures, below 28 degrees or above 99 degrees. As of May 19, 2009, Duval County was included in the SBA disaster for very cold weather and freezing temperatures from January 20 through February 6, 2009, FL-#11739.

8. Areas Vulnerable to Drought

As described in previous sections of the Update, all of Duval County and its jurisdictions are vulnerable to the effects of drought. As of January 1, 2007, Duval County was included in a Drought Disaster Declaration through the SBA, #FL-10970.

H. Hazard Prioritization Process

Twenty-two hazards were identified and their vulnerabilities analyzed as required between the State of Florida CEMP Guideline Criteria and the Local Mitigation Strategy requirements. Each local government has different priorities based on the outcome of this hazard analysis for particular jurisdictions. Duval County used the Local Mitigation Strategy Risk Assessment sub-committee and the Duval Prepares organization to

determine those priority hazards that call for the development of standard operating guidelines, resource identification, impact analysis, mitigation strategies, performance objectives, hazard elimination and mitigation activities.

Local Mitigation Strategy sub-committee members (subject matter experts in planning, public works etc.) reviewed the nineteen-hazard analysis and then used a normative group process to rank order hazards based on frequency, severity, damage estimates and other professional knowledge.

That prioritization process yielded the top hazards to be:

- Wind from Tropical Cyclone
- Floods
- Storm Surge from Tropical Cyclone
- Terrorism
- Hazardous Materials Accidents
- Thunderstorms and Tornadoes
- Wildfires
- Critical Facilities Disruption

A follow-up meeting further narrowed the top hazards list to 6 by combining wind and storm surge from Tropical Cyclone into one hazard, and by dropping critical facilities disruption as a hazard usually resulting from other hazards. Therefore the final list of the top hazards that can affect Duval County and its municipalities is:

- Wind and Storm Surge from Tropical Cyclone
- Floods
- Terrorism
- Hazardous Materials Accidents
- Thunderstorms and Tornadoes
- Wildfires

The Risk Assessment and Planning subcommittee of Duval Prepares, the LMS Advisory Committee reaffirmed the above priorities as the top priorities in the 2010 LMS Update hazard prioritization process through the meetings and workshops conducted to update the 2010 LMS during February and March 2009 (Appendix C). Reference Appendix C for information concerning the description of the planning process and meeting schedule for the Local Mitigation Strategy 2009 update.

I. Multi-Hazard Maps

The multi-hazard map that reveals the highest risk to Duval County is actual a series of maps consisting of factors related to the Hurricane hazard (storm surge and high winds); the wildfire map for the wildfire hazard; the hazardous material impact zone map for the accident hazard; and the flood plain map for the flooding hazard.

Far and away from the other hazards in terms of risk to population is the area subject to the hurricane hazard, namely the lands from the coast inland to the Intracoastal Waterway and people living within the coastal high hazard area. Table 18 summarizes the probabilities, risks and vulnerabilities.

Table 19: Vulnerability, Probability, Risk Assessment Table (1998 – 2008)

Vulnerability to Hazard by Community

Hazard	Events Recorded 1998-2008	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 Storm	14	High	Yes	High	High	High	Y	Y	Y	Y	Y	Y
Storm Surge (from Hurricane, Tropical Storms, Nor'easters)	1.2	High	Moderate	High	High	Moderate	Y	Y	Y	Y	Y	N
Flooding (from Hurricane, Tropical Storm and Seasonal Heavy Rains, Nor'easters)	70	High	Yes	High	High	High	Y	Y	Y	Y	Y	Y
Extreme Temperatures (<28° or >99°)	4	Low	No	Very Low	Very Low	Very Low	Y	Y	Y	Y	Y	Y
Wildfire (Brush, Forest)	99+	High	No	Low	Low	Moderate	Y	Y	Y	Y	Y	Y
Thunderstorms & Tornadoes	230 TH/11/T	High/Low	Yes/No	Moderate/Moderate	Moderate/Moderate	Moderate/Low	Y	Y	Y	Y	Y	Y
Drought	2	Moderate	Yes	Low	Low	Low	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	20	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 probability to take place in Duval County (with exception of hazards deleted from further consideration in the 2009 Consolidated City of Jacksonville/Duval County Comprehensive Emergency Management Plan)

Documentation Sources: 2009 Consolidated City of Jacksonville/Duval County Comprehensive Emergency Management Plan; Florida Division of Forestry; National Weather Service, Jacksonville Office; City of Jacksonville Division of Emergency Preparedness event response files; City of Jacksonville Beach; Town of Baldwin; City of Neptune Beach and City of Atlantic Beach; 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; Jacksonville Electric Authority (JEA); City of Jacksonville Public Works and Planning & Development Departments for Floodplain and Community Rating System (CRS) data.

I. Multi-Hazard Risk Maps

Figure 19: Category 1 Storm Surge Event

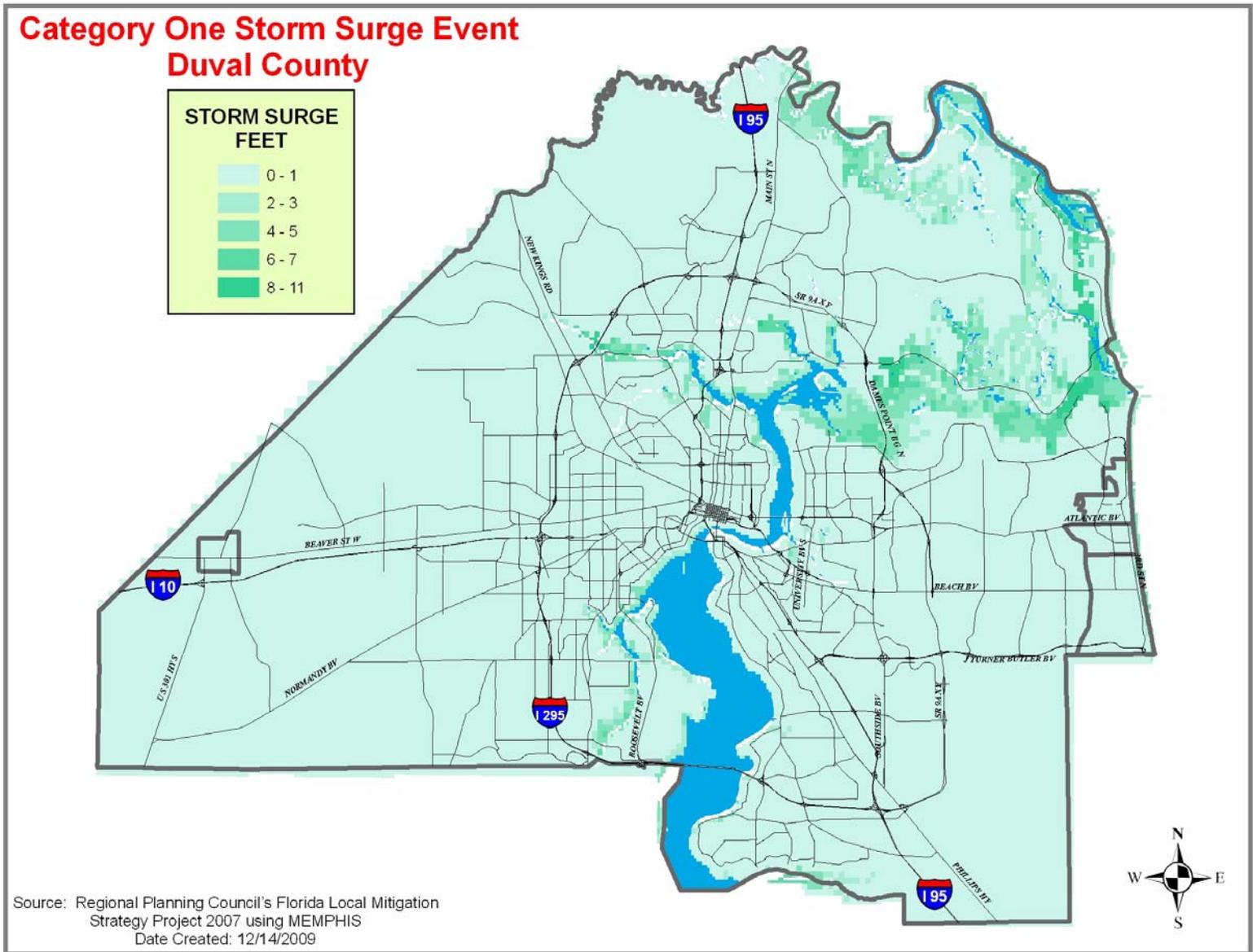


Figure 20: Category One Wind Event

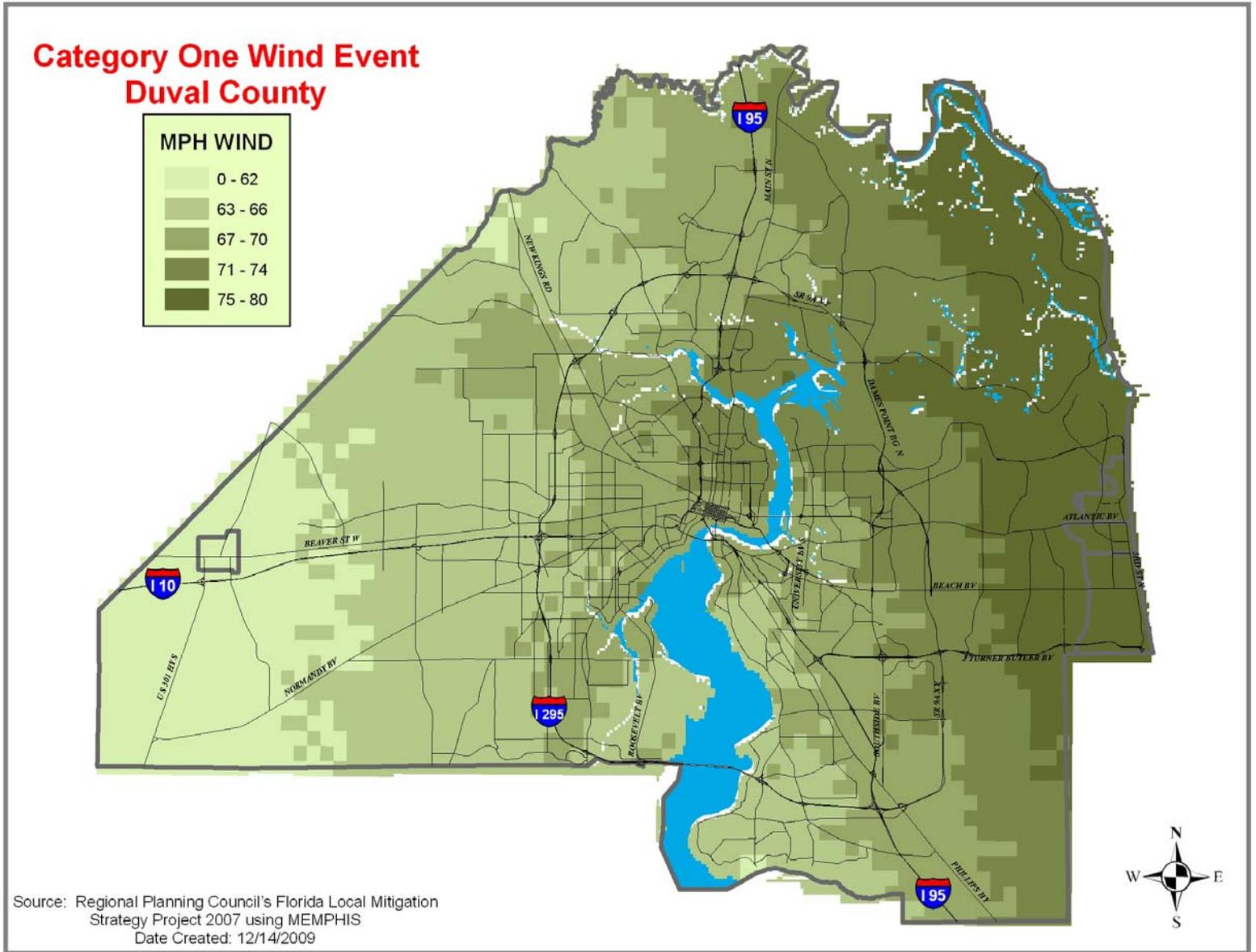


Figure 21: Category 3 Storm Surge Event

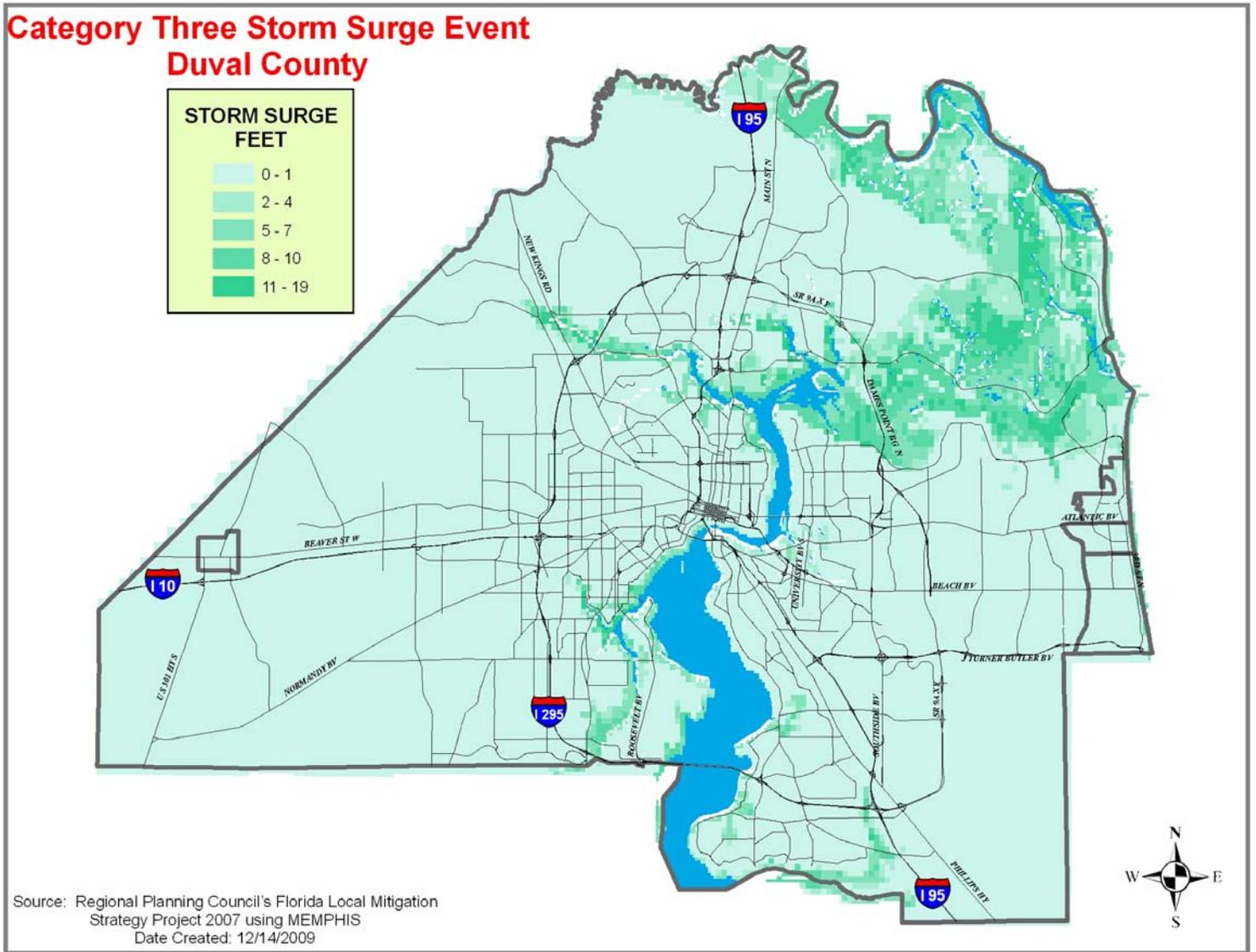


Figure 22: Category 3 Wind Event

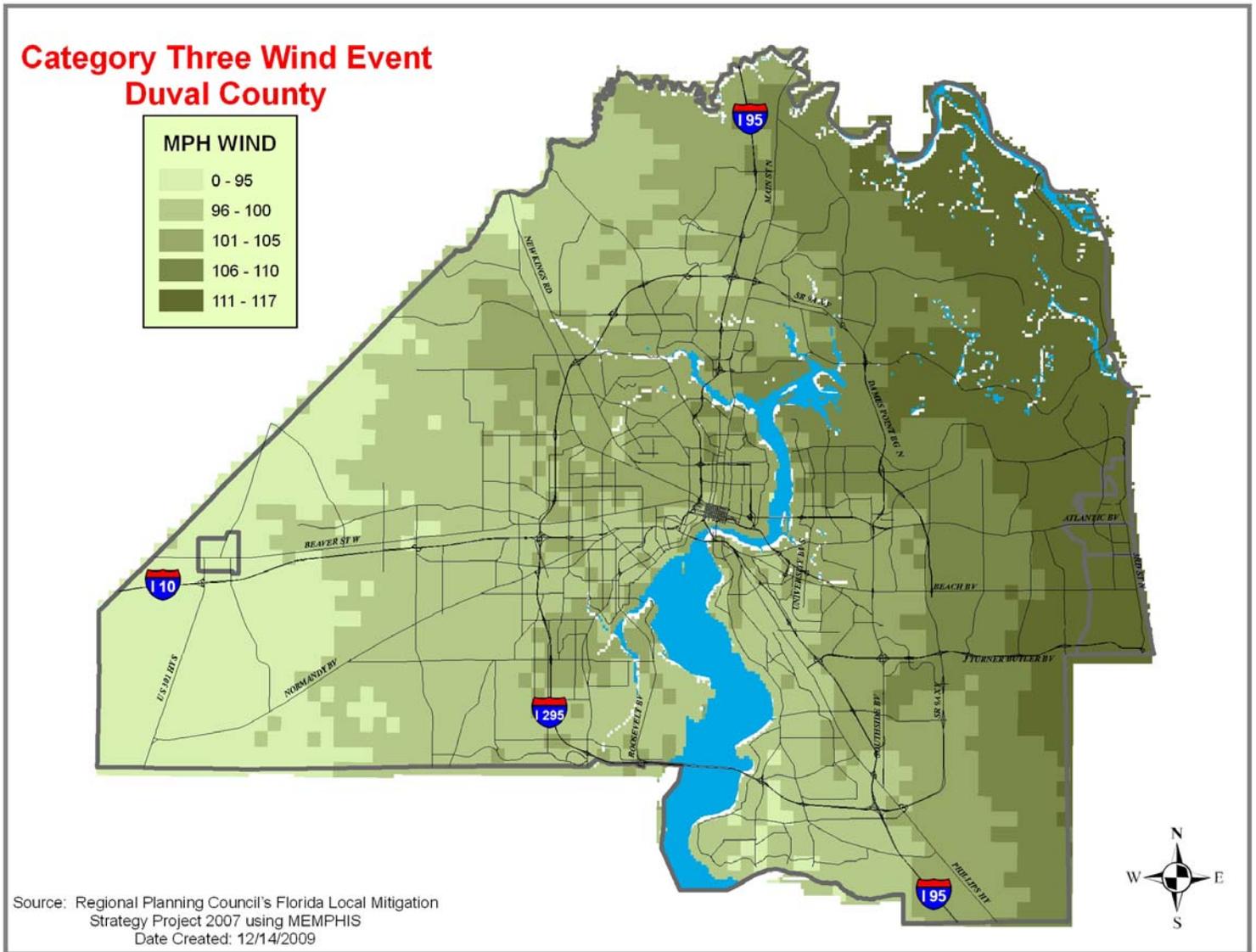


Figure 23: Category 5 Storm Surge Event

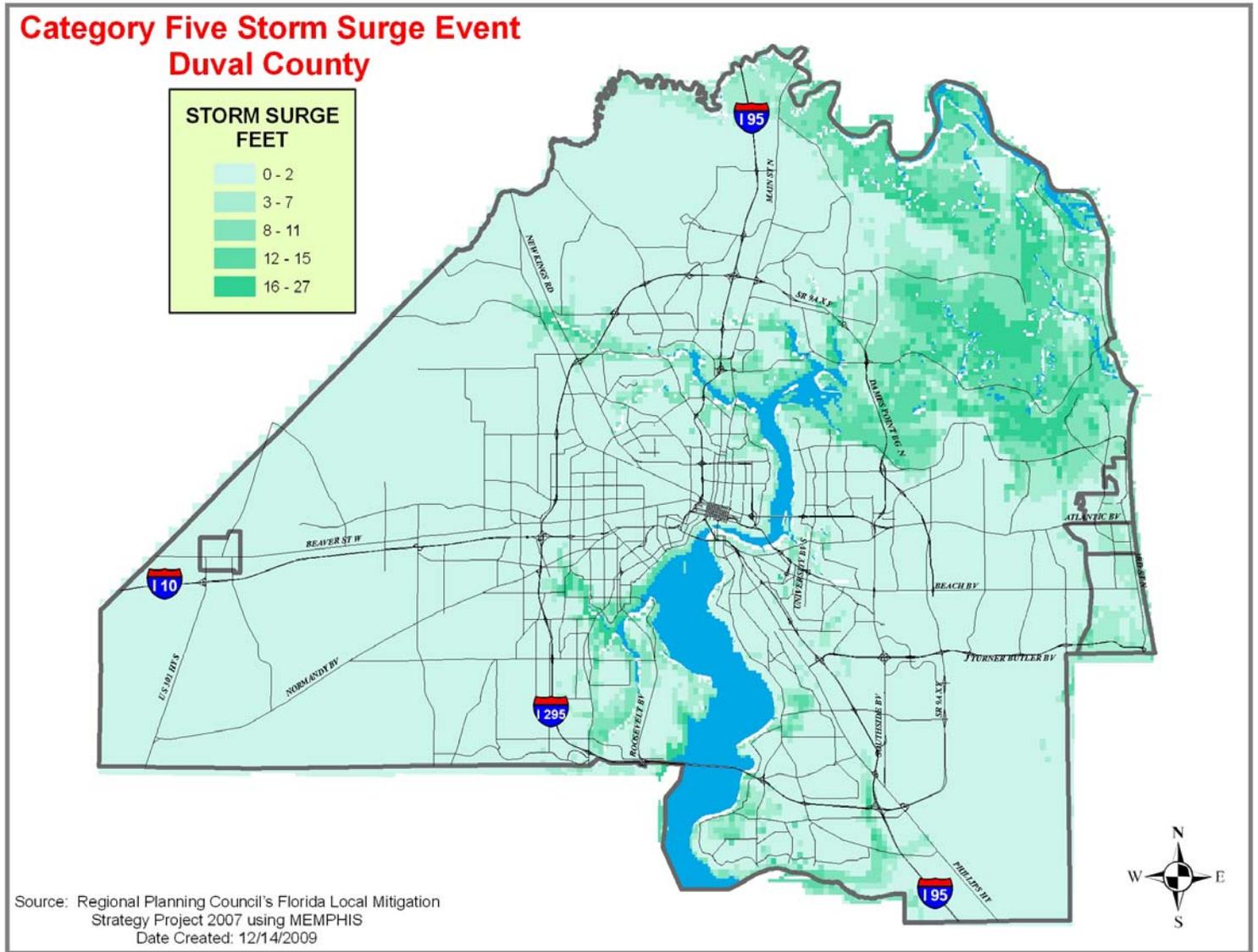


Figure 24: Category 5 Wind Event

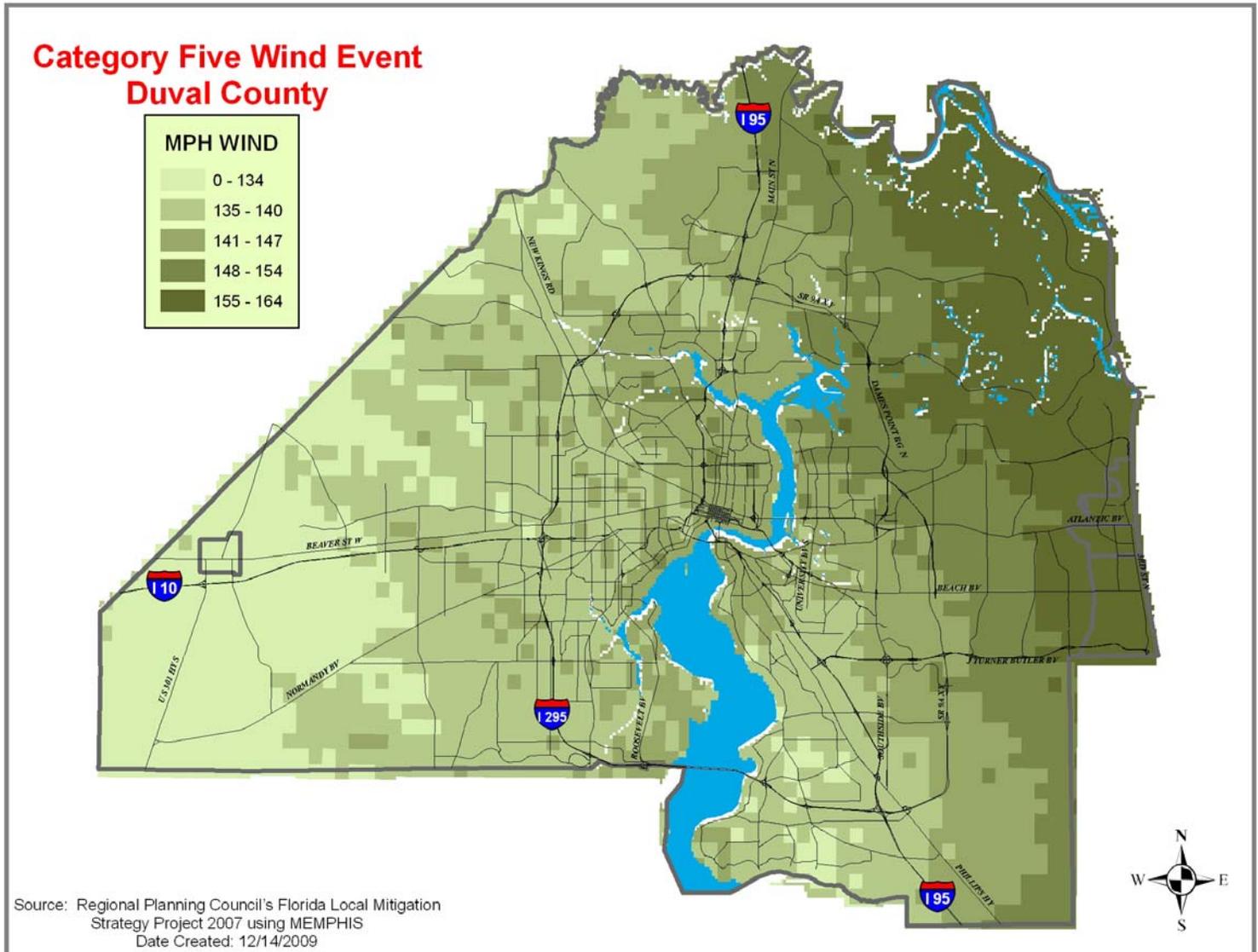


Figure 25: 100 year & 500 Year Flood Event

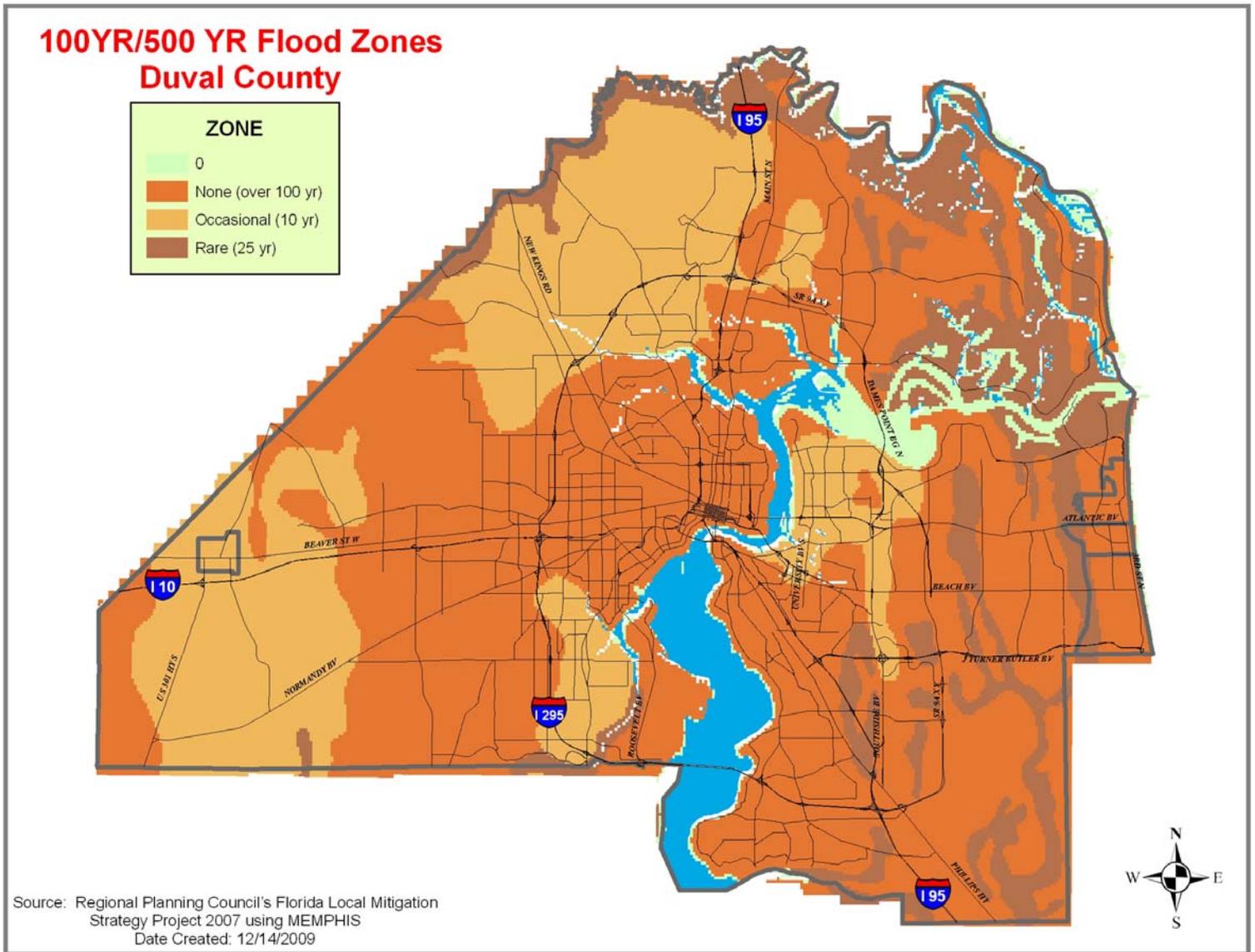


Figure 26: FEMA FIRM Flood Zone

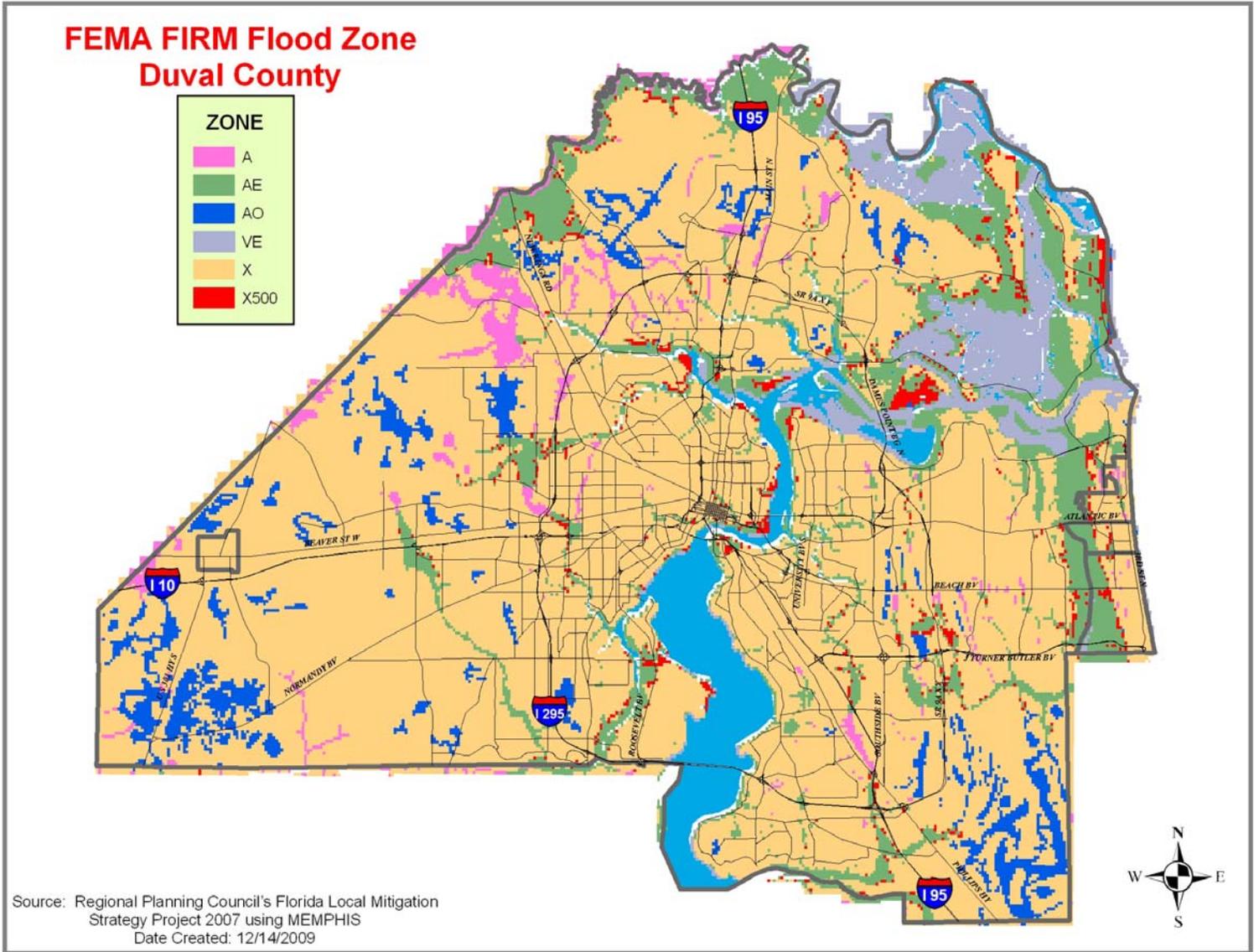


Figure 27: Tornado Risk Frequency

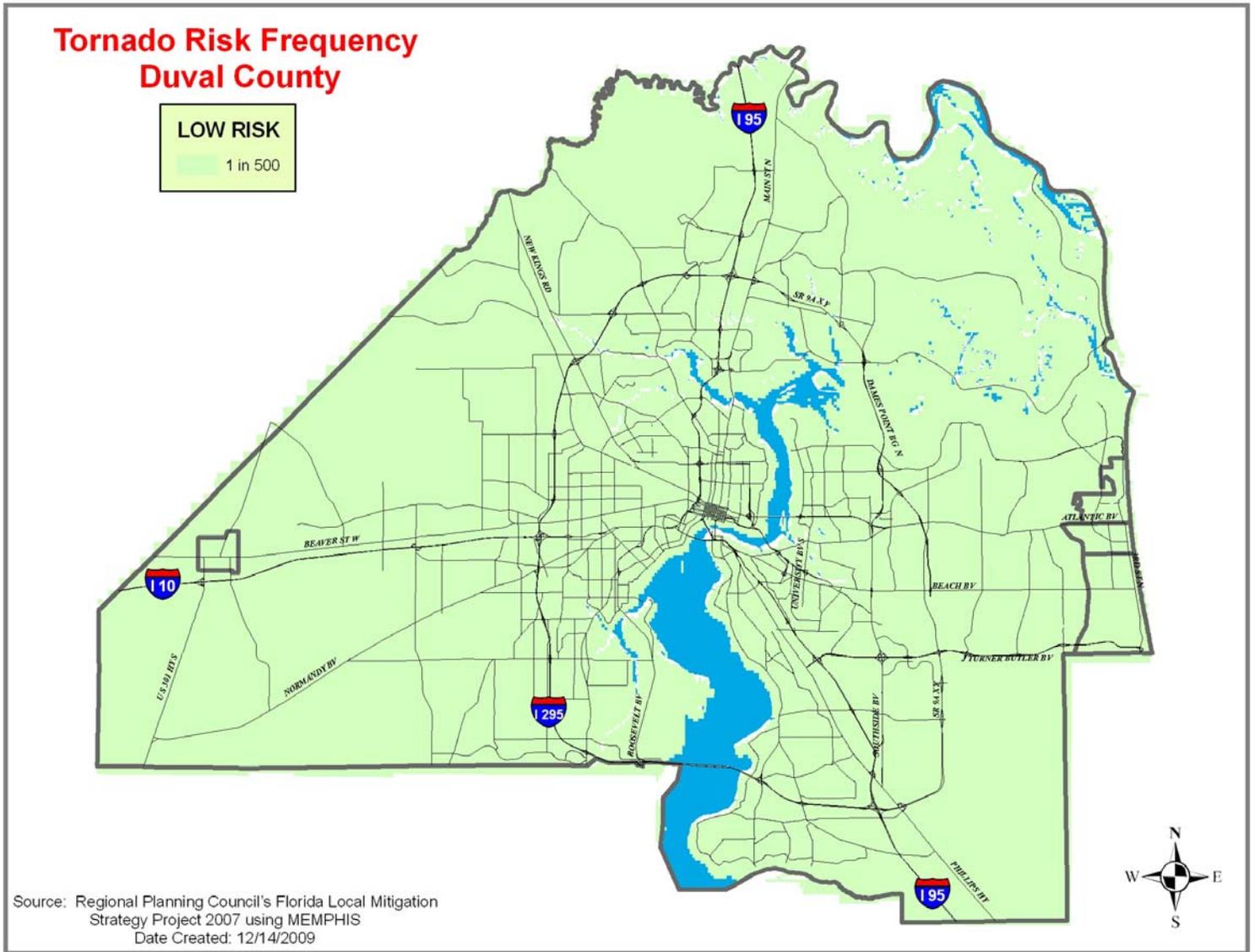


Figure 28: Wildfire Potential

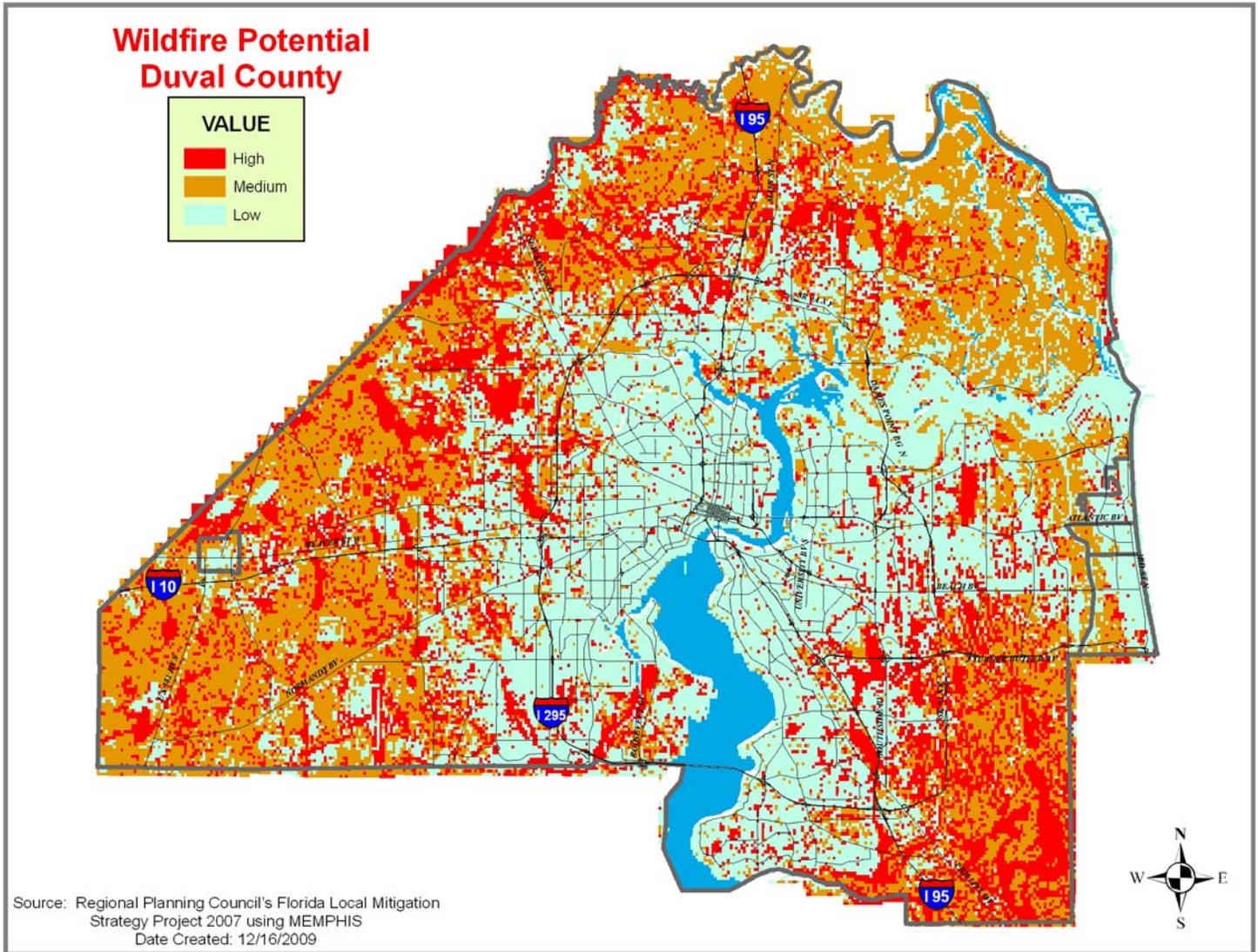


Figure 29: Repetitive Flood Loss in Duval County

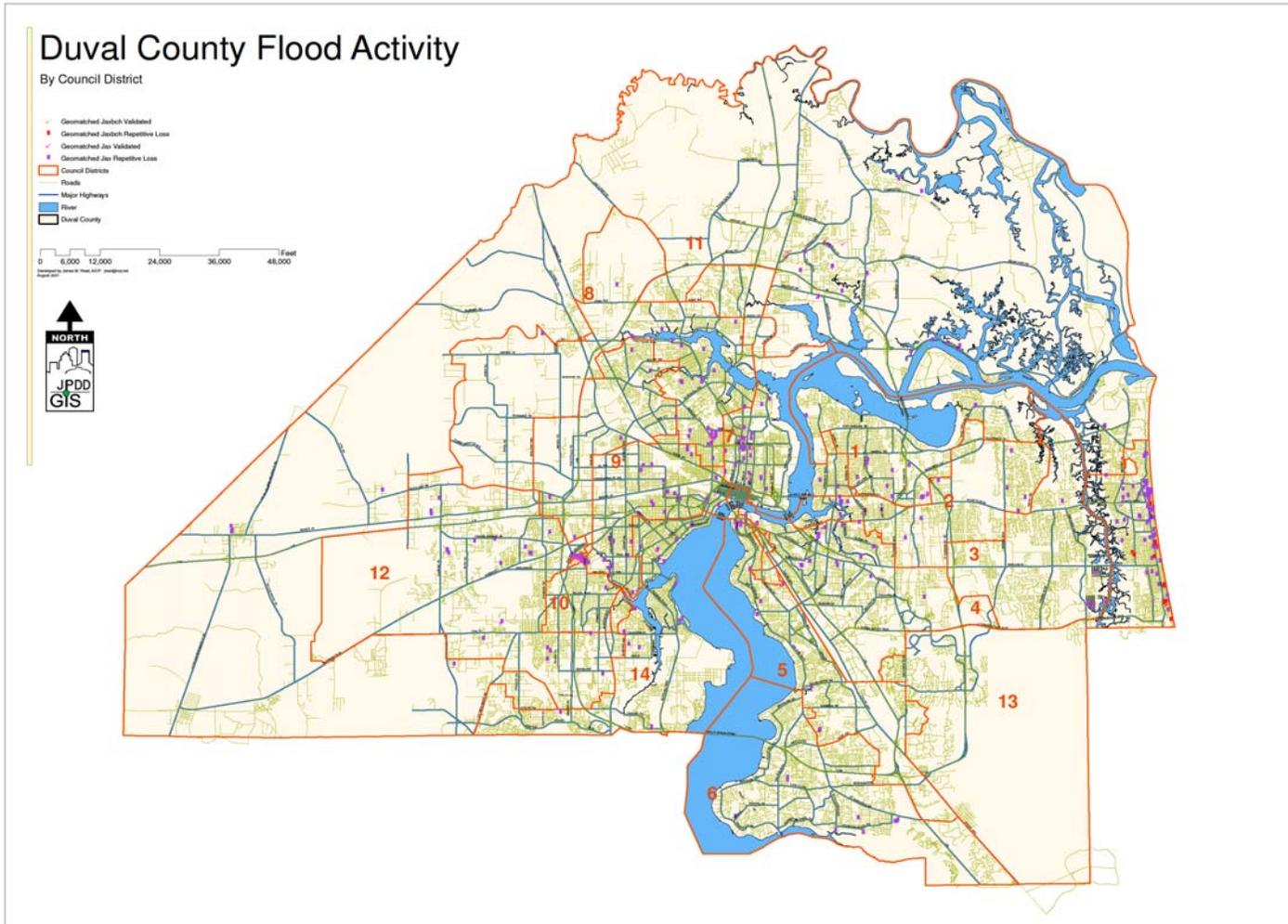


Figure 30: CAT 1 Storm Surge Zip Code Analysis for Vulnerability Impact

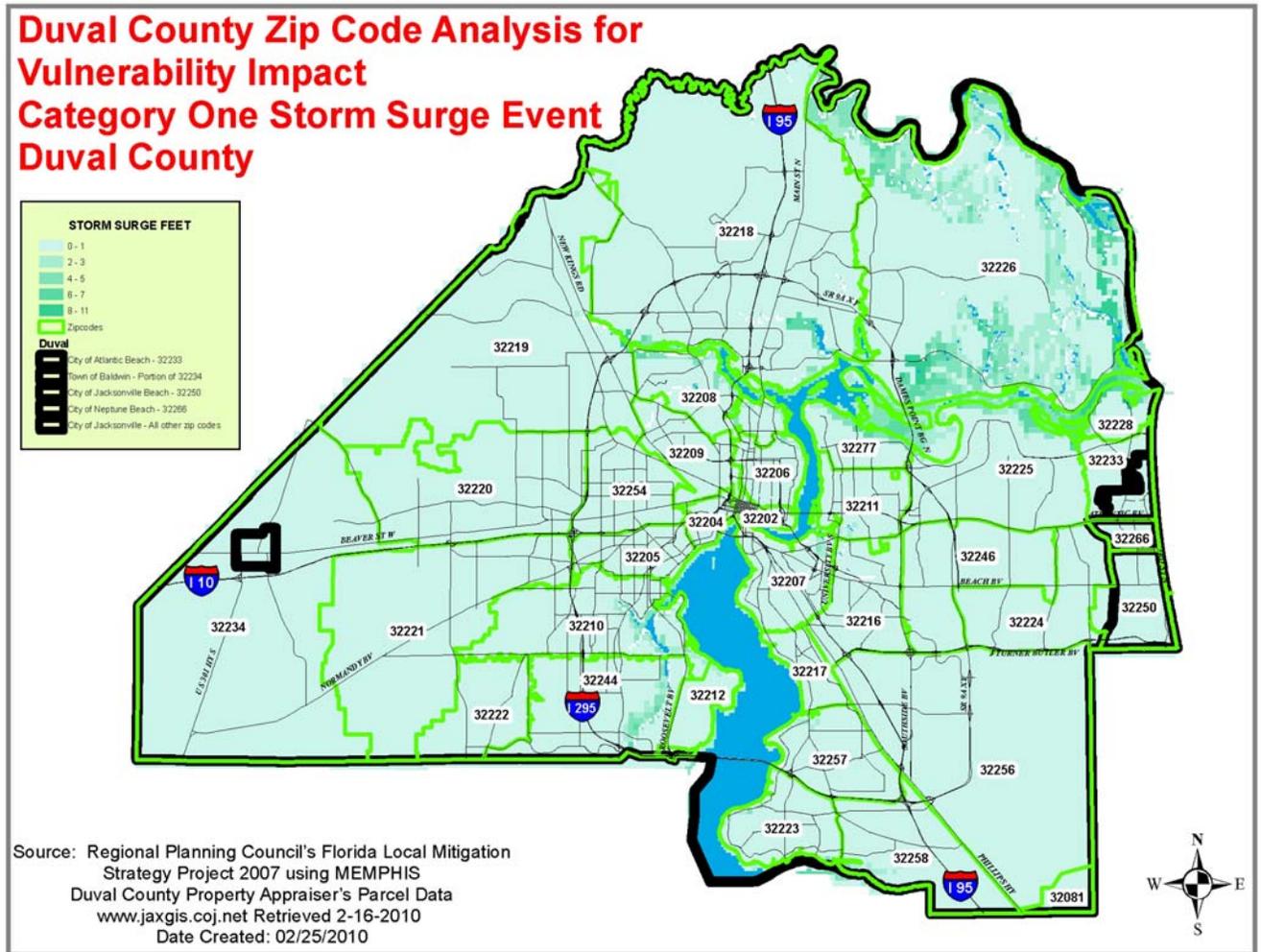


Figure30a: CAT 1 Wind – Zip Code Analysis for Vulnerability Impact

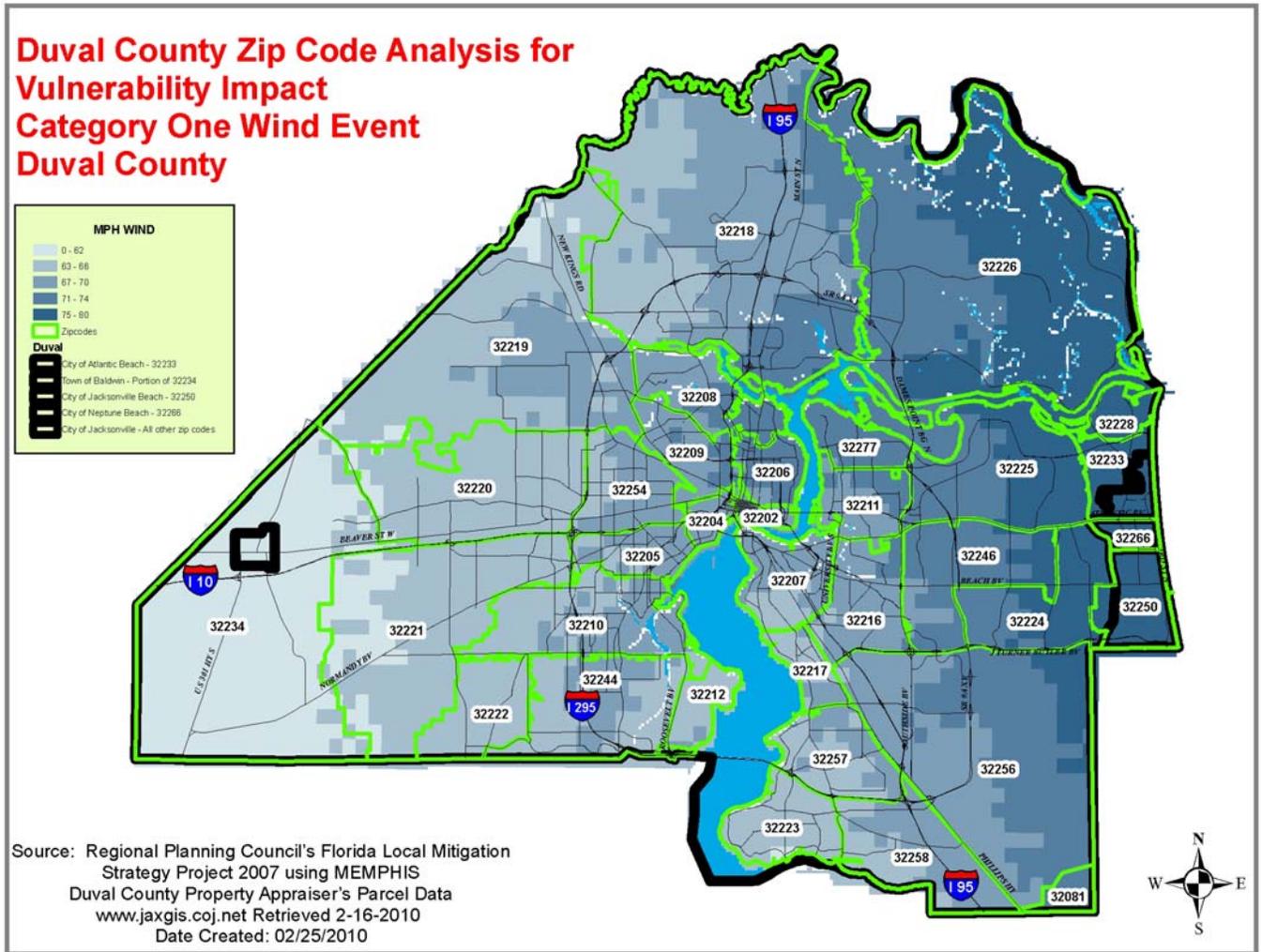


Figure 30b: Category 3 Storm Surge -- Zip Code Analysis for Vulnerability Impact

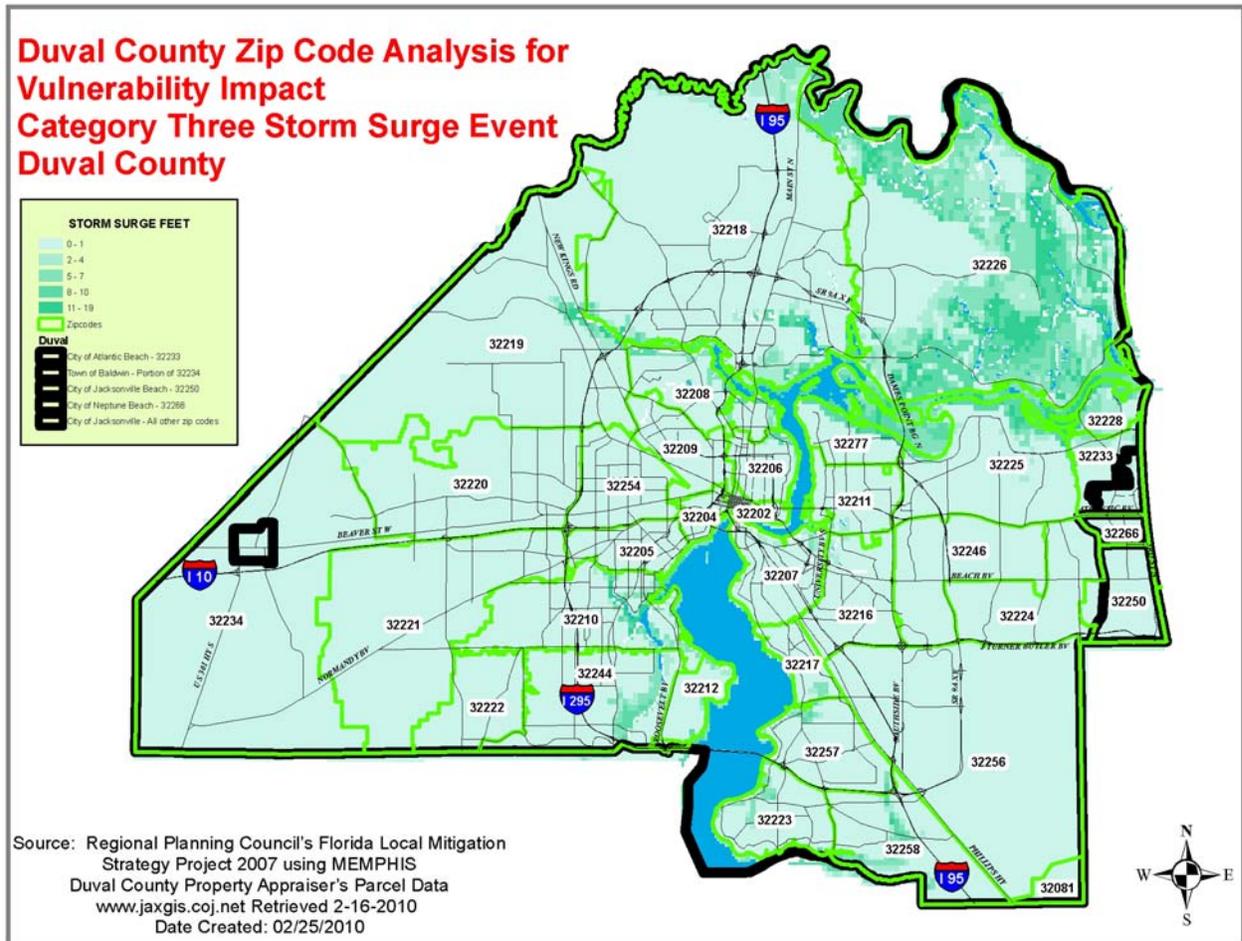


Figure 30c: Category 3 Wind -- Zip Code Analysis for Vulnerability Impact

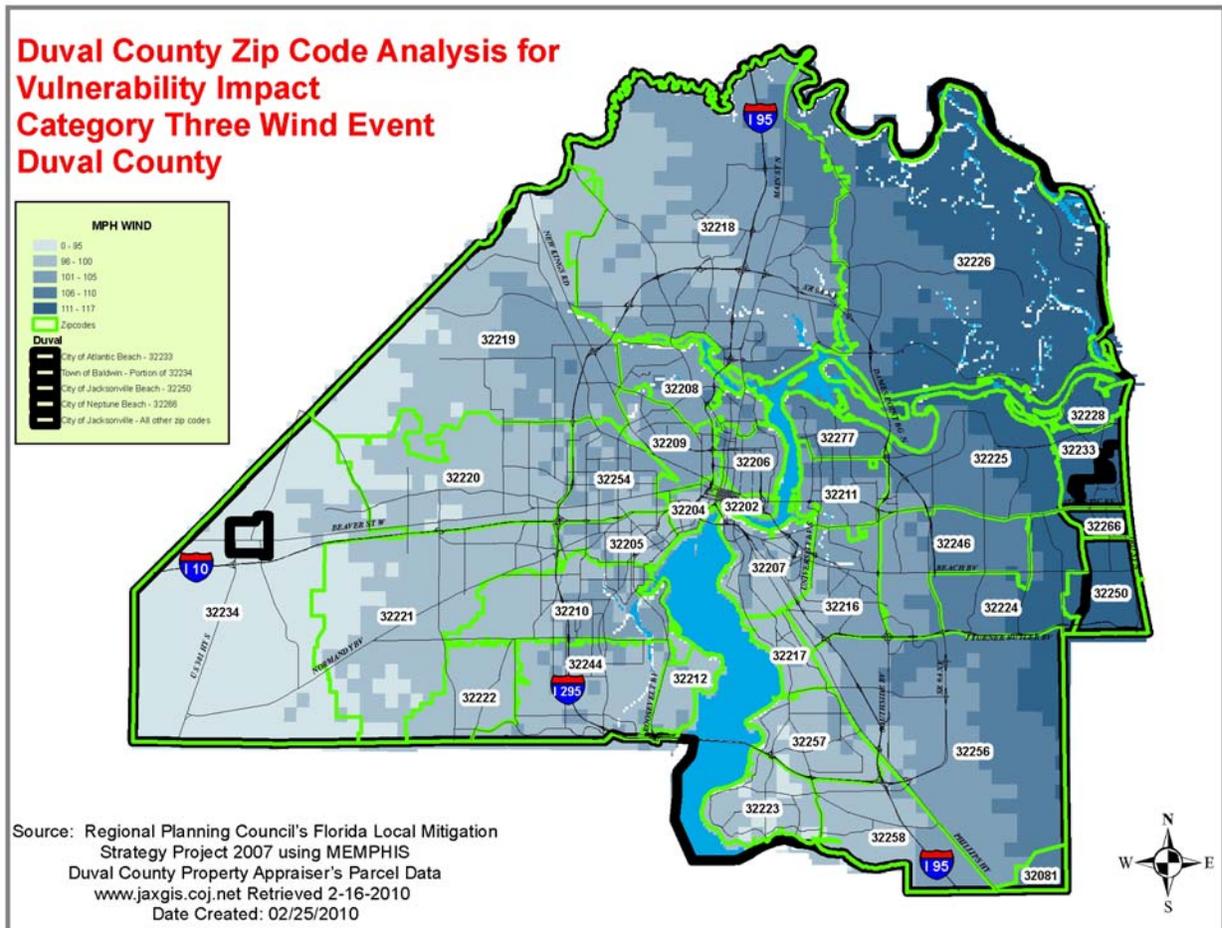


Figure 30d: Category 5 Storm Surge -- Zip Code Analysis for Vulnerability Impact

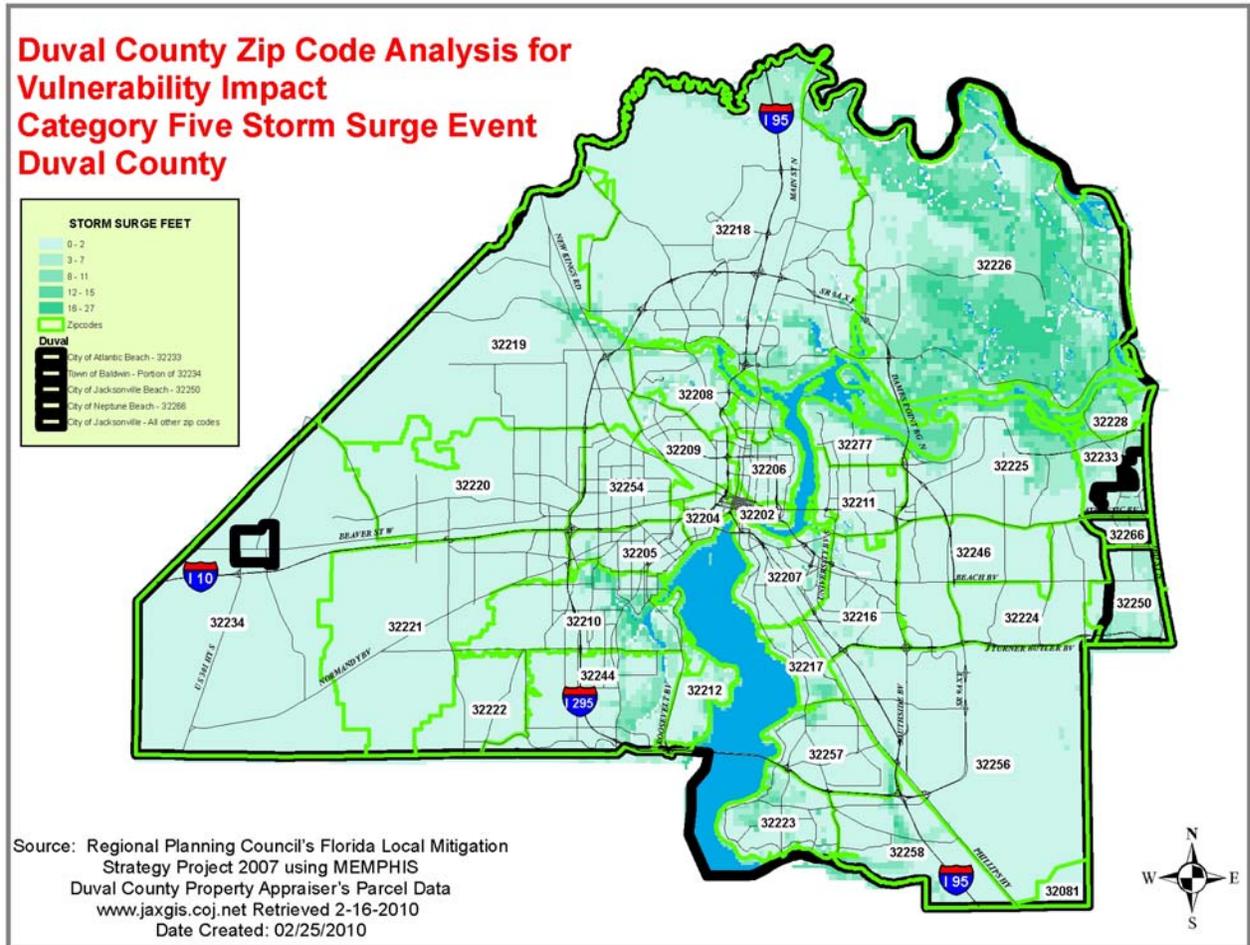


Figure 30e: Category 5 Wind -- Zip Code Analysis for Vulnerability Impact

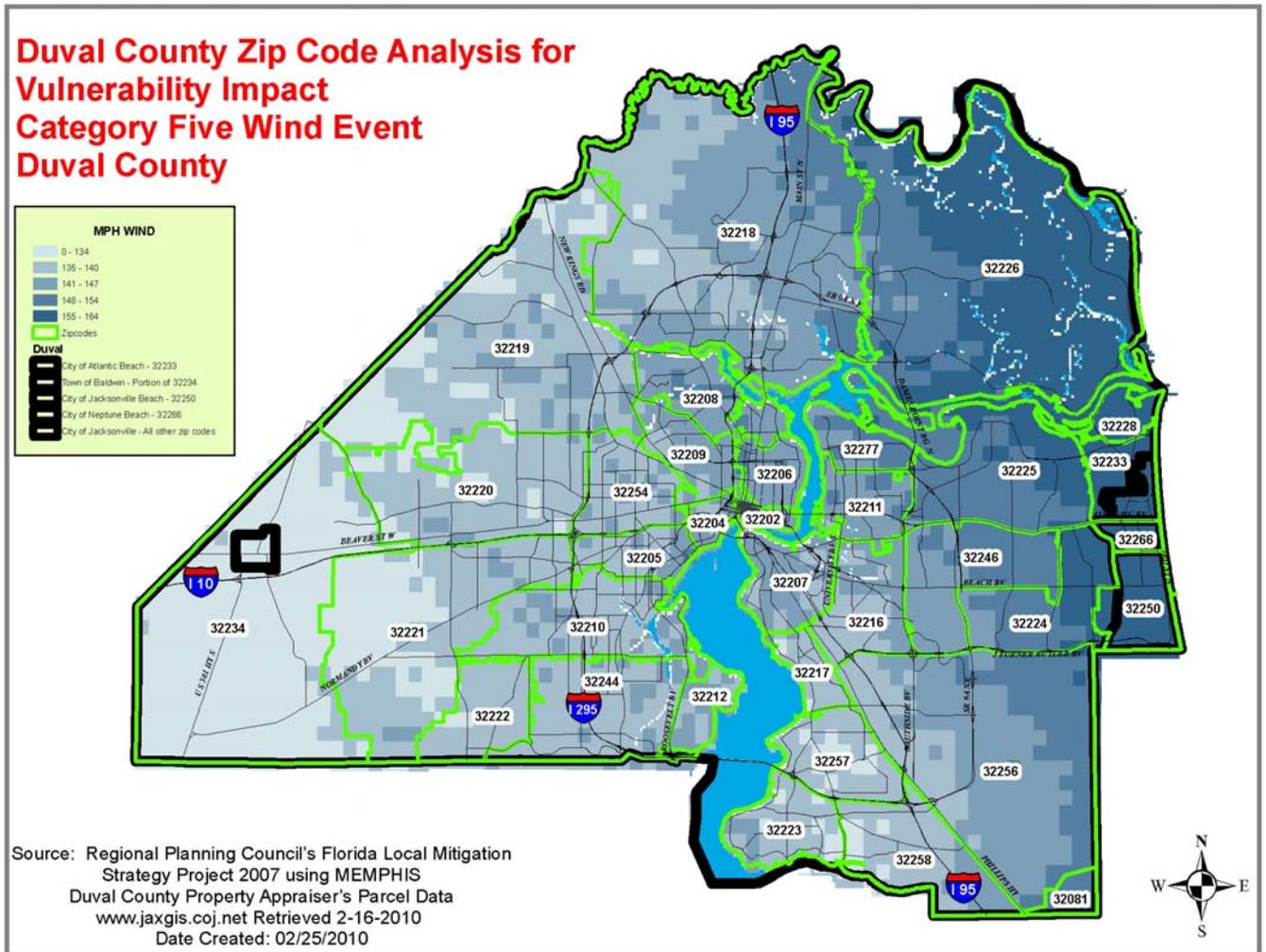


Figure 30f: 100YR/500 YR Flood Zones --Zip Code Analysis for Vulnerability Impact

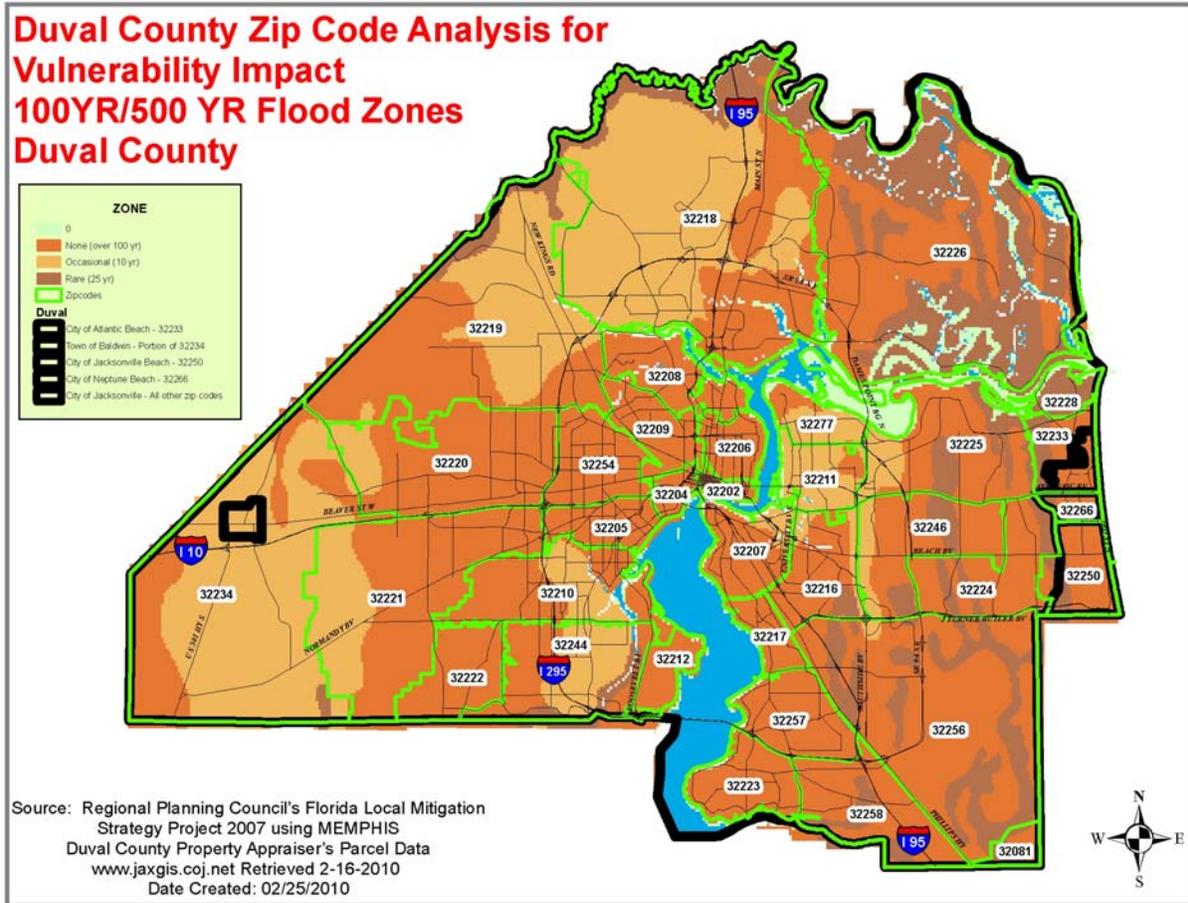


Figure 30g: FEMA FIRM Flood Zone - Zip Code Analysis for Vulnerability Impact

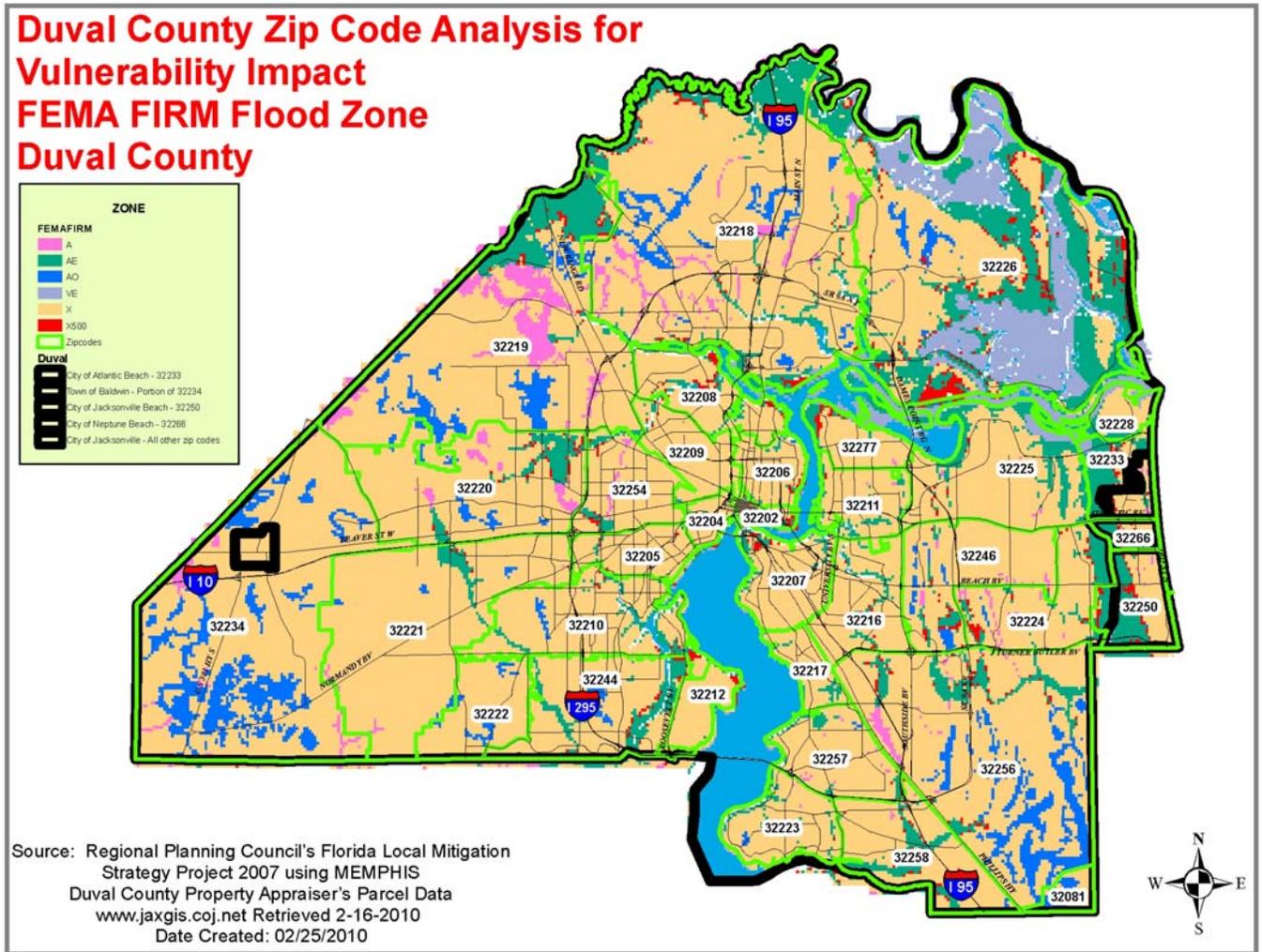


Figure 30h: Tornado Risk Frequency -- Zip Code Analysis for Vulnerability Impact

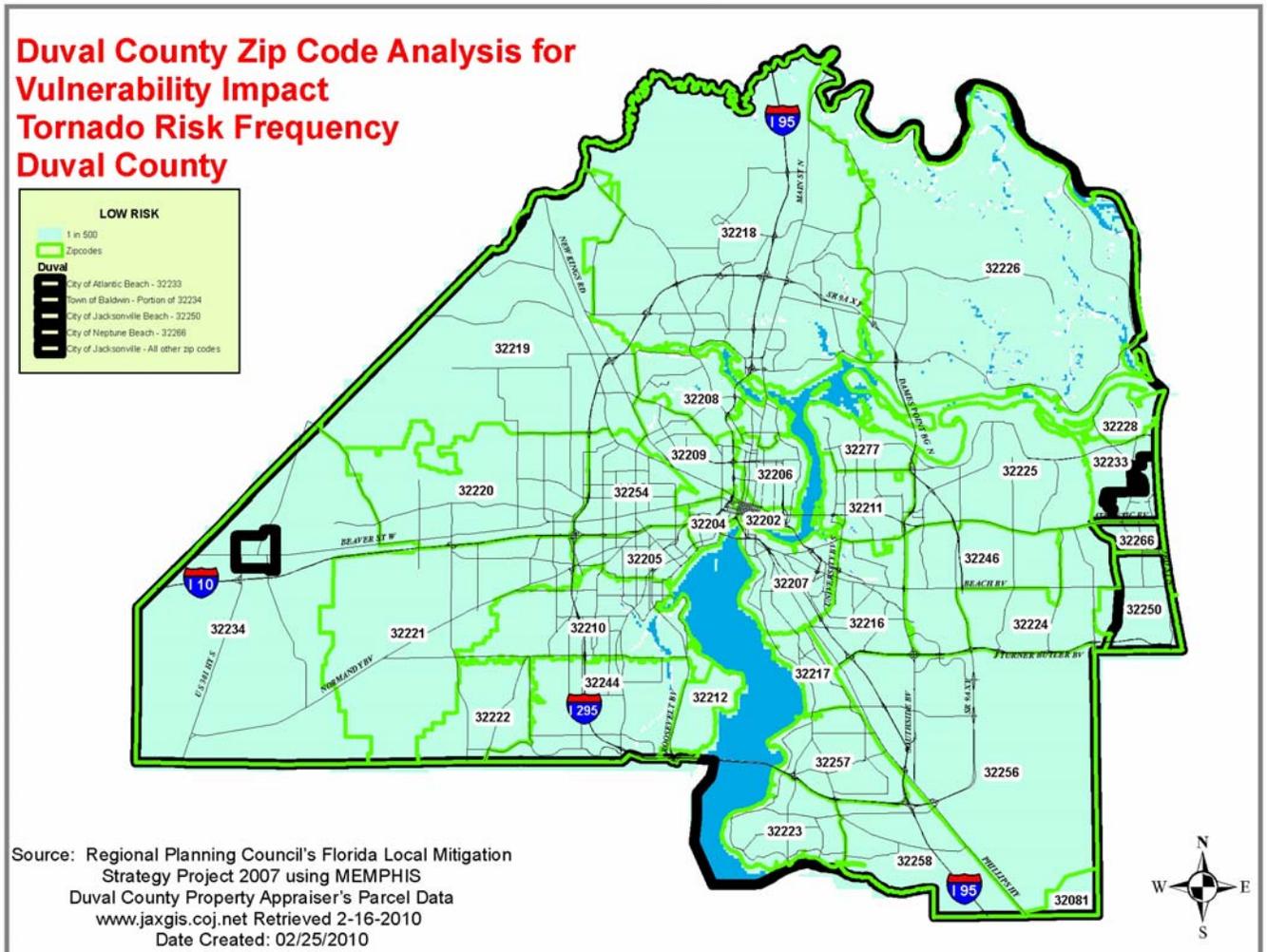
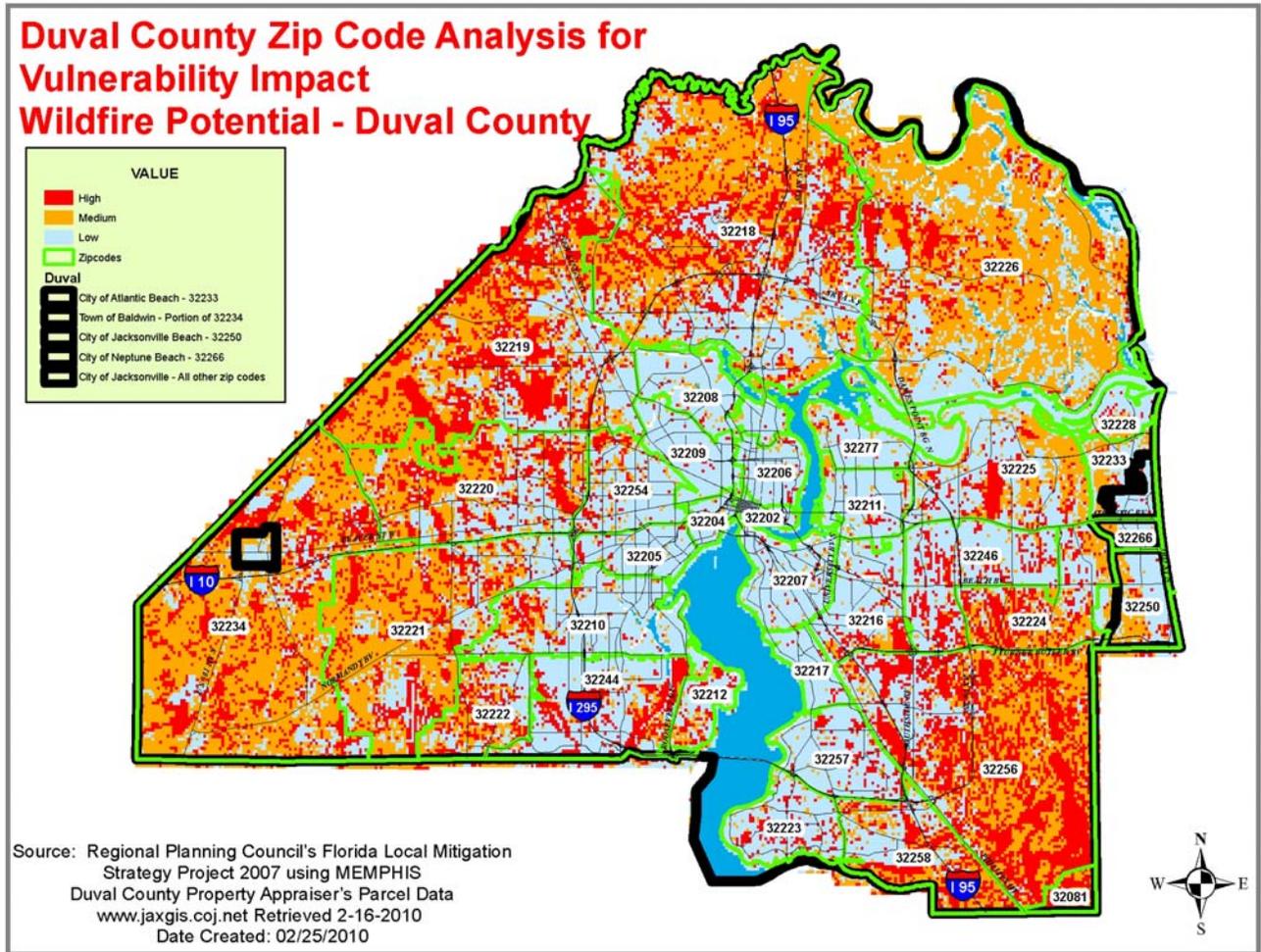


Figure 30i: Wildfire Potential-- Zip Code Analysis for Vulnerability Impact



THIS PAGE IS INTENTIONALLY LEFT BLANK

Table 19a: VULNERABILITY ANALYSIS FOR IMPACT IN DUVAL COUNTY AND JURISDICTIONS

PROPERTY APPRAISERS DATA			HAZARDS							CITY
Zip Code	# of Structures	Total Building Value	Severe Thunderstorm/Tornado	Wind Tropical Cyclone	Storm Surge (Tropical Cyclone)	Extreme Temp.	Drought	Wildfire	Flooding	Jurisdiction
	5	\$433,194.00	<i>not able to map from available data</i>							JAX
32009	2	\$110,481.00	D	D	D	N	N	D	D	JAX
32202	2047	\$1,764,978,650.00	D	D	D	N	N	D	D	JAX
32202-	5	\$141,258.00	D	D	D	N	N	D	D	JAX
32203	1	\$13,692,846.00	D	D	D	N	N	D	D	JAX
32204	3499	\$916,567,349.00	D	D	D	N	N	D	D	JAX
32204-	24	\$798,964.00	D	D	D	N	N	D	D	JAX
32205	12515	\$1,710,474,084.00	D	D	D	N	N	D	D	JAX
32205-	38	\$4,561,204.00	D	D	D	N	N	D	D	JAX
32205-8929	1	\$157,626.00	D	D	D	N	N	D	D	JAX
32206	8714	\$849,087,635.00	D	D	D	N	N	D	D	JAX
32206-	61	\$738,147.00	D	D	D	N	N	D	D	JAX
32206-3838	1	\$86,523.00	D	D	D	N	N	D	D	JAX
32206-6031	1	\$332,952.00	D	D	D	N	N	D	D	JAX
32207	14633	\$2,518,403,086.00	D	D	D	N	N	D	D	JAX
32207-	19	\$127,000.00	D	D	D	N	N	D	D	JAX
32207-2429	1	\$82,500.00	D	D	D	N	N	D	D	JAX
32208	14098	\$1,195,676,200.00	D	D	D	N	N	D	D	JAX
32208-	27	\$1,337,130.00	D	D	D	N	N	D	D	JAX
32209	15311	\$1,222,876,287.00	D	D	D	N	N	D	D	JAX
32209-	17	\$2,922,803.00	D	D	D	N	N	D	D	JAX
32210	23108	\$2,940,537,729.00	D	D	D	N	N	D	D	JAX
32210-	83	\$2,967,427.00	D	D	D	N	N	D	D	JAX
32211	10986	\$1,353,547,751.00	D	D	D	N	N	D	D	JAX
32211-	17	\$157,878.00	D	D	D	N	N	D	D	JAX
32212	2	\$209,878.00	S	S	S	N	N	S	S	JAX
32216	14008	\$2,390,615,617.00	D	D	D	N	N	D	D	JAX
32216-	44	\$4,297,252.00	D	D	D	N	N	D	D	JAX
32217	7196	\$1,217,566,763.00	D	D	D	N	N	D	D	JAX
32217-	22	\$1,054,054.00	D	D	D	N	N	D	D	JAX
32218	19698	\$2,971,604,019.00	S	S	S	N	N	S	S	JAX
32218-	148	\$20,844,327.00	S	S	S	N	N	S	S	JAX
32218	10	\$2,495,943.00	S	S	S	N	N	S	S	JAX
32219	5490	\$648,504,142.00	D	D	D	N	N	D	D	JAX
32219-	20	\$1,397,935.00	D	D	D	N	N	D	D	JAX
32220	5271	\$617,910,373.00	D	S	N	N	N	S	S	JAX
32220-	12	\$1,033,263.00	D	S	N	N	N	S	S	JAX
32221	9617	\$1,345,010,826.00	S	S	N	N	N	S	S	JAX
32221-	16	\$252,263.00	S	S	N	N	N	S	S	JAX

PROPERTY APPRAISERS DATA			HAZARDS							CITY
Zip Code	# of Structures	Total Building Value	Severe Thunderstorm/Tornado	Wind Tropical Cyclone	Storm Surge (Tropical Cyclone)	Extreme Temp.	Drought	Wildfire	Flooding	Jurisdiction
32221-4432	1	\$60,757.00	D	D	N	N	N	D	D	JAX
32222	3319	\$430,477,225.00	D	D	N	N	N	D	D	JAX
32222-	6	\$120,946.00	D	D	N	N	N	D	D	JAX
32223	9973	\$1,849,355,208.00	D	D	D	N	N	D	D	JAX
32223-	4	\$279,671.00	D	D	N	N	N	D	D	JAX
32224	11726	\$2,903,722,279.00	D	D	D	N	N	D	D	JAX
32224-	103	\$2,294,665.00	D	D	D	N	N	D	D	JAX
32225	19824	\$4,023,884,311.00	D	D	D	N	N	D	D	JAX
32225-	16	\$1,505,057.00	D	D	D	N	N	D	D	JAX
32225-1103	1	\$343,401.00	D	D	D	N	N	D	D	JAX
32226	7167	\$1,235,557,033.00	D	D	D	N	N	D	D	JAX
32226-	13	\$1,049,616.00	D	D	D	N	N	D	D	JAX
32227	4	\$209,498,241.00	D	D	D	N	N	D	D	JAX-MAYPORT NAS
32233	8491	\$1,496,160,072.00	D	D	D	N	N	D	D	CAB
32233-	46	\$155,006.00	D	D	D	N	N	D	D	CAB
32234	1941	\$210,436,075.00	R	R	N	N	N	R	R	TOB/JAX
32234-	13	\$548,848.00	R	R	N	N	N	R	R	TOB/
32234-2705	1	\$0.00	R	R	N	N	N	R	R	TOB
32244	19889	\$2,431,909,572.00	S	S	S	N	N	S	S	JAX
32244-	84	\$1,179,918.00	S	S	S	N	N	S	S	JAX
32246	16698	\$2,705,085,051.00	S	S	S	N	N	S	S	JAX
32246-	96	\$282,465.00	S	S	S	N	N	S	S	JAX
32250	13022	\$2,923,580,293.00	D	D	D	N	N	D	D	CJB
32250-	107	\$24,300,487.00	D	D	D	N	N	D	D	CJB
32254	7590	\$893,107,813.00	D	D	D	N	N	D	D	JAX
32254-	14	\$1,176,161.00	D	D	D	N	N	D	D	JAX
32254-2938	2	\$587,268.00	D	D	D	N	N	D	D	JAX
32256	14694	\$4,386,505,161.00	S	S	S	N	N	D	D	JAX
32256-	124	\$3,077,852.00	S	S	S	N	N	D	D	JAX
32256-0836	1	\$11,527,608.00	S	S	S	N	N	D	D	JAX
32256-9010	1	\$267,501.00	S	S	S	N	N	D	D	JAX
32257	13172	\$2,127,110,461.00	D	D	D	N	N	D	D	JAX
32257-	23	\$15,858,741.00	D	D	D	N	N	D	D	JAX
32258	10723	\$1,773,593,410.00	S	S	S	N	N	S	S	JAX
32258-	31	\$2,384,298.00	S	S	S	N	N	S	S	JAX

PROPERTY APPRAISERS DATA			HAZARDS							CITY
Zip Code	# of Structures	Total Building Value	Severe Thunderstorm/Tornado	Wind Tropical Cyclone	Storm Surge (Tropical Cyclone)	Extreme Temp.	Drought	Wildfire	Flooding	Jurisdiction
32258-1666	2	\$305,340.00	S	S	S	N	N	S	S	JAX
32258-3127	1	\$229,478.00	S	S	S	N	N	S	S	JAX
32258	13	\$152,050.00	S	S	S	N	N	S	S	JAX
32266	2934	\$602,664,795.00	D	D	D	N	N	D	D	CNB
32266-	9	\$128,144.00	D	D	D	N	N	D	D	CNB
32277	9278	\$1,417,004,875.00	D	D	D	N	N	D	D	JAX
32277-	43	\$13,325,554.00	D	D	D	N	N	D	D	JAX
32299	1	\$145,831.00	<i>not able to map</i>					<i>Insufficient Data</i>		
99999	426	\$61,272,370.00	<i>not able to map</i>					<i>Insufficient Data</i>		
Total # Structures	338395									
Total \$ Value of Structures		\$55,485,804,267.00								

Data retrieved from Duval Property Appraisers Parcel Layer, N:\work\Depts\propapp\Parcel_Update\Parcel_Polygons.shp.

Impact described as follows:

- D** = area defined as densely populated (FL Statute 163.3164 (34), F.S. "Dense urban land area" (IMPACT)
- U** = urban (Urban, Suburban and Rural Areas of the City as designated in the Capital Improvements Element of the 2030 Comprehensive Plan) (IMPACT)
- S** = suburban (Urban, Suburban and Rural Areas of the City as designated in the Capital Improvements Element of the 2030 Comprehensive Plan (IMPACT)
- R** = Rural (IMPACT)
- N** = no impact to structures

Jurisdictions

- JAX = Consolidated City of Jacksonville
- CJB = City of Jacksonville Beach
- CAB = City of Atlantic Beach
- CNB = City of Neptune Beach
- TOB = Town of Baldwin

- (a) A municipality that has an average of at least 1,000 people per square mile of land area and a minimum population of at least 5,000.
- (b) A county, including the municipalities located therein, which has an average of at least 1,000 people per square mile of land area; or
- (c) A county, including the municipalities located therein, which has a population of at least 1 million.

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.

For the purpose of this project, the LMS Advisory Group/Duval Prepares is the body that ensures effective projects and programs already accepted and operational in the community will be maintained.

- 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
 - why the project is needed;
 - how it would effectively reduce disaster damages or save lives (technical merit);
 - anticipated cost-effectiveness; and
 - 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

- Cost-benefit/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.

Prioritization Process

Mitigation initiatives will be prioritized annually and as urgency or availability of funding requires.

Table 20
Duval County Local Mitigation Strategy
Prioritization Point Scale for Mitigation Initiatives

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 or growth management plan 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 Existing Regulatory Framework</u></p> <p><i>Is the project consistent with existing legal and regulatory framework of the governing jurisdiction?</i></p>	10	If there are no legal or regulatory problems with the implementation of this project or initiative, award 10 points. If there are extra roadblocks to the completion of the project, subtract points based on the extent of the difficulty (ex. 1 permit/approval required, minus 2 pts., 2 permits/approvals, minus 4 pts., etc.)	

Categories	Maximum Points Available	Scoring Instructions	Points Awarded
<p>4. <u>Consistency with Structured Programs & Processes or Project's Potential to Provide Economic Benefits</u></p> <p><i>Does the project or initiative meet criteria or guidelines within its hazard area, which will provide program credits or economic benefit 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 both program credits and economic benefit; award 5 points for those conveying either program credits or 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	Award 10 points for those projects that benefit all of Duval County. Award lesser point scores for those projects which are area or group specific: Benefit 80% of the county = 8 pts. Benefit 60% of the county = 6 pts. Benefit 40% of the county = 4 pts. Benefit 20% of the county = 2 pts. Benefit 10% or less of the county = 1 pt.	
<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	Award 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. All Hazards = 10 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	

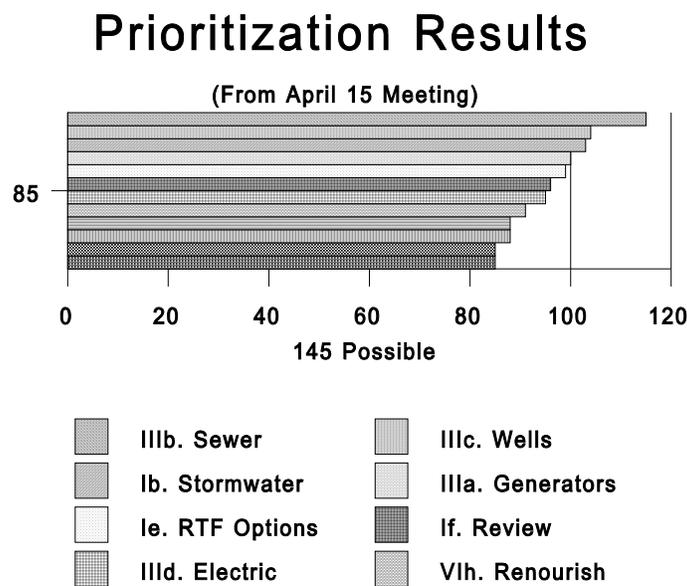
Categories	Maximum Points Available	Scoring Instructions	Points Awarded
<p>7. <u>Cost Effectiveness</u></p> <p><i>What is the benefit/cost ratio of the project applying the FEMA A Cost-effectiveness of Hazard Mitigation Projects guidelines?</i></p>	10	<p>A total of 10 points will be awarded in this category based on the following:</p> <p>Benefit/cost ratio = 4.0 or greater =10 pts. Benefit/cost ratio = 3.0 to 3.9 = 8 pts. Benefit/cost ratio = 2.0 to 2.9 = 6 pts. Benefit/cost ratio = 1.0 to 1.9 = 4 pts. Benefit/cost ratio = <1.0 = 0 pts.</p>	
<p>8. <u>Effective Life Expectancy</u></p> <p><i>How long will the community continue to receive the benefits of a particular mitigation project or initiative?</i></p>	10	Award 10 points to projects with a life expectancy greater than 40 years. Award reduced numbers of points to projects with reduced benefit periods.	
<p>9. <u>Public Support</u></p> <p><i>Can public support for this project be documented?</i></p>	10	Award 10 points to projects that have been identified/selected through a public information or input process or program. Award lesser points for projects that have resulted from general feedback or awareness.	
<p>10. <u>Sponsorship</u></p> <p><i>Does this project have an active sponsor that will take responsibility for its management and implementation?</i></p>	10	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>11. <u>Funding Availability</u></p> <p><i>Is funding currently available for this particular project, or included in a multi-year funding plan/program, such as a CIP?</i></p>	10	Award 10 points if funds for the project or initiative are currently available or have been <u>approved</u> for a current multi-year funding plan or program. Award 5 points if project or initiative is scheduled to be funded within 2 years; award 3 points if scheduled to be funded within 5 years.	

Categories	Maximum Points Available	Scoring Instructions	Points Awarded
12. <u>Environmentally Sound</u> <i>Does the project impact environmental or historical resources?</i>	10	Award 10 points to projects or initiatives that have no negative impact on environmental or historical resources, taking into account any appropriate mitigation measures that may be applied. Award 5 points for projects that have a minimal impact on those resources; award 0 points for projects or initiatives that have a moderate or high impact.	
13. <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.	
14. <u>BONUS CREDITS for Post Disaster Funding</u> <i>Does the project/initiative have urgency due to official declaration of disaster and availability of post-disaster funding?</i>	(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. 1999 Mitigation Initiative Prioritization Results

Advisory Committee/Duval Prepares members generated some 50 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 was then scored against 14 criteria ranging from how well the initiative was consistent with the comprehensive plan to how available funding was to implement. This process was a whole group consensus driven exercise, which resulted in a raw score for each potential initiative. The prioritized list was then developed with specific projects developed on project work sheets with estimated budgets, responsible agencies and implementation dates. The following chart and table show only the highest ranked initiatives and is the most important product of the Local Mitigation Strategy.

Figure 30: LMS Prioritization Results

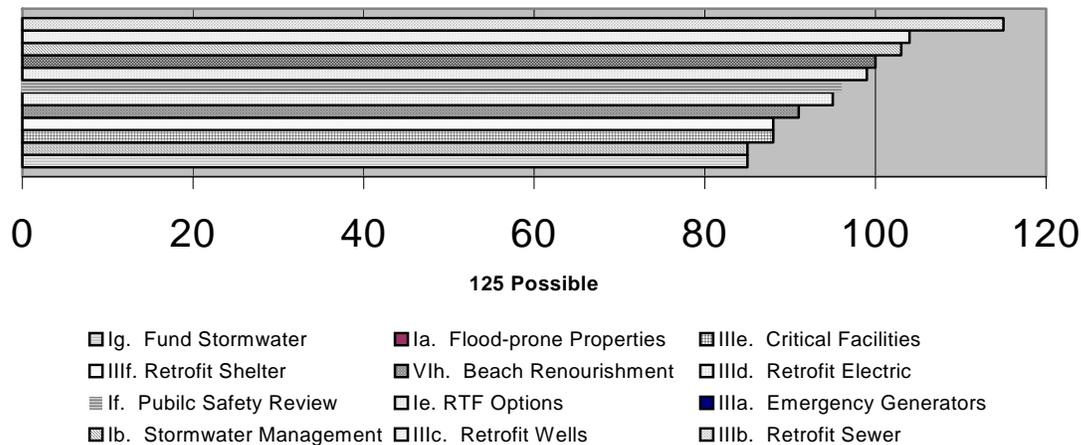


D. 2002 Mitigation Initiative Prioritization Results

Risk Assessment and Planning Subcommittee members of Duval Prepares reviewed some 50 different potential mitigation projects organized into seven (7) categories of land use, construction, critical facilities, economic diversification, transportation, natural environment and community resources. The original LMS list had been developed using work sheets with estimated budgets, responsible agencies and implementation dates. Project information and status were updated for all projects by the Subcommittee. Each of the potential initiatives was then scored against 13 criteria ranging from how consistent the

initiative was with the comprehensive plan to how available funding was to implement. This process was a group consensus driven exercise, which resulted in a score for each potential priority project. The following chart and table show only the highest ranked initiatives. They are the most important product of the local mitigation strategy.

Prioritization Results
(From October 4 Discussion)



E. 2004/2005 Mitigation Initiative Prioritization Result

The mitigation initiatives originally developed during the initial planning process for the Local Mitigation Strategy have been reorganized and re-categorized to reflect the updated goals, objectives and needs of the County. The 2004 Mitigation Initiatives Table reflects these restructured projects, which were reapproved for the 2010 Update. The categories for the mitigation initiatives are as follows: reduce risk; decrease vulnerability; prevent repetitive losses; protect business and industry; use land use guides, zoning codes, development controls, and incentives to protect vulnerable properties; and public awareness, education, training and communication. This organization will better assist the Advisory Committee/Duval Prepares in linking the mitigation initiatives to the goals and objectives of the County.

Throughout the planning process these initiatives will continually be reviewed and edited as necessary. Solicitation for updated mitigation initiatives was conducted following the 2008 and 2009 hurricane seasons. The updated list was generated and approved by the Advisory Committee/Duval Prepares and the projects were approved by the SEPPC, which serves as the LMS Working Group. Projects eligible for immediate disaster-related mitigation funds were prioritized to reflect the County's current need for funding. The entire mitigation initiatives list was prioritized based upon the six (6) initiative categories. Results

of that prioritization are reflected in Table 10. Projects will be reviewed and reprioritized at least annually or on an as-needed basis.

F. 2010 Mitigation Prioritization Results

The Risk Assessment and Planning Committee of Duval Prepares, which served as the lead group to review the hazards and vulnerabilities for Duval County, found these hazards are still in effect in 2009 in priority order, (1) tropical storm wind, (2) storm surge and (3) flooding. This parallels the prioritization process established in 2003-2004. During the 2010 LMS update preparation period, the County responded to two disasters, resulting in FEMA Hazard Mitigation Grant Program application cycles for FEMA-1785 (Tropical Storm Fay) and FEMA-1806 (Hurricane Gustav). Through the prioritization process, Duval Prepares, as the LMS Advisory Group determined the priorities from 2004-2005 are still in effect for the jurisdictions within Duval County. Throughout the ongoing planning process, these initiatives will continually reviewed and edited as necessary. Solicitation for updated mitigation initiatives was conducted following the 2008 hurricane season. A new policy was adopted by the Risk Assessment and Planning committee to remove completed projects from the LMS as they are finished, in order to streamline the document and maintain current projects.

A copy of the mitigation project submission form is attached, to reflect the information requested about projects recommended for inclusion in the 2010 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:

5. Hazard that proposed project will mitigate against:

6. Estimated cost of proposed project:
7. Source of funding for proposed project:
8. Estimated percentage of population benefited from proposed project:
9. Estimated percentage of jurisdiction benefited from proposed project:
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:
14. Are program credits awarded for this project? If so which program?

**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) 630-2472
Email: lauraad@coj.net**

**Table 21: Duval County Mitigation Project List Template
(following pages)**

TABLE 21 – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name Of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match (if applicable)	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
GOAL 1	REDUCE RISK															
34		Pre-disaster plan for post disaster underground utility placement	F/SS/W	G-2, 0-2.6	HMGP	Y	Duval County	JEA	101K		6 lift stations				Jun-09	E
34c		Jacksonville Beach; east end of 3rd Street between Seagate and 7th avenue N	F/SS/W	G-2, 0-2.6	TBD	n/K	Jacksonville Beach	Jacksonville Beach					Deferred	No funding	N/K	E
34d		Jacksonville Beach; east of 3rd St. between 17th Ave S. and St. Johns County line	F/SS/W	G-2, 0-2.6	TBD	n/K	Jacksonville Beach	Jacksonville Beach					Deferred	No funding	N/K	E
35		Replacement program for 35 drawbridges on designated evacuation routes	F/SS/W	G-2, 0-2.6	TBD	N	Duval County	FDOT/Local Govts	35M						N/K	E
36		Emergency Generator – funding assistance program	F/SS/W	G-2, 0-2.6	HB7121	Y	Duval County	Div. of Emergency Preparedness	750K for SPNS site	Partial	3 SPNS Shelters					E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match If applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
37		Full Implementation of Stormwater Management Plans/Maintenance of drainage Infrastructure	F/SS	G-1, 0-1.2, G-3, 0-3.1	Post - Disaster Funding	Y	Duval County	Local Govts	NK		In Progress				more than 12 months	C
37a		Town of Baldwin drainage improvement plan	F/SS	G-1, 0-1.2, G-3, 0-3.1	Post - Disaster Funding	Y	Baldwin	Baldwin	100,000		In Progress				more than 12 months	
37b		Neptune Beach, stormwater pumping facility for Hopkins Creek	F/SS	G-1, 0-1.2, G-3, 0-3.1	Post - Disaster Funding	Y	Neptune Beach	Neptune Beach	N/K						more than 12 months	
37c		City of Atlantic Beach Salt Air Gravity Sewer Rehabilitation	F/SS	G-1, 0-1.2, G-3, 0-3.1	HMGP	Y	Atlantic Beach	Atlantic Beach	400,000	N					more than 12 months	E
37 d		City of Atlantic Beach Drainage --	F/SS	G-1, 0-1.2, G-3, 0-3.1	HMGP	Y	Atlantic Beach	Atlantic Beach	30,000	N					12 months	E
37e		Town of Baldwin Bypass on US 90 and US 301	CID	G-1, 0-1.2, G-3, 0-3.1	TBD	NK	Baldwin	FDOT	650,000	N					12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match If applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
38		Study of regional cumulative impacts of natural storm water retention systems & storm basins	F/SS	G-1, 0-1.2	COJ CIP and new storm water utility fee	NK	Jacksonville	Jacksonville	5M		In Progress				more than 12 months	E
39		Develop site specific community response plans for potential water & wastewater facility chemical release	F/SS	G-2,O-2.6	NK	NK	Duval County	JEA/EPD	NK			Deleted				E
39a	Mc Coys Creek	A. McCoy Creek Drainage Improvement Project –Closure of McCoy Creek Boulevard and channel 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	F/SS	G-2,O-2.6	Stormwater fund; Bond funds, Fed & State aid if available		Jacksonville	Jacksonville Public Works	20 M	N					more than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match If applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
39b	Hogans Creek	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 as applicable	F/SS	G-2,O-2.6	Stormwater fund; Bond funds, Fed & State aid if available	NK	Jacksonville	Jacksonville Public Works	15M	N					more than 12 months	E
39c	Moncrief Creek	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	G-2,O-2.6	Stormwater fund; Bond funds, Fed & State aid if available	NK	Jacksonville	Jacksonville Public Works	15M	N					more than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13	
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart –pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)	
										New	Completed	Deleted	Deferred	If Deferred Why?			
42	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 Oams ES #258, Mandarin HS, Douglas Anderson HS, Baldwin HS, Venetia #68, Sadie Tullis #116, Cedar Hills ES 397	F/SS/W	G-2, O-2.4,O-2.6	Stormwater management fund/DOE/D CPS	NK	Duval County	DCPS	5M	N						more than 12 months	E
40	US-ACE	Beach renourishment program to mitigate storm surge damage (NOTE - Specifically requested by all beaches municipalities for 2010	F/SS/W	G-1	N/K	N/K	Jacksonville Beach, Neptune Beach, Atlantic Beach, US Army Corp of Engineers	US-ACE	13 miles, 3-5M per mile, \$39M - \$195 M				Deferred	no activity since 1998- no funds		more than 12 months	E
40a	US-ACE	Jacksonville Beach Sand Dune Revegetation	SS/W	G-1	N/K	N/K	Jacksonville Beach	Jacksonville Beach	10-15M				Deferred	due to economic conditions	12 months	E	

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
41		Wildfire Mitigation Projects for fuel reduction around critical facilities and residential areas	WF	G-1	TBD	N/K	DOF/Duval County	DOF/JFRD	Planning effort \$50K	N					12 months	
GOAL 2 DECREASE VULNERABILITY																
1		Debris management plan to restore county more quickly after emergency event in disposal of storm-generated debris	F/SS/W	G-2, O-2.6	Post - Disaster Funding	Y	Duval County	Public Works/COJ	\$13M - \$75M							E
3		Develop functional procedures for EOC Executive Group to identify redevelopment options pre-event	F/SS/W	G-2, O-2.6	EMPA/E MPG	N/A	Duval County	Emergency Preparedness/P lanning & Dev.			Completed 2009					E
4		Procedures to require public safety review of new development in identified hazard areas (flood zones, flood-prone areas, urban/wildland interface areas) & impact on hurricane evacuation	F/SS/W/WF	G-2, O-2.2	EMPA/E MPG	N/A	Duval County	Emergency Preparedness/P lanning & Dev.			Completed 2009					E
5		Mandatory water/wind mitigation requirement for new construction within the Coastal Construction Control Line	F/SS/W	G-2, O-2.3	City Fiscal Yr. Budget	N/A	Jacksonville/Be aches Cities	City of Jacksonville & Beach municipal building departments/ COJ Emergency			In Progress					E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
6		Home Retrofit Program for Residential Housing	W	G-2, O-2.3	RCMP	Y	Jacksonville	FL Dept. Of Financial Services, FL Dept. of Emergency Management, building industry; FLASH, City of Jacksonville Housing & Neighborhood Services and Emergency Preparedness Division	500,000		In progress					E
6a		Home Retrofit Program for Low-Income Residential Housing	W	G-2, O-2.3	RCMP	Y	Jacksonville	FL Dept. Of Financial Services, FL Dept. of Emergency Management, building industry; FLASH, City of Jacksonville Housing & Neighborhood Services and Emergency Preparedness Division	500,000	N			Deferred	not yet funded		E
7		Identify vulnerable critical facilities for relocation and retrofit	F/SS/W	G-2,O-2.4, O-2.6	TBD	N/K	Duval County	Local Govts								
7a		City of Atlantic Beach Code-Plus Public Safety Building	F/SS/W/T/W F	G-2, O-2.4,O-2.6	Post-Disaster Funding	Y	Atlantic Beach	Atlantic Beach	1.5M	N						E
7b		City of Atlantic Beach Wind Retrofit City Hall	W	G-2, O-2.4,O-2.6	TBD	N/K	Atlantic Beach	Atlantic Beach	50K	N			Deferred	Tier III	more than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
7c		DCPS Wind Retrofit and Wall Support West Riverside ES #12	W	G-2, O-2.4,O-2.6	Post Disaster Funding	Y	Duval County Public Schools	Duval County Public Schools	200K	N					more than 12 months	E
7d		DCPS Frank Peterson HS, replacement of electric panels (lightning protection) and light fixtures, relocation of water meter and water main	F/SS/CID	G-2, O-2.4,O-2.6	Post Disaster Funding	Y	Duval County Public Schools	Duval County Public Schools	250K	N						E
7e		Lee HS replacement of electrical and 1200 AMP distribution panel for lightning protection	F/SS/CID	G-2, O-2.4,O-2.6	Post Disaster Funding	Y	Duval County Public Schools	Duval County Public Schools	250K	N						E
7f				G-2, O-2.4,O-2.6												
7g		A. Fleet Management Central Garage Wind Retrofit	W	G-2, O-2.4,O-2.6	Post Disaster Funding	Y	Jacksonville/ Duval County	COJ Public Wks	700K	N					more than 12 months	E
7h		Traffic Engineering Bldgs (2) Wind Retrofit	W	G-2, O-2.4,O-2.6	HMGP	Y	Jacksonville/ Duval County	COJ Public Wks	45K	At FEMA for review					More than 12 months	E
7i		Solid Waste Division & Solid Waste Div. C. Maintenance Bldg- 1031 Superior St	W	G-2, O-2.4,O-2.6	HMGP	Y	Jacksonville/ Duval County	COJ Public Wks	94K	At FEMA for review					More than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
7j		. Rights of Way (ROW) Div. GM East Yard Complex 609 St. Johns Bluff Road N.	W	G-2, O-2.4,O-2.6	HMGP	Y	Jacksonville/ Duval County	COJ Public Wks	94K	At FEMA for review					More than 12 months	E
7k		ROW-GM West Yard Complex & ROW-GM West Yard Complex 2 2639 1st Street W	W	G-2, O-2.4,O-2.6	HMGP	Y	Jacksonville/ Duval County	COJ Public Wks	94K	At FEMA for review					More than 12 months	E
7l		Public Buildings Division - 555 W. 44th St.	W	G-2, O-2.4,O-2.6	HMGP	Y	Jacksonville/ Duval County	COJ Public Wks	94K	At FEMA for review					More than 12 months	E
7m		Ed Ball Bldg. Data Ctr Hardening	W/CID	G-2, O-2.4,O-2.6	HMGP	Y	Jacksonville/ Duval County	COJ Public Wks	300K	N					More than 12 months	E
7n		JAXPORT Masthead Lighting Tie Downs Wind Retrofit - Talleyrand, Blount Island, & Dames Pt.	W	G-2, O-2.4,O-2.6	Post Disaster Funding	Y	Jacksonville	JAXPORT	53K						More than 12 months	E
7o		Hardening of Jacksonville Aviation Authority Critical Facilities	W	G-2, O-2.4,O-2.6	Post Disaster Funding	Y	Jacksonville	JAA	500K	N					More than 12 months	E
7p		Hardening of JAXPORT Critical Facilities, Port-Wide.	W	G-2, O-2.4,O-2.6	Post Disaster Funding	Y	Jacksonville	JAXPORT	500K	N					More than 12 months	E
7q		Greater Jacksonville Agricultural Fair (JGAF) Wind Retrofit of Buildings on Fairgrounds	W	G-2, O-2.4,O-2.6	Post Disaster Funding	Y	Jacksonville	GJAF/EPD/FL Dept. of Agriculture	300K	N					More than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
7r		(JGAF) Design and construct Code Plus facility to support emergency response/ recovery	F/SS/W	G-2, O-2.4,O-2.6	Post Disaster Funding	Y	Jacksonville	GJAF/EPD/FL Dept. of Agriculture	1M	N					More than 12 months	E
8		Shelter assessment & retrofit program	F/SS/W	G-2,0-2.6	Post Disaster Funding	Y	Duval County Public Schools	Duval County Public Schools								E
8a		Mandarin Middle 2nd Floor Shuttering	W	G-2,0-2.6	HB7121	Y	Duval County Public Schools	Duval County Public Schools	498K		In Progress				More than 12 months	E
8b		Chimney Lakes Elementary 2 nd floor shuttering	W	G-2,0-2.6	HB7121	Y	Duval County Public Schools	Duval County Public Schools	300K		In Progress				More than 12 months	E
8c		Crystal Springs Elementary 2nd flr shuttering	W	G-2,0-2.6	DOE/DC PS	Y	Duval County Public Schools	Duval County Public Schools	300K	N	In Progress				more than 12 months	E
8d		AAA High School (Atlantic Coast HS) shuttering	W	G-2,0-2.6	DOE/DC PS	Y	Duval County Public Schools	Duval County Public Schools	600K	N	In Progress				More than 12 months	E
8e		Northwest Multipurpose Center Shelter Code Plus Construction	F/SS/W	G-2,0-2.6	HB7121	Y	Jacksonville	COJ Recreation Dept.	325K	N	In Progress				Jun-09	
8f		Westview K-8 School	W	G-2,0-2.6	DOE/DC PS	Y	Duval County Public Schools	Duval County Public Schools	300K	N	completed				Jun-09	
8g		Bartram Springs Elementary	W	G-2,0-2.6	DOE/DC PS	Y	Duval County Public Schools	Duval County Public Schools	250K	N	completed				Jun-09	N
8h		Twin Lakes EL SpNs generator	W/CID	G-2,0-2.6	HB7121	Y	Duval County Public Schools	Duval County Public Schools	500K		In Progress					E
8i		Waterleaf Elementary	W	G-2,0-2.6	DOE/DC PS	N/K	Duval County Public Schools	Duval County Public Schools	150K	N			Deferred	Economic Conditions	more than 12 months	

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart –pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
8j		Twin Lakes Middle School Shuttering	W	G-2,0-2.6	HMGP	Y	Duval County Public Schools	Duval County Public Schools	350K	N					more than 12 months	E
8k		FSCJ Campus Buildings – North, South, Roosevelt Blvd., Cecil Field	W	G-2,0-2.6	DOE/FS CJ	N/K	Duval County	Fla. St. College at Jacksonville	600K	N					more than 12 months	E
8l		Town of Baldwin Community Center Shelter	W	G-2,0-2.6	HMGP	Y	Baldwin	Baldwin	300K		At FEMA for review				more than 12 months	E
8m		ARC Jacksonville Headquarters Retrofit	W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	American Red Cross/EPD	50K				Deferred	Not ranked high enough in FEMA process	12 months	E
8n		UNF Campus Buildings 42,51	W	G-2,0-2.6	HMGP	Y	Duval County	UNF/EPD	1.2M				Deferred	Tier III	more than 12 months	E
8o		UNF Campus Buildings, 9, 10, 45, 53	W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	UNF/EPD	4M				Deferred	Insufficient funds	more than 12 months	E
8P		ARC Jacksonville special needs EHPA Retrofit	W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	ARC/EPD	100K				Deferred	Tier III	more than 12 months	E
8Q		Beaver St. Enterprise Center Retrofit	W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	Beaver St. Ctr./EPD	150K				Deferred	Tier III	more than 12 months	E
8R		Recreation and Community Services centers' shelter retrofits	W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	COJ Recreation Dept./EPD	2M	N					more than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
9		A structural enhancement/ retrofit program for public safety and health/medical critical facilities	W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	COJ/DCHD/EPD	5M						more than 12 months	E
9a		Duval County Health Dept. EOC retrofit	W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	COJ/DCHD/EPD	750K	N					more than 12 months	E
9b		Private for-profit and non-profit hospitals	W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	Hospital/EPD	1 M	N					more than 12 months	E
9c		Jacksonville Fire & Rescue Phased Wind Retrofit Program - 6 Groups of Fire Stations (9 each)	W	G-2,0-2.6	HMGP	Y	Jacksonville/ Duval County	COJ/JFRD/EPD	1.5 M to retrofit 60 stations in phases		Ongoing				more than 12 months	E
9c(1)		JFRD Group 1 Fire Stations Wind Retrofit	W	G-2,0-2.6	HMGP	Y	Jacksonville/ Duval County	COJ/JFRD/EPD	50K		C				more than 12 months	E
9c(2)		JFRD Group 2 Fire Stations Wind Retrofit	W	G-2,0-2.6	HMGP	Y	Jacksonville/ Duval County	COJ/JFRD/EPD	200K		In progress				more than 12 months	E
9c(3)		JFRD Group 3 Fire Stations Wind Retrofit	W	G-2,0-2.6	HMGP	Y	Jacksonville/ Duval County	COJ/JFRD/EPD	130K	N	At FEMA for review				more than 12 months	E
9c(4)		JFRD Code Plus Construction FS 40	W/SS	G-2,0-2.6	HMGP	Y	Jacksonville/ Duval County	COJ/JFRD/EPD	650K	N	In Progress				more than 12 months	
9c(5)		JFRD Group 4 Fire Stations Wind Retrofit	W	G-2,0-2.6	HMGP	Y	Jacksonville/ Duval County	COJ/JFRD/EPD	130K	N			Deferred	Tier III	more than 12 months	E
9c(6)		JFRD Group 5 Fire Stations Wind Retrofit	W	G-2,0-2.6	HMGP	Y	Jacksonville/ Duval County	COJ/JFRD/EPD	130K	N						

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
10		Pre-positioned contracts for post- disaster debris removal; pre-designation of sites	W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	COJ Public Wks	4M+	N					12 months	E
11		Retrofit sewer lift stations –flood proofing and alternative electric source	F/SS/W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	JEA	101K		C				Jun-09	E
11a		JEA sewage lift station retrofit and elevation	F/SS/W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	JEA	350K		C				9-Jun	E
11b		Jacksonville Beach, portable pumps for lift stations (JEA has FLA WARN system serving region)	F/SS/W	G-2,0-2.6	HMGP	Y	Jacksonville Beach	Jacksonville Beach/JEA	400K		C				9-Jun	E
12		Retrofit vulnerable electric substations – flood proofing	F/SS/W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	JEA	400K		C				9-Jun	E
13		Retrofit water wells -alternative electric source	F/SS/W	G-2,0-2.6	Post Disaster Funding	Y	Duval County	JEA	N/K			Deleted				
14		Ditch clean-out projects	F/SS	0-3.2	Annual Budgets	Y	Duval County	FDOT/Local Govts	Included in operations budget		ongoing				12 months	E
42		Emergency and Portable Generators for Critical Facilities COJ portable generator's for alternate EOC	F/SS/W/CID		Post Disaster Funding	N/K	Duval County	Local Govts/reg. authorities/ EPD	100-500K				D	not eligible for grant as 2004	12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
42a		COJ portable generators for alternate EOC	F/SS/W/CID		Post Disaster Funding	N/K	Duval County	EPD	200K				D	not eligible for grant as 2004	12 months	E
42b		Atlantic Beach emergency power support for city emergency operations facility	F/SS/CID		Post Disaster Funding	N/K	City of Atlantic Beach	CAB/EPD	100K				D	not eligible for grant as 2004	12 Months	E
42c		Jacksonville Beach, Osceola Ave. Water Plant emergency power generator	F/SS/CID		HMGP	Y	City of Jax Beach	Jax Beach/EPD	400K		C				Jan-09	E
42d		Jacksonville Beach emergency generator for alternate EOC	F/SS/CID		Post Disaster Funding	N/K	City of Jax Beach	Jax Beach/EPD	100K				D	not allowed for grant as 2004	12 months	E
42e		Jacksonville Beach, portable generators for lift stations	F/SS/CID		Post Disaster Funding	N/K	City of Jax Beach	Jax Beach/JEA	NK				D	not eligible for grant as 2004	12 months	E
42f		WJCT; Relocation of Emergency Radio Operations	F/SS/CID		Post Disaster Funding	N/K	Jacksonville/Duval County	WJCT/EPD	300K	N				not eligible for grant as 2004	more than 12 months	E
42g		Neptune Beach, generator for City Hall	F/SS/CID		Post Disaster Funding	N/K	Neptune Beach	Neptune Beach/EPD	100K				D	not eligible for grant as 2004	12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
42h		Emergency Energy Source for JAXPORT's Port Central Operations Building (PCOB).	F/SS/CID		Post Disaster Funding	N/K	JAXPORT	JAXPORT/EPD	200K	N			D	not eligible for grant as 2004	12 months	E
43		Jacksonville Beach City-wide imaging of records	F/SS/CID		Post Disaster Funding	N/K	Jacksonville Beach	Jax Beach/EPD	300K				D	No funds available	12 months	E
Goal 3	EDUCATION/TRAINING/COMMUNICATIONS/AWARENESS															
15		A program to require notification to prospective home buyers of potential flood hazard property	F/SS	G-6	Post Disaster Funding	N/K	Duval County	Northeast Florida Board of Realtors/Banking Industry	300K				D	no funds available	more than 12 months	
16		Flood insurance education program for at-risk for flood hazard property owners	F/SS	G-6, 0-6.1, 0-6.4	Post Disaster Funding	N/K	Duval County	Florida Dept. Insurance/Municipal building depts./COJ EPD, and Planning & Development Department and Floodplain Manager	300K		ongoing				On-Going – COJ annual letters to property owners, "Eye on the Storm" annual all-hazards guide distributed countywide	
17		Education/incentive programs for builders -higher building standards -cost-effective retrofitting	F/SS/W	G-6, 0-6.6	N/K	N/K	Duval County	NE Florida Builders Assn/ Building Officials Org. /Florida Dept. of Community Affairs/FL Dept. Of Business & Professional Reg./ FLASH	500K				D	no funds available	My Safe Florida Home not funded as of June2009	

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
18		Evacuation Education Program- routes, time frame, shelters, procedures, etc.	F/SS/W/WF	G-6, 0-6.1, 0-6.4	CERT/Private Funding	Y	Duval County	EPD/CERT/Red Cross	operational		ongoing				"Eye on the Storm" annual all hazards guide, "Get Ready" program EPD website, annual hurricane season outreach, CERT Program	E
19		COJ adopt Firewise Program	WF	G-6, 0-6.1, 0-6-3,0-6.4	Firewise Program	Y	Duval County	Local Govt, Fire Rescue Depts., Fla Forestry	NK	N					More than 12 months	
20		Promotional Program - environmental benefits of floodway maintenance	F/SS	G-6, 0-6.1, 0-6.3, 0-6.4	City Fiscal Yr. Budget	N/A	Jacksonville	COJ Floodplain, Planning Dev. Dept.	operational		ongoing				annual CRS letter and community outreach	
21		Neighborhood information program for all hazards	F/SS/W/WF/T	G-6, 0-6.1, 0-6.4	City Fiscal Yr. Budget	N/A	Duval County	EPD/LEPC/Fire Depts./ COJ Office of Volunteer Services/Red Cross	operational		ongoing				Eye on the Storm, CERT, CRS annual outreach	
22		Hurricane evacuation/shelter education program for homes and businesses	F/SS/W	G-6, 0-6.1, 0-6.4	CERT/Private Funding	Y	Duval County	EPD/CERT/Red Cross	operational		ongoing				12 months	

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
23		Hazard Mitigation Speaker's Bureau	F/SS/W/WF/T	G-6, 0-6.3	City Fiscal Yr. Budget	N/A	Duval County	EPD/CERT/Red Cross	operational		ongoing				12 months	
24		Education on preparing post-disaster kits -(first aid, saws, tools, etc.) for pre-during-post events	F/SS/W/WF/T	G-6, 0-6.3	City Fiscal Yr. Budget./ CERT	Y	Duval County	EPD/Media/CERT/Red Cross	operational		ongoing				12 months	
25		Program for property owners to educate on the impacts of filling wetlands that might affect homes/businesses	F/SS	G-6, 0-6.3	State and City budgets	N/A	Duval County	SJWMD/COJ Floodplain	operational		ongoing				annual CRS letter and community outreach	
26		Disaster Preparedness Plan for Neighborhoods	F/SS/W/WF/T	G-6, 0-6.3	CERT/City Fiscal Budget	Y	Duval County	EPD/CERT/Housing and Neighborhoods Dept.	operational		ongoing				12 months	
27		Family Emergency Preparedness/Mitigation Training	F/SS/W/WF/T	G-6, 0-6.3	CERT/City Fiscal Budget	Y	Duval County	EPD Citizen Emergency Responder Training/Red Cross/FLA Dept of Financial Services	operational		ongoing				12 months	
28		Education Program for Homeowners' Mitigation Credits	W	G-6, 0-6.3	State of Florida	N/A	Duval County	Florida Dept. of Financial Services	operational		ongoing	N			12 months	
Goal 4	LAND USE ZONING/ DEVELOPMENT CONTROLS/INCENTIVES															
29		Establish procedure for mitigation category in Capital Improvements Elements	F/SS	G-2, 0-2.6	County/Municipal P&D Depts	N/A	Duval County	County/Municipal P&D Depts	in progress		pending				12 months	

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
30		Development requirement to ensure defensible space around homes/subdivisions from wildfires	W/WF	G-4, O-4.7, O4.9	Fla Dept. of insurance/Private Insurance companies, Florida Windstorm Underwriters insurance		Duval County	Fla Dept. of insurance/Private Insurance companies, Florida Windstorm Underwriters insurance	operational		ongoing					
31		Discount program on property owners insurance for mitigation construction/retrofit features	W/F/SS/WF	G-4, O-4.2, O-4.11	Fla Dept. of insurance/Private Insurance companies, Florida Windstorm Underwriters insurance		Duval County	Fla Dept. of insurance/Private Insurance companies, Florida Windstorm Underwriters insurance	Fla Dept. of insurance/Private Insurance companies, Florida Windstorm Underwriters insurance		ongoing				12onths	
Goal 5	PROTECTION OF BUSINESS & INDUSTRY															
32		Disaster preparedness training program for small businesses (such as Hurricane Biz)	F/SS/W/WF	G-5, O-5.1		N/A	Duval County	EPD/Small Business Dev. Ctr UNF/Chamber/R ed Cross/Duval Prepares Business Sustainability Subcommittee	operational		ongoing				12 months	
33		Insurance discount for businesses with disaster plans	F/SS/W/WF/ CID	G-5	State of Florida	N/A	Duval County	Fla. Dept. of Financial Services/private insurance companies/Risk & Insurance Mgtment Society	operational				D	no funds available		

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
34		DOF Firewise Program to be adopted by Duval County	WF	G-4, O-4.7, O4.9	State of Florida/JF RD	N/A	Jacksonville/ Duval County	Business Sustainability Committee/JFR D/FLA-DOF	35K	N					12 months	
Goal 6	PREVENTION OF REPETITIVE LOSSES – section updated for new properties - THIS SECTION ADDRESSES NFIP GOALS FOR THE LMS															
2		Elevation, relocation, acquisition program for flood-prone & repetitive flood loss properties	F/SS/W	G-2,O-2.4,O-3.	FEMA pre and post disaster grant programs	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	10M		ongoing				more than 12 months	E
2a		4260 Yacht Club Rd Elevation	F/SS/W		FMAP 2005	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	800K		In Progress				Jun-10	E
2b		1873 Powell Place Minor Flood Control	F/SS		FMAP 2005	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	40K		In Progress				Jun-10	E
2c		32 Dongalla Court Minor Flood Control	F/SS/		FMAP/SRL	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	45K	N	Pending				12 Months	E
2d		6906 Bakersfield Drive acquisition	F/SS/W		FMAP	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	250K	N	Pending				12 months	E
2e		6804 Bakersfield Drive acquisition	F/SS/W		SRL 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	550		ongoing				more than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
2f		7080 Delaware Court acquisition	F/SS/W		SRL 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	350		ongoing				more than 12 months	E
2g		Clark's Fish Camp -12903 Hood Landing Road Elevation	F/SS		FMAP 2007	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	371K		In Progress				more than 12 months	E
2h		4914 Rhode Island Drive South acquisition	F/SS/W		FMAP 2005	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	150K		Completed				more than 12 months	E
2i		6864 Bakersfield Drive acquisition	F/SS/W		SRL 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	250K	N	Pending				more than 12 months	E
2j		6872 Bakersfield Drive acquisition	F/SS/W		SRL 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	250K	N	Awarded				more than 12 months	E
2k		6882 Bakersfield Drive acquisition	F/SS/W		RFC 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	280K	N	Awarded				more than 12 months	E
2l		6910 Bakersfield Drive acquisition	F/SS/W		RFC 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	281K	N	Awarded				more than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
2m		6842 Bakersfield Drive acquisition	F/SS/W		RFC/SRL 2010	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	250K	N	At FEMA for review				more than 12 months	E
2n		6744 Bakersfield Dr. Acquisition	F/SS/W		RFC/SRL 2010	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	240K	N	At FEMA for review				more than 12 months	E
2o		6944 Bakersfield Dr. Acquisition	F/SS/W		RFC/FM AP 2010	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	250K	N		Deferred	BCR >1.00		more than 12 months	E
2p		5156 Martha Ann Dr Mitigation Reconstruction	F/SS/W		SRL 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	150		Awarded				more than 12 months	E
2q		2811 W. Fourth St. Mitigation Reconstruction	F/SS/W		SRL 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	150		In Progress				more than 12 months	E
2r		10130 Paxton Road acquisition	F/SS		SRL 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	200K		At FEMA for review				more than 12 months	E
2s		5180 Martha Ann Dr. Acquisition	F/SS		SRL 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	550K		At FEMA for review				more than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
2t		5138 Martha Ann Drive acquisition	F/SS		SRL 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	450K		At FEMA for review				more than 12 months	E
2u		112 Mabelle Drive Elevation	F/SS/W		RFC/ FMAP 2008	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	291K				Deferred	BCR >1.00	more than 12 months	E
2v		5123 Martha Ann Drive minor flood control	F/SS		FMAP	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	256K	N			Deferred	Homeowner changed mind	more than 12 months	E
2w		1580 Navaho Drive acquisition	F/SS		RFC/SRL 2010	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	550K		At FEMA for review				more than 12 months	E
2x		5104 Martha Ann Drive Minor Flood Control	F/SS		FMAP/R FC	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	320K	N			Deferred	Homeowner changed mind	more than 12 months	E
2y		4902 Rhode Island Drive acquisition	F/SS		RFC/FM AP 2010	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	275K	N			Deferred	BCR >1.00	more than 12 months	E
2z		9653 Carbondale Drive East Elevation	F/SS/W		FMAP	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	209K	N			Deferred	Homeowner changed mind	more than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
2aa		4130 Leonard Circle acquisition	F/SS		FMAP	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	130K	N			Deferred	BCR >1.00	more than 12 months	E
2bb		3915 San Jose Blvd. Acquisition	F/SS		RFC/FM AP 2010	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	300K	N	At FEMA for review				more than 12 months	E
2cc		7038 Seneca Ave. Acquisition	F/SS		RFC/FM AP 2010	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	260K	N	At FEMA for review				more than 12 months	E
2dd		6768 Bakersfield Dr Acquisition	F/SS		RFC/FM AP 2010	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	258K	N	At FEMA for review				more than 12 months	E
2ee		4347 Ortega Farms Circle Acquisition	F/SS		SRL	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	1.3M	N			Deferred	BCR >1.00	more than 12 months	E
2ff		1231 Ribault Circle Dr. Acquisition	F/SS		FMAP/R FC	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	275K	N			Deferred	BCR >1.00	more than 12 months	E
2gg		1237 Ribault Circle Dr Acquisition	F/SS		FMAP/R FC	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	275K	N			Deferred	BCR >1.00	more than 12 months	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
2hh		2748 Sam Hardwick Blvd. Acquisition	F/SS		FMAP/R FC	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	202K	N			Deferred	BCR >1.00	more than 12 months	E
2ii		6910 New Kings Road Minor Flood Control	F/SS		RFC/FM AP 2010	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	136K	N	At FEMA for review				more than 12 months	E
2jj		1430 Belleshore Circle acquisition	F/SS		FMAP/R FC	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	N/K	N			Deferred	Homeowner changed mind	more than 12 months	E
2kk		4041 Sunbeam Road acquisition	F/SS		pre or post-disaster funds	Y	Jacksonville/ Duval County/EPD/ Property Owner	Local Govts/EPD	N/K	N					more than 12 months	E
DEFERRED and DELETED PROJECTS																
Goal 1		Reduce Risk														
34		JEA Lift Stations Elevation	F/SS	G-2, 0-2.6	HMGP	Y	Duval County	JEA	101K		C -6 lift stations				Jun-09	E
34A		Jacksonville Beach, PV Blvd between Sawgrass & Micklers	F/SS	G-2, 0-2.6	N/A	N/A	St. Johns County	N/A	N/A			DELETED		NOT DUVAL COUNTY		
34b		Jacksonville Beach, SR A1A, Micklers Rd. So. For 2.5 miles	F/SS	G-2, 0-2.6	N/A	N/A	St. Johns County	N/A	N/A			DELETED		NOT DUVAL COUNTY		
36		Emergency Generators - funding assistance program	F/SS/W/CID	G-2, 0-2.6	pre and post disaster funding	Y	Duval County	DCPS/EPD					Deferred	No funding-grant eligibility rescinded after 2004	Jun-09	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4	5	6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart –pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
37a		Drainage in Baldwin			HMGP 1545	Y	Baldwin	Baldwin	65K		partial				Aug-09	E
37c		Full Implementation of Stormwater Management Plans/Maintenance of drainage Infrastructure	F/SS	G-1, 0-1.2, G-3, 0-3.1	Post - Disaster Funding	Y	Duval County	FDOT/Local Govts	NK		In Progress			FDOT did not have a project in its CIP	Jan-08	E
37e		Neptune Beach, stormwater pumping facility for Hopkins Creek	F/SS	G-1, 0-1.2, G-3, 0-3.1	pre and post disaster funding	Y	Neptune Beach	Neptune Beach	300K				Deferred	No funding for match	Jan-09	E
Goal 2	Decrease Vulnerability															
1		Program to pre-sell recycled by-products from storm debris	W	G-2,0-2.6	N/A	N/A	COJ	COJ Solid Waste Div	N/A				DELETED			
8c		Shelter assessment retrofit program-FCCJ Deerwood Campus	W	G-2,0-2.6	n/A	n/a	FCCJ	FCCJ	n/K				DELETED	substituted FCCJ Cecil Field project	Jan-05	
8j		shelter retrofit-Johnson Family YMCA	W	G-2,0-2.6	HMGP	Y	Jacksonville	YMCA/EPD	100K				DELETED	ARC 4496 not favorable		
9a		Port Authority Electrical Service Hardening	F/SS/CID/W	G-2, 0-2.6	N/A	n/A	n/a	n/a	n/a				Deferred	insufficient flood history		
9c(1)		Health Dept. Critical Infrastructure Hardening	W	G-2,0-2.6	pre and post disaster funding	Y	Jacksonville/Duval County	COJ/JFRD/EPD	50K				DELETED	insufficient flood history		
11b		Jacksonville Beach, portable pumps for lift stations (JEA has FLA WARN system serving region)	F/SS	G-2, 0-2.6	pre and post disaster funding	Y	Jacksonville	JEA/EPD	partial				Deferred	No funding	Jun-09	E

TABLE 21 CONTINUED – CURRENT MITIGATION INITIATIVES

1	2	3	4		6	7	8	9	10	11					12	13
Priority	Name of Project	Project Description	Hazards Mitigated See legend at bottom of chart – pg 172	Mitigation Goals Achieved	Funding Source	Match if applicable	Jurisdiction (Location)	Agency Responsible for Implement.	Estimated Costs	Status					Timeframe for Completion	Mitigate new or existing? (N/E)
										New	Completed	Deleted	Deferred	If Deferred Why?		
42f		WJCT; Hogan Rd. Backup power system for transmitter	F/SS/W/CID	G-2 0-2 6	other funding source	n/a	Jacksonville	WJCT/EPD			C				Jan-08	
42g		FDLE, generator for multi-command post	F/SS/W	G-2 0-2 6	other funding source	n/a	Jacksonville	FDLE			C				Jan-08	
Goal 6	Prevention of Repetitive Losses															
		Privately owned parcels deferred or deleted as owners either decline to participate in voluntary programs or project does not obtain a BCR < 1.00	F/SS		pre and post disaster funding		Jacksonville	COJ/EPD					Deferred		See explanation	E

Legend

- F** Flood
- SS** Storm Surge
- W** Wind-Tropical Cyclone
- CID** Critical Infrastructure Disruption
- WF** Wildfire
- T** Tornado
- TBD** to be determined
- N/A** Not applicable
- NK** Not known

Duval County Completed, Deleted and Deferred Projects Summary

Progress through the completion of 2005 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). The University of North Florida has recently completed ARC 4496 reviews of existing buildings on campus that could potentially be retrofitted as hurricane risk shelter space during the next five years.
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.
3. Stormwater Improvements have been commissioned at City of Jacksonville Beach, JEA, and Town of Baldwin, to improve stormwater runoff conditions and minimize drainage issues from flooding and storm surge hazards.
4. Effective 2005, 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 closed one project, is 90% near completion on two other projects; 50% complete on three other projects from 2008 and has initiated approximately six new projects in 2009.

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 who is eligible. 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. Certainly each community should be able to take advantage of at least some of the programs offered.

American Recovery & Reinvestment Act of 2009 (ARRA)

Certain programs enabling small businesses, stormwater utilities, fire departments and educational entities to fund construction.

Florida Department of Community Affairs

Emergency Management Preparedness and Assistance Trust Fund (EMPA)

Through the Emergency Management Competitive Grant Program provides grants to state or regional agencies, local governments and private not-for-profit organizations to implement projects that will further state and local emergency management objectives. A similar program, the Municipal Competitive Grant Program provides grants to legally constituted municipalities with an authorized, established and maintained emergency management program and that have also signed the Statewide Mutual Aid Agreement

Residential Construction Mitigation Program (RCMP)

This Department of Community Affairs (DCA) program provides technical and financial resources to homeowners for hurricane retrofitting. A certified inspector using DCA's Wind Resistance Checklist may perform a structural inspection of the home. Information is assessed and a mitigation report is prepared that outlines the hurricane hazard risk, identifies retrofit options and packages, assesses costs and benefits, and provides retrofitting recommendations and estimated costs. If homeowners are recommended for the program, they are eligible for a forgivable loan to complete the retrofitting recommendations.

Florida Warning and Information Network

The FWIN is a state-sponsored program to harden existing facilities against disasters events. The program contains some new elements and may be applicable to needs identified by participating municipalities. Note: The Florida Department of Community Affairs also administers many of the grants awarded by and listed in this document under the Federal Emergency Management Agency (FEMA).

Florida Department of Environmental Protection Revolving Fund Loan Program for Waste Water Treatment (Includes Stormwater Facilities)

Provides funding to assist in the financing of publicly owned waster water and stormwater treatment collection, transmission, disposal, and reclamation, re-use facilities as well as infiltration/inflow correction. Project loans are for up to 20 years at interest rates that are over 60% below market rate.

Pollution Control Bond Program

This program provides loans to local governments for construction of stormwater, water and wastewater facilities. Special districts are eligible as well as municipalities and county governments. Available funding is up to \$300 million a year and the source of the funds are bonds sold by the state. Plans and specifications of proposed facilities are required. The loan interest rate is a pass through rate.

Florida Fish & Game Conservation Commission Environment Education

Projects are to educate adult Floridians about population growth, habitat loss, coastal and fresh water ecosystems.

Florida Inland Navigation District (FIND) Waterway Assistance Program & Cooperative Assistance Program

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.

Federal Emergency Management Agency (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.

Flood Mitigation Assistance Program (FMA)

FMA is a federal program administered by DCA. Florida initiated it in 1997 in coordination with FEMA. Its goal is to fund cost-effective measures that reduce or eliminate the long-term risk of flood damage to property insurable under NFIP. Program components include both planning grants and project grants. Planning grants assist state agencies and local governments in developing or updating flood mitigation plans that assess risk and propose possible mitigation actions. Project grants assist state agencies and local governments in implementing flood mitigation projects that will reduce risk of flood damage to repetitive loss properties identified in a flood mitigation plan. This program is administered through the state Division of Emergency Management.

Hazard Mitigation Grant Program (HMGP)

The HMGP provides funds to states, municipalities and certain private non-profit organizations for implementing long-term hazard mitigation measures following a major disaster declaration. Federal funds provide 75% of the cost of elevation projects, land acquisition, relocation of structures, or retrofitting of facilities. Funding for HMGP is generated as a percent of the total cost to the federal government of a declared disaster event. This program is administered through the state Division of Emergency Management.

Pre-Disaster Mitigation Program (PDM)

The PDM program provides an approximate total of \$150,000,000 dollars (or other amount as appropriated by Congress) annually on a nationally competitive basis to put mitigation initiatives in place prior to a disaster event. Each project may receive 75% of project cost as the federal share not to exceed \$3,000,000 for the federal share. This program is administered through the state Division of Emergency Management.

Repetitive Flood Claims Program (RFC)

This program is design to reduce losses from severe flooding and priority is given to acquisition of NFIP repetitive loss properties. There is no funding match required. This program is administered through the state Division of Emergency Management.

Flood Mitigation Assistance (FMA)

The Flood Mitigation Assistance Program provides financial and technical assistance to states and territories, and their local governments, to create and maintain comprehensive state hazard mitigation capability. States and territories at risk to storm surge and hurricane force winds from tropical storms are eligible. A pre-application, formal application and compliance with the state work plan is required.

Disaster Preparedness Improvement Grant (DPIG)

Assist states in developing and improving state and local plans, programs, and capabilities for disaster preparedness and mitigation. Provides for grants not to exceed

50% of the cost of improving, maintaining and updating these plans (not to exceed \$50,000 per year to any state).

Community Assistance Program (CAP) – State Support Services Element

CAP provides funding to meet negotiated objectives for reducing flood hazards in NFIP communities. The program is intended to identify, prevent, and resolve floodplain management issues in participating communities before they require compliance action by FEMA. Available CAP funding is provided on a 75% federal maximum and 25% minimum state cost sharing basis through the annual FEMA-State Performance Partnership Agreement or Cooperative Agreement.

Fannie Mae Pilot Loan Program

FEMA and DCA jointly sponsor this program. It makes consumer installment loans available to Florida homeowners to make specific disaster prevention home improvements such as the installation of storm shutters or the construction of a safe room. All single-family homeowners in Florida are eligible for these loans. Homeowners may borrow up to \$15,000 over a ten year repayment term.

Federal Highway Administration (FHWA)

Transportation Enhancements

Surface Transportation Program (STP) under the Transportation Efficiency Act for the 21st Century (TEA-21)/Transportation Enhancements 10% of the Surface Transportation Program Budget used for enhancements, projects generally selected competitively on a statewide basis.

Federal Transit Administration (FTA)

Section 5309 Capital Funds

Section 5309 (formerly Section 3) capital funds are available for fixed guideways (new starts, extensions, and rehabilitation), bus procurements, and acquisition or rehabilitation of major facilities. Section 5309 is designated as part of the congressional appropriations process to FTA grantees.

Section 5307 Urban Formula/Transportation Enhancements

Section 5307 (formerly Section 9) Urban Formula Grants are designated for transit capital and operating assistance in urbanized areas. Any transit-related capital or operating expense is eligible for federal funding, requiring a 20% local capital match and up to 50% operating match. Each year, 1% of the Section 5307 appropriation is set aside for transit-related transportation enhancements.

Section 5311f (formerly Section 18i) Inter-city Bus Program

Under Section 5311(f), each state is required to spend fifteen percent of its annual Section 5311 apportionment "to carry out a program to develop and support Inter-city bus transportation." Use of Section 5311(f) funds for capital projects in urbanized areas is limited to those aspects of the project, which can be identified as directly benefiting and supporting service to and from non-urbanized areas.

Livable Communities Initiative

Nationally competitive program, generally \$1 million in federal support requiring 20% local match.

Welfare-to-Work Initiative

Capital/vehicle grant program, contingent on receipt of nationally-competitive Welfare-to-Work funds from the Department of Labor.

U.S. Army Corps of Engineers (USACE)**Beach Erosion Control Projects**

The program is administered by the U.S. Army Corps of Engineers (USACE) and is intended to control public beach and shore erosion. Reconnaissance studies are federally funded, and the costs of feasibility studies are shared 50/50 with the local sponsor. Projects are designed and constructed by USACE. Federal participation cannot exceed \$2 million.

Aquatic Ecosystem Restoration

Section 206 of the Water Resources Development Act of 1996 provides a 65% federal match for construction of projects designed to carry out aquatic restoration that will improve the quality of the environment, are in the public interest, and are cost-effective. The program focuses on designing and implementing engineering solutions that restore degraded ecosystems to a more natural condition. Project application may be made at any time and is limited to \$5,000,000 in federal participation and are awarded to state, tribal, and local governments. Projects include restoration of canals, wetlands, and floodplains, including wildlife habitat.

Flood Plain Management Services

Section 206 of the 1960 Flood Control Act provides USACE services in planning and technical services without charge to state, tribal, and local governments without charge for studies, including hurricane evacuation studies, comprehensive flood plain management studies, flood damage reduction studies, urbanization impact studies, stormwater management studies, and inventories of flood-prone structures.

Planning Assistance to States

Section 22 of the Water Resources Development Act (WRDA) of 1974 allows the USACE to assist state, tribal, and local governments in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources with up to 50% federal match. Technical and planning assistance may include wetlands evaluation studies, flood damage reduction studies, flood plain management studies, and water quality/quantity studies.

Project Modifications for Improvement of the Environment

Section 1135 of the Water Resources Development Act of 1986 provides for ecosystem

restoration by modifying the structures and/or operations of water resources projects constructed by the USACE, or by restoring areas where a USACE project contributed to the degradation of the area. Local funding is required to leverage an unspecified federal match.

Emergency Bank Protection

This program provides bank protection of highways, highway bridges, essential public works, churches, hospitals, schools, and other nonprofit public services endangered by flood-caused erosion. State or local government officials should consult the nearest district engineer regarding specific problems and the possibility of remedial action under this program. An environmental assessment is required. In most cases project studies will be at Federal expense. Cost sharing is required for project, but federal participation cannot exceed \$500,000.

U.S. Department of Agriculture (USDA) Emergency Watershed Protection Program (EWP)

The Natural Resources Conservation Service provides technical and financial assistance to local sponsors for the relief of imminent hazard and reduction of the threat to life and property in watersheds damaged by severe natural events that are either local or national in nature (national disaster area declaration is not required).

Emergency work includes establishing quick vegetative cover on denuded land, sloping steep land, and eroding banks; opening dangerously restricted channels; repairing diversions and levees; and other emergency work. The act also authorizes the purchase of rural and agricultural floodplain easements designed to retire land from frequent flooding to preclude federal disaster payments, retire land to allow levee setbacks, or limit the use of the land.

Watershed Surveys and Planning

Watershed surveys and planning studies are for appraising water and related land resources and formulating alternative plans for conservation use and development. Studies are of limited scope and short duration, designed to provide specific information needed for planning purposes related to non-traditional flood recovery and floodplain management strategies, including land treatment measures, nonstructural measures, and structural measures.

Small Watershed Program (PL-566 Operations Phase)

The objective of this program is to provide technical and financial assistance in carrying out works of improvement to protect, develop, and utilize the land and water resources in small watersheds. Funding is available to any state agency, county or groups of counties, municipality, town or township, soil and water conservation district, flood prevention or flood control district, Indian tribe or tribal organization, or any other nonprofit agency with authority under state law to carry out, maintain, and operate watershed works of improvement may apply for assistance. Program funds may pay for up to 100% of flood prevention costs and requires preparation of an approved

watershed plan.

Rural Utilities Service Water and Waste Disposal Program

RUS provides grants and loans to rural communities with fewer than 10,000 people for wastewater, drinking water, solid waste, and storm drainage projects. File requests any time of year at any rural development office in the county, district or state.

U.S. Department of Commerce (DOC) Coastal Zone Management (CZM) Program

The Coastal Zone Management Program assists state, tribal, and local entities through a 50% federal match in planning and implementing sustainable management of coastal zones. Section 306 Grants are used to administer CZM programs at the state level and for coastal hazard mitigation strategies, including the development of local hazard mitigation plans, outreach and education activities, monitoring programs, and projects to enhance program management. Section 308 Grants, The Coastal Zone Management Fund, provides emergency grants to address a wide range of unforeseen or disaster-related circumstances. Section 309 Grants are competitive funds designed to enhance state programs, including planning and land regulation activities, enhancing natural features, and preventative measures.

NOAA Coastal Service Center

Go to this site via the Internet <http://www.csc.noaa.gov/text/grant.html> for many funding sources. This service will provide you with links to a variety of agencies and organizations that post information about grant funding for coastal and natural resource management related projects.

Economic Development Administration (EDA) Business Recovery Loans

EDA Public Works & Infrastructure Development Grants

This program is designed to promote long-term economic development and assist in the construction of public works and development facilities needed to initiate and support the creation or retention of permanent jobs in the private sector in areas experiencing substantial economic distress. Project proposals must be located within an economically distressed EDA designated area and be in conformance with an Overall Economic Development Program (OEDP) for the eligible area. Projects must also contribute to long-term economic development of the area by creating or retaining permanent jobs and raising income levels. Examples of projects include 1) Infrastructure for industrial park development; 2) port development and expansion; 3) infrastructure necessary for economic development (e.g. water/sewer facilities); 4) renovation and recycling of old industrial buildings; 5) construction of vocational-technical facilities and skill centers; and 6) construction of incubator facilities. Project costs range widely, with an average of over \$850,000 and federal funding generally allocated to cover 50% of project costs (80% funding may be granted in special cases).

U.S. Environmental Protection Agency (EPA) Clean Water Act Section 319 Grants

Formula funds are awarded to states (state agencies) to implement certain non-point

source programs pursuant to Section 319(h) of the Clean Water Act, including wetland restoration. Federal participation is limited to 60%, and an EPA-approved State non-point source management program is required.

Brownfields Economic Redevelopment Grants

EPA's Brownfields Economic Redevelopment Initiative is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse Brownfields. A "Brownfield" is a site, or portion thereof, that has actual or perceived contamination and an active potential for redevelopment or reuse. EPA's Brownfields Initiative strategies include funding pilot programs and other research efforts, clarifying liability issues, entering into partnerships, conducting outreach activities, developing job training programs, and addressing environmental justice concerns. Projects are funded for two years at a total of \$200,000 per project.

Sustainable Development Challenge Grant (SDCG)

The U.S. Environmental Protection Agency developed this competitive grant program in FY 1996 to encourage people, organizations, business, and governments to work together in their communities to improve their environment while supporting a healthy economy and a sense of community well being. The program focuses on improving the quality of human life while living within the carrying capacity of supporting ecosystems. Sustainable development is placing equal and integrated emphasis on the three legs of the "sustainability stool"- economic prosperity, environmental quality, and community well-being. Understanding the relationships among economic, environmental and a community's social and cultural systems means that community problem-solving in a sustainable development context will consider, enhance, and mutually reinforce each of these systems. Following the sustainable development approach is an opportunity to lift barriers to create synergistic activity between and among these systems. Grants are available for up to \$200,000 and require a 20% non-federal match.

U.S. Department of Homeland Security

The Homeland Security Grant Program (HSGP) is the primary funding mechanism for building and sustaining national preparedness capabilities. HSGP is comprised of five separate grant programs:

Urban Areas Security Initiative (UASI)

UASI focuses on the unique planning, equipment, training and exercise needs of high-threat, high-density urban areas. It assists them in building sustainable capacity to prevent, protect, respond and recover from acts of terrorism. In FY 2008 \$781.6 million was made available through UASI grants.

State Homeland Security Program (SHSP)

This core assistance program provides funds to build capabilities at the state and local levels through planning, equipment, training and exercise activities. SHSP also supports

the implementation of state homeland security strategies and key elements of the national preparedness architecture, including the National Preparedness Goal, the National Incident Management System and the National Response plan.

Law Enforcement Terrorism Prevention Program (LETPP)

LETPP provides resources to law enforcement and public safety communities to support critical terrorism prevention activities, including establishing and enhancing fusion centers and collaborating with non-law enforcement partners, other government agencies and the private sector.

Metropolitan Medical Response System (MMRS) Program

MMRS funds support local preparedness efforts to respond to all-hazards mass casualty incidents, including CBRNE terrorism, epidemic disease outbreaks, natural disasters and large-scale hazardous materials incidents.

Citizens Corp Program

The Citizens Corps mission is to bring community and government leaders together to coordinate community involvement in emergency preparedness, planning, mitigation, response and recovery.

U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) Small Cities Program

The program provides funding to cities with a population of less than 50,000 and counties with a population of less than 200,000 in unincorporated areas. Funds are available to improve local housing, streets, utilities, and public facilities. Disaster Recovery Initiative (DRI) funds are provided for disaster relief, long-term recovery, and mitigation activities in areas affected by a presidential disaster declaration. The state must submit a detailed Action Plan for Disaster Recovery indicating how DRI funds will be used.

Community Development Block Grant (CDBG) Entitlement Communities Program

The CDBG entitlement program annually allocates funds to metropolitan cities and urban counties to develop viable urban communities through decent housing, a suitable living environment, and by expanding economic activities, principally for low- and moderate-income persons. Funds require no local match and are allocated through a formula program.

Community Development Block Grant (CDBG) State-Administered Program

The CDBG entitlement program annually allocates funds to designated state agencies for application to non-entitlement areas. The program is designed to develop viable urban communities through decent housing, a suitable living environment, and by expanding economic activities, principally for low- and moderate-income persons. Funds require no local match and are allocated through a formula program.

Note: CDBG grants many times lose their federal identity when administered through a

state government. When this occurs the CDBG may be used as match to a FEMA grant. Your state grant manager can advise when this condition exists.

HOME Investment Partnerships Program

Formula grants provide up to 75% federal assistance to states, local governments, and urban counties for permanent and transitional housing for low-income persons. HOME funds can assist renters, new homebuyers, and existing homeowners with acquisition, new construction, rehabilitation, and tenant-based rental assistance.

Section 108 Loan Guarantee Program

HUD offers CDBG recipients guaranteed loan funds to acquire real property, relocate homeowners and businesses, rehabilitate publicly owned real property (including infrastructure), housing rehabilitation, and economic development.

U.S. Department of the Interior

Federal Land-to-Parks Transfer Program

The General Services Administration provides funds to identify, assess, and transfer available surplus federal real property to state and local entities for use as parks, recreation areas, and open space. The General Services Administration or Department of Defense must make federal property available. Up to 100% federal participation is possible.

Land Acquisition

This program, administered by the US Fish and Wildlife Service (FWS), identifies and acquires high quality lands and waters for inclusion into the National Wildlife Refuge System.

North American Wetland Conservation Fund

The US Fish and Wildlife Service provides up to 50% federal funds to stimulate public-private partnerships to protect, restore, and manage a diversity of wetland habitats for migratory birds and other wildlife in the United States, Canada, and Mexico.

Partners for Fish and Wildlife

The US Fish and Wildlife Service provides financial and technical assistance to private landowners, businesses, and local governments interested in restoring wetlands and riparian habitats on their land.

Rivers, Trails, and Conservation Assistance Program

The National Parks Service provides staff consultants and technical assistance for river and trail corridor planning and for open space preservation efforts.

Other Sources of Funding Information

Additionally, there are other valuable sources to identify funding information. Among these are as follows:

- The Resource Identification Strategy (RIS) Database. This database, developed jointly by the Florida Department of Community Affairs (DCA) and the Florida Public Affairs Center at Florida State University, contains information on historical and potential funding sources for disaster preparedness, response, mitigation, recovery, and long-term redevelopment projects funded by federal, state, and other organizations. Its goal is to help Florida towns, cities, and counties build stronger disaster-resistant, sustainable communities. The database may be searched by program or by project on the Internet at: <http://www.flris.org>.
- Another useful database is at <http://www.floridafunding.com>
- Florida grants may be viewed at <http://www.floridadisaster.org/Mitigation/index.htm>.
- From the federal government there is <http://www.grants.gov/>
Finally, there is a wealth of information at the “Catalog of Federal Domestic Assistance” on the Internet at <http://www.cfda.gov/>.

APPENDICES

Appendix A Resolutions

To be added after DEM/FEMA approvals

Page intentionally left blank

Appendix B Roster of Current Participants

Page left intentionally blank

Appendix C Work Schedule – 2010 LMS Update

DATE	2010 LMS Update Activity	Participation
November 17, 2008	2010 LMS Update Kickoff meeting – presentation by Joy Duperault, State DEM	Duval Prepares membership as a whole
December 2, 2008	Briefing on 2010 LMS Update from Chief Senterfitt to Mayor’s Security Emergency Preparedness Planning Council on requirements for fulfilling the 2010 LMS Update.	Mayor’s SEPPC membership as a whole – presentation. Individual letter to follow up with members not at meeting.
January 14, 2009	Duval Prepares Risk Assessment Committee First review of hazards and vulnerabilities, for (a) all of Duval County, and (b) individual jurisdictions as Section I, the Plan Draft using the current approved 2005 LMS Plan and the FEMA Local Mitigation Planning Guide Guidance of July 1, 2008. Distributed Plan Comment forms for tracking of updates.	Duval Prepares Risk Assessment Subcommittee members: Members: City of Atlantic Beach Asst. City Manager, (Chair), Jax Beach Senior Planner, City of Jacksonville Planner, URS engineer, Watershed Concepts engineer, Town of Baldwin Liaison (architect), City of Neptune Beach Community Dev. Mgr., Duval County Public Schools Safety Officer, City of Jacksonville Floodplain specialist, City of Jacksonville Dept. of Public Works coordinator, Fla. Division of Forestry mitigation planner
January 22, 2009	Letter requested participating jurisdictions to comply with FEMA directives for this process.	Mayor’s SEPPC membership as a whole – presentation and individual letter (letter to attach as an appendix item)

DATE	2010 LMS Update Activity	Participation
January – February 2009 interim weeks	Work within individual jurisdictions, follow up and consultation with technical experts. Literature and study reviews in preparation for meetings and workshops.	Division of Emergency Preparedness Staff, jurisdiction liaisons, technical experts, Duval Prepares membership
February 2, 2009	Duval Prepares Quarterly Meeting – Presentation by Northeast Florida Regional Planning Council on the local impacts for the 2010 LMS Update – Duval Prepares reaffirmed the adoption of the Guiding Principles, Section II as promulgated in the 2005 LMS, to support the hazard vulnerability analysis process and mitigation projects decision-making into the 2010 update.	Duval Prepares membership as a whole Jason Taylor, NEFRC Planner, Presenter
February 9, 2009	Letters sent to State/ Federal and Duval County agencies to request comment and review on jurisdictions' work programs as they relate to Duval County's analysis of hazards and vulnerabilities. Formal review and response requested by March 9, 2009.	Florida Department of Transportation (FL-DOT) Northeast Florida Regional Council (NEFRC) NOAA National Weather Service (NWS), Jacksonville Office US Army Corps of Engineers, Jacksonville office Duval County Property Appraiser

DATE	2010 LMS Update Activity	Participation
February 13, 2009	Duval Prepares Risk Assessment Committee Second Review of hazards and vulnerabilities; and the mitigation activities for (a) Duval County and (b) within individual jurisdictions. Complete review of Section and I and II, including mitigation strategy, planning process, evaluation process review, plan maintenance and continuing public participation. The committee established the processes enacted in 2005 are still in effect and approved for the 2010 update.	Duval Prepares Risk Assessment Subcommittee members
February 18, 2009	Meeting with URS to discuss integrating LMS 2010 Update information into concurrent process to update the Consolidated City of Jacksonville/Duval County Comprehensive Emergency Management Plan (CEMP)	Division of Emergency Preparedness staff; URS consultants
February – March 2009 interim weeks	Work within individual jurisdictions, follow up and consultation with technical experts. Staff preparing narratives and updates based on data collection.	Division of Emergency Preparedness Staff, City of Jacksonville planning and GIS, jurisdiction liaisons, technical experts, Duval Prepares membership

DATE	2010 LMS Update Activity	Participation
March 6, 2009	Duval Prepares Risk Assessment Committee Third Review of hazards and vulnerabilities, with emphasis on new data gathered after Tropical Storm Fay and Hurricane Gustav disasters in 2008. Reviewed Section III Hazard Identification & Vulnerability Analysis. Reaffirmed the top three priorities are the same as in the 2005 LMS – Winds from Tropical Storms, Storm Surge and Flood. It was also recommended to delete Tsunami, Landslide/Sinkhole, and Dams/Levee Failures, and earthquakes as hazards; due to low to no probability of event impacting County and its jurisdictions as recommended in the 2009 Consolidated City of Jacksonville/Duval County CEMP	Duval Prepares Risk Assessment Subcommittee members and EPD staff.
March – May 2009 interim weeks	Staff preparing narratives and updates based on prior data collection.	Division of Emergency Preparedness Staff, City of Jacksonville planning and GIS, jurisdiction liaisons, technical experts, Duval Prepares membership; Duval Property Appraiser's office.
May 1- May 18, 2009	DRAFT Plan #1 Circulation for initial comments and update	Duval Prepares partnership as a whole

DATE	2010 LMS Update Activity	Participation
May 18, 2009	Duval Prepares Risk Assessment Committee Fourth (and Final) Review of Hazards and vulnerabilities (Section III) -, reviewed hazards, demographics, incorporate new information from NWS, and adopted Table 9, Prioritization Criteria, with note they may want to revisit criteria in 2010. Under Section IV, Adopted Mitigation Initiatives, inclusive of jurisdictional projects. For Section V, on Funding Sources, elected to use the Miami-Dade County LMS information as a comprehensive source of funding information.	Duval Prepares Risk Assessment Subcommittee members
May 18, 2009	Duval Prepares 3 rd Quarterly Meeting – LMS information update to committee - input from partners and stakeholders	Duval Prepares partnership as a whole – comments accepted to update 2010 revisions
June 1-30, 2009	Staff second round of draft revisions – incorporation of Duval Prepares stakeholder input	Division of Emergency Preparedness staff, City of Jacksonville
June 18, 2009	Public Information Subcommittee of Duval Prepares - review of input From Risk Assessment and Planning Subcommittee, with emphasis on community outreach and education activities.	Public Information and Community Outreach subcommittee membership – review and ratification of mitigation projects

DATE	2010 LMS Update Activity	Participation
June 22, 2009	Business Sustainability Subcommittee of Duval Prepares – review of final comments from Risk Assessment and Planning Subcommittee, with emphasis on private sector activities in mitigation initiatives.	Business Sustainability Subcommittee membership – review and ratification of mitigation projects
June - July, 2009 interim weeks	Staff rewrites to incorporate Subcommittee additions to current mitigation initiatives.	Division of Emergency Preparedness Staff
July 20 – August 20, 2009	Community outreach and public comment period	City of Jacksonville GIS put LMS online with phone numbers and email addresses for public comments. Posted public notices at City of Jacksonville City Hall. Hard copy for review available at all jurisdiction's City Halls, inclusive of Jacksonville Beach, City of Neptune Beach, City of Jacksonville Emergency Preparedness Division, City of Atlantic Beach, and Town of Baldwin.
July 20- August 20, 2009	Copies of 2010 Update routed to Duval Prepares membership for review for 08-24-2009 meeting to adopt 2010 Update	Duval Prepares partnership as a whole
August 24, 2009	Duval Prepares Quarterly Meeting –adoption of the 2010 LMS Update	Duval Prepares partnership as a whole – motion to accept the 2010 Update and forward to Mayor's SEPPC for adoption

DATE	2010 LMS Update Activity	Participation
September 8, 2009	Final plan submitted to Mayor's Security Emergency Preparedness Planning Council; adopted and minutes forwarded to State DEM	Mayor's Security Emergency Preparedness Planning Council as a whole
September 15, 2009	Duval County 2010 LMS Update and crosswalk forwarded to State of Florida Division of Emergency Management for review and submission.	

Table 22: Extent Of Hazards - (all information applies to all jurisdictions in Duval County, unless noted otherwise)
 Information in grey cells is optional

Hazard	Effects	Answers		
Drought	How severe on the Drought Severity Classification?	Portions of Duval County reached D3 Drought - Extreme on June 13th 2000 and also experienced D3 conditions during April and May of 2007. While D4 is possible, D3 appears to be a more likely upper limit on drought.		
Flooding	How deep could the flooding be on the ground?	4 feet on McCoys Creek.		
	Expected worst case scenario loss of life per year?			
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">0-1</td> <td style="width: 33%;">2 to 5</td> <td style="width: 33%;">>5</td> </tr> </table>		0-1	2 to 5
0-1	2 to 5	>5		
Thunderstorm	How deep could flooding be expected to get?	4 feet on McCoys Creek.		
	How big could hail be expected to be?	2.75		
	Potential thunderstorm related deaths per year?			
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">0-1</td> <td style="width: 33%;">2 to 5</td> <td style="width: 33%;">>5</td> </tr> </table>	0-1	2 to 5	>5
0-1	2 to 5	>5		
Tornado	What category on the Fujita Scale could impact the jurisdictions?	Since 1950 Duval county has reported 63 Tornado Events, with 8 of those events being classified as F2 tornadoes. It must be noted that F3 to F4 tornadoes have occurred with a 100 nm radius of Duval County and it is not entirely impossible for an F3 to F4 event to occur within the county. An F5 tornado event has never been reported in either Florida or Georgia. As this study request the max potential event an F4 is possible within the county; however, events of F2 and below are for more likely.		
	Expected worst case scenario loss of life per year?			
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">0-1</td> <td style="width: 33%;">2 to 5</td> <td style="width: 33%;">>5</td> </tr> </table>		0-1	2 to 5
0-1	2 to 5	>5		

Hazard	Effects	Answers	
Wind from Tropical Cyclone (Hurricane)	What category on the Saffir Simpson Scale could impact the jurisdictions?	<p>Historical analysis indicates the maximum credible hurricane threat for Duval County would be a category 4 storm, with winds of 135 mph, similar to both the October 2nd 1898, coastal Georgia event and Hurricane "Hugo" (1989) in South Carolina. Near the Florida Peninsula an analysis of the category 5 hurricane track segments indicates no category 5 segment in the Atlantic Ocean extends north of 28.5 degrees north latitude. Additionally, due to the large continental shelf and the relatively shallow shelf waters it is unlikely that a storm would maintain category 5 intensity while transiting those waters. Conversely an analysis of all Category 4 or greater hurricane track segments indicates category 4 landfalls have occurred both to the north and south of the Greater Jacksonville Metropolitan Area. Several of these landfall events (Oct. 2nd, 1898, Hurricane Grace 1959 and Hurricane Hugo 1989) have transited shelf waters which are similar to the shelf waters near Duval County. In both the 1898 Hurricane and Hurricane Hugo the maximum sustained wind speeds were estimated at 135 mph (near the Radius of Maximum Winds) and this should be considered as the maximum likely sustained wind speeds from future Duval County landfalls.</p>	
	<p>Expected worst case scenario loss of life per year?</p> <table border="1" data-bbox="390 285 989 781"> <tr> <td data-bbox="390 285 743 781">0-1</td> <td data-bbox="743 285 989 781">2 to 5</td> <td data-bbox="989 285 1136 781">>5</td> </tr> </table>		0-1
0-1	2 to 5	>5	
Storm Surge (Associated with Tropical Cyclone)	How many feet on the ground?	<p>Based on the maximum credible hurricane threat storm with winds of 135 mph at the Radius of Maximum Winds (RMW), and using an average sized RMW of 25 nm the maximum Storm Tide at the Jacksonville Beaches would be 16 feet above the National Geodetic Vertical Datum of 1929 (NGVD 1929, Figure 4). Similar Storm Tides would be pushed down the St Johns River into the Trout River and southward to Tallyrand Docks. Storm tides in Downtown Jacksonville and the Arlington River would range from 9 to 12 feet above NGVD and along the St Johns River south of Downtown storm tides would average 6 to 7 feet above NGVD 1929. Due to the very complex terrain of Duval County it is difficult to provide an average water depth Above Ground Level (AGL) but for the Jacksonville Beaches area this would average 6 to 8 feet AGL, along the St Johns River to Tallyrand (including the Trout River) average tides of 12 to 16 feet AGL and for the banks of the St Johns River south of Downtown 2 to 4 feet AGL. Along the Arlington River maximum storm tide flooding would average near 10 feet AGL (Figure 5).</p>	
	What category could the jurisdiction get?	4	

Hazard	Effects	Answers			
Wildfire	How big or how many acres could be expected to burn?	State of Florida Division of Forestry states annual average of 98 wildfire events that burn average of 1,325 acres, using the Levels of Concern (LOC) Scale, an integer-scale from 1-9 with relative risk of Wildland Fire, from low level to high level. The highest level is level 9, with 13,818 structures and 6351 residents at the high level at risk. MEMPHIS data.			
	Expected worst case scenario loss of life per year?				
	0-1			2 to 5	
Extreme Temperature	What is the maximum temperature to expect?	The maximum temperature recorded in the Jacksonville Metropolitan area was 104 degrees on July 28, 1872 and July 11, 1879. This could be considered the maximum likely temperature to be experienced in the Jacksonville Area. Of the ten hottest days in Jacksonville the average temperature was 102.9 (103) degrees.			
	Expected worst case scenario loss of life?				
	0-1			2 to 5	
	What is the minimum temperature to expect?	The minimum temperature recorded in the Jacksonville Metropolitan area was 7 degrees on January 21. This could be considered the minimum likely temperature to be experienced in the Jacksonville Area. Of the ten coldest days in Jacksonville the average low temperature was 12.5 (13) degrees.			
	Expected worst case scenario loss of life?				
	0-1			2 to 5	

**Source: National Weather Service, Jacksonville Field Office, as of 3-22-2010
Wildfire Hazard information from State of Florida Forestry Division, MEMPHIS Data**