

Duval County Local Mitigation Strategy
Mitigation Initiatives Update **DRAFT**
July 2010

Project Ranking	Project #	Mitigation Initiative	Goals & Objectives Addressed	Responsible Entity	Status
1	REDUCE RISK				
	34	Pre-disaster plan for post disaster underground utility placement	G-2, 0-2.6	JEA	On-going
	34b)				
	34c	Jacksonville Beach; east end of 3rd Street between Seagate and 7th avenue N			
	34d	Jacksonville Beach; east of 3rd St. between 17th Ave S. and St. Johns County line			
	35	Replacement program for 35 drawbridges on designated evacuation routes	G-2, 0-2.6		On-Going
	36	Emergency Generator –funding assistance program	G-2, 0-2.6	Town of Baldwin	On-going
	37	Full Implementation of Stormwater Management Plans/Maintenance of drainage Infrastructure	G-1, 0-1.2, G-3, 0-3.1	FDOT/ Local Govts	Placeholder for CDM project list for COJ stormwater improvements
	37a	Town of Baldwin drainage improvement plan			
	37b	Jacksonville Beach property acquisition; 16th Ave. S. and 6th St.			
	37c	Jacksonville Beach 2nd St. and 7th, 8th, and 9th Ave N drainage improvements			
	37d	Jacksonville Beach, stormwater outfall Extensions			
	37e	Neptune Beach, stormwater pumping facility for Hopkins Creek			
	37f	City of Atlantic Beach Salt Air Gravity Sewer Rehabilitation			Added in 2009 for TS Fay
	37g	City of Atlantic Beach Drainage --			Added in 2009 for TS Fay
	NEW	Town of Baldwin Bypass on US 90 and US 301		Fla-DOT	

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	38	Study of regional cumulative impacts of natural stormwater retention systems & storm basins	G-1, 0-1.2	St. Johns River Water Management/COJ	On-Going
	39	Develop site specific community response plans for potential water & wastewater facility chemical release	G-2,O-2.6	JEA/EPD	On-Going
	NEW	<ul style="list-style-type: none"> 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 	G-2,O-2.6	COJ Public Works	
	NEW	<ul style="list-style-type: none"> 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 	G-2,O-2.6	COJ Public Works	

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	NEW	<p>A. Moncrief Creek Drainage Improvement Project - Bank stabilization and channel widening between 33rd Street and Gulf View.</p> <p>B. In-line Regional Stormwater Facility at Gulf View</p> <p>C. Bank stabilization from 26th street to 16th street</p> <p>D. Off-line Regional Stormwater Facility Relocation of repetitive loss properties as applicable</p>	G-2,O-2.6	COJ Public Works	
	NEW	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	G-2, O-2.4,O-2.6	Duval County Public Schools/DEM	
	40	Beach renourishment program to mitigate storm surge damage (NOTE - Specifically requested by all beaches municipalities for 2010	G-1	Jacksonville Beach, Neptune Beach, Atlantic Beach , US Army Corp of Engineers	On-Going
	40a	Jacksonville Beach Sand Dune Revegetation		US-ACE/Beaches municipalities/COJ	On-going
	41	Wildfire Mitigation Projects for fuel reduction around critical facilities and residential areas	G-I	DOF, Duval County	On-going
2	DECREASE VULNERABILITY				

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	1	Debris management plan to restore county more quickly after emergency event in disposal of storm-generated debris	G-2,O-2.6	Public Works, COJ	FEMA adopted debris management plan 2007
	3	Develop functional procedures for EOC Executive Group to identify redevelopment options pre-event	G-2, O-2.6	COJ/Emergency Preparedness/Municipal Planning & Development Departs	
	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	G-2, 0-2.2	Municipal P & D Depts/EPD On-Going	On-Going
	5	Mandatory water/wind mitigation requirement for new construction within the Coastal Construction Control Line	G-2, 0-2.3	City of Jacksonville & Beach municipal building departments/COJ Emergency Preparedness Div. And Engineering Dept.	On-Going
	6	Home Retrofit Program for Residential Housing	G-2, 0-2.3	FL Dept. Of Financial Services, FL Dept. of Emergency Management, building industry; FLASH, City of Jacksonville Housing & Neighborhood Services and Emergency Preparedness Division	On-going

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	6a	Home Retrofit Program for Low-Income Residential Housing	G-2, O-2.3	Services, FL Dept. of Emergency Management, building industry; FLASH, City of Jacksonville Housing & Neighborhood Services and Emergency Preparedness Division; Non-profit organizations	Residential Mitigation Construction Program (RMCP)
	7	Identify vulnerable critical facilities for relocation and retrofit	G-2,O-2.4, O-2.6		Implementing
	NEW	City of Atlantic Beach Code-Plus Public Safety Building	G-2, O-2.4,O-2.6	City of Atlantic Beach/DEM	
	NEW	DCPS facilities varied – relocation and retrofit	G-2, O-2.4,O-2.6	Duval County Public Schools/DEM	
		Multiple Public Buildings Wind Retrofit A. Fleet Management Central Garage Wind Retrofit B. Traffic Engineering Bldgs (2) Wind Retrofit C. Solid Waste Division & Solid Waste Div. C. Maintenance Bldg– 1031 Superior St. D. Rights of Way (ROW) Div. GM East Yard Complex 609 St. Johns Bluff Road N. E. ROW-GM West Yard Complex & ROW-GM West Yard Complex 2 2639 1st Street W F. Public Buildings Division - 555 W. 44th St.	G-2, O-2.4,O-2.6	COJ Public Works	HMGP-1785
	7d	JAXPORT Masthead Lighting Tie Downs Wind Retrofit - Talleyrand, Blount Island, & Dames Pt.	G-2, O-2.4,O-2.6	JAXPORT/EPD/DEM	HMGP-1785
	NEW	Hardening of Jacksonville Aviation Authority Critical Facilities	G-2, O-2.4,O-2.6	JAA/EPD/DEM	
	NEW	Hardening of JAXPORT Critical Facilities, Port-Wide.	G-2, O-2.4,O-2.6	JAXPORT/EPD/DEM	

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	NEW	Greater Jacksonville Agricultural Fair (JGAF) Wind Retrofit of Buildings on Fairgrounds	G-2, O-2.4,O-2.6	GJAF/EPD/FL Dept. of Agriculture	
	NEW	(JGAF) Design and construct Code Plus facility to support emergency response/ recovery	G-2, O-2.4,O-2.6	GJAF/EPD/FL Dept. of Agriculture	
	NEW	DCPS Wind Retrofit and Wall Support West Riverside ES #12	G-2, O-2.4,O-2.6	DCPS/EPD	
	NEW	DCPS Frank Peterson HS, replacement of electric panels (lightning protection) and light fixtures, relocation of water meter and water main	G-2, O-2.4,O-2.6	DCPS/EPD	
	NEW	Lee HS replacement of electrical and 1200 AMP distribution panel for lightning protection	G-2, O-2.4,O-2.6	DCPS/EPD	
	8	Shelter assessment & retrofit program	G-2,0-2.6	Duval County Schools/EPD	On-Going
	8a	Mandarin Middle 2 nd Floor Shuttering	G-2,0-2.6	Duval County Public Schools/EPD	In progress HB7121
	8b	Chimney Lakes Elementary 2 nd floor shuttering	G-2,0-2.6	Duval County Public Schools/EPD	In progress HB7121
	8c	Crystal Springs Elementary	G-2,0-2.6	Duval County Public Schools/EPD	In progress HB7121
	8d	Chimney Lakes Elementary	G-2,0-2.6	Duval County Public Schools/EPD	In progress HB7121
	8e	AAA High School	G-2,0-2.6	Duval County Public Schools/EPD	Applied PDM 2008
	8f	Northwest Multipurpose Center Shelter Code Plus Construction	G-2,0-2.6	City Recreation and Community Services Dept./EOD	Applied HB7121 and CDBG
	8g	Westview K-8 School	G-2,0-2.6	Duval County Public Schools/EPD	Applied PDM 2008
	8h	Bartram Springs Elementary	G-2,0-2.6	Duval County Public Schools/EPD	Applied PDM 2008
	8i	Waterleaf Elementary	G-2,0-2.6	Duval County Public Schools/EPD	

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	8j	FCCJ Campus Buildings – North, South, Roosevelt Blvd., Cecil Field	G-2,0-2.6	FCCJ/EPD	
	8k	Town of Baldwin Community Center Shelter	G-2,0-2.6	Baldwin/EPD	HMGP-1785
	8l	UNF Campus Buildings 42,51	G-2,0-2.6	UNF/EPD	HMGP-1806
	8m	UNF Campus Buildings, 9, 10, 45, 53	G-2,0-2.6	UNF/EPD	
	8n	Beaver St. Enterprise Center Retrofit	G-2,0-2.6	Beaver St. Ctr./EPD	HMGP 1806
	8o	ARC Jacksonville Headquarters Retrofit	G-2,0-2.6	ARC/EPD	PDM 2008
	NEW	Recreation and Community Services centers' shelter retrofits	G-2,0-2.6	COJ Rec. & CA Dept./EPD	
	9	A structural enhancement/ retrofit program for public safety and health/medical critical facilities	G-2, 0-2.6		On-Going HMGP1545 HMGP1679 PDM 2009 HMGP 1785 HMGP 1806
	9a	Duval County Health Dept. EOC retrofit	G-2, 0-2.6	DCHD/EPD	
	9b	Private for-profit and non-profit hospitals	G-2, 0-2.6	Private and non-profit hospitals	
	10	Pre-positioned contracts for post- disaster debris removal; pre- designation of sites	G-2, 0-2.6	Public Works/EPD/JEA/	FEMA approved debris management plan 2007
	11	Retrofit sewer lift stations -floodproofing and alternative electric source	G-2, 0-2.6	JEA	Implementing – HMGP 1545 - 2007
	11a	JEA sewage lift station retrofit and elevation			Implementing – HMGP 1545- 2007 – six lift stations
	11b	Jacksonville Beach, portable pumps for lift stations (JEA has FLA WARN system serving region)			In progress- 2008 –\$400K state DEM
	12	Retrofit vulnerable electric substations -floodproofing	G-2, 0-2.6	J EA	Implementing
	13	Retrofit water wells -alternative electric source	G-2 0-2 6	JEA	Implementing

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	14	Ditch clean-out projects	0-3.2	FDOT/Local Govs	On-going
	42	Emergency and Portable Generators for Critical Facilities COJ portable generator's for alternate EOC		COJ, Jacksonville Beach, Neptune Beach, Atlantic Beach, Town of Baldwin, Private Non-Profit's, Independent Govt. Agencies	On-Going
	42a	COJ portable generators for alternate EOC		EPD	Identified alternated EOC with generator capacity - 2007
	42b	Atlantic Beach emergency power support for city emergency operations facility			Requested to be continued in the 2010 Update
	42c	Jacksonville Beach, Osceola Ave. Water Plant emergency power generator			In progress, HMGP 1545
	42d	Jacksonville Beach emergency generator for alternate EOC			
	42e	Jacksonville Beach, portable generators for lift stations			
	42f	WJCT; Relocation of Emergency Radio Operations		WJCT/EPD	
	42h	Neptune Beach, generator for City Hall			
	42i	Emergency Energy Source for JAXPORT's Port Central Operations Building (PCOB).		Jaxport/ EPD	
	43	Jacksonville Beach City-wide imaging of records			
3	EDUCATION/TRAINING/COMMUNITYCATIONS/AWARENESS				
	15	A program to require notification to prospective home buyers of potential flood hazard property	G-6	Northeast Florida Board of Realtors/Banking Industry	On-Going

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	16 UPDATED	Flood insurance education program for at-risk for flood hazard property owners	G-6, 0-6.1, 0-6.4	Florida Department of Insurance/Municipal building depts./City of Jacksonville EPD, and Planning & Development Department and Floodplain Manager	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	G-6, 0-6.6	NE Florida Builders Assn/ Building Officials Org. /Florida Dept. of Community Affairs/FL Dept. Of Business & Professional Reg./ FLASH	Pending
	18 UPDATED	Evacuation Education Program- routes, time frame, shelters, procedures, etc.	G-6, 0-6.1, 0-6.4	EPD/ CERT/Red Cross	“Eye on the Storm” annual all hazards guide, “Get Ready” program EPD website, annual hurricane season outreach, CERT Program

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	20 updated	Promotional Program - environmental benefits of floodway maintenance	G-6, 0-6.1, 0-6.3, 0-6.4	Public Works/ Community Rating System	On-going
	21 UPDATED	Neighborhood information program for all hazards	G-6, 0-6.1, 0-6.4	EPD/LEPC/Fire Depts./ COJ Office of Volunteer Services/ Red Cross	On-going
	22 UPDATED	Hurricane evacuation/shelter education program for homes and businesses	G-6, 0-6.1, 0-6.4	EPD/ CERT/Red Cross	On-going
	23 updated	Hazard Mitigation Speaker's Bureau	G-6, 0-6.3	EPD/ CERT/Red Cross	On-going
	24 UPDATED	Education on preparing post- disaster kits - (first aid, saws, tools, etc.) for pre-during-post events	G-6, 0-6.3	EPD/Media/Red Cross	On-going
	25	Program for property owners to educate on the impacts of filling wetlands that might affect homes/businesses	G-6, 0-6.3	SJRWMD	On-going
	26 updated	Disaster Preparedness Plan for Neighborhoods	G-6, 0-6.3	EPD/ CERT/Housing and &Neighborhoods Dept.	On-going
	27 UPDATED	Family Emergency Preparedness/Mitigation Training	G-6, 0-6.3	EPD Citizen Emergency Responder Training/Red Cross/ FLA Dept of Financial Services	On-going
	NEW	Education Program for Homeowners' Mitigation Credits	G-6, 0-6.3	Florida Dept. of Financial Services	On-going
4	LAND USE ZONING/ DEVELOPMENT CONTROLS/INCENTIVES				
	28	Establish procedure for mitigation category in Capital Improvements Elements	G-2, O-2.6	County/Municipal P&D Depts.	Pending

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	29	Development requirement to ensure defensible space around homes/subdivisions from wildfires	G-4, O-4.7, O4.9	Municipal P&D/Building, Permitting, and Fire Departments	Pending
	30	Discount program on property owners insurance for mitigation construction/retrofit features	G-4, O-4.2, O-4.11	Fla Dept. of insurance/Private Insurance companies, Florida Windstorm Underwriters insurance	On-going My Safe Florida Home Program, Citizens Insurance
5	PROTECTION OF BUSINESS & INDUSTRY				
	32 UPDATED	Disaster preparedness training program for small businesses (such as Hurricane Biz)	G-5, O-5.1	EPD/Small Business Dev. Ctr of UNF/Chamber/Red Cross/Duval Prepares Business Sustainability Subcommittee	On-going
	33 Updated	Insurance discount for businesses with disaster plans	G-5	Fla. Dept. of Financial Services/private insurance companies/Risk & Insurance Mgtment Society	On-going
	NEW	DOF Firewise Program to be adopted by Duval County		Business Sustainability Committee/JFRD/FLA-DOF	
6	PREVENTION OF REPETITIVE LOSSES – section updated for new properties				
	2	Elevation, relocation, acquisition program for flood-prone & repetitive flood loss properties	G-2,O-2.4,O-3.1	COJ/Emergency Preparedness/Property Owner	Ongoing
	2a	4260 Yacht Club Road			Elevation project in progress-2007
	2b	5138 Martha Ann Drive			
	2c	32 Dongalla Court Minor Flood Control			FMAP grant application 2007
	2d	6906 Bakersfield Drive acquisition			FMAP application 2007
	2e	4130 Leonard Circle acquisition			
	2j	1873 Powell Place Minor Flood Control			

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	2l	Clark's Fish Camp -12903 Hood Landing Road = Elevation			2007 FMAP project in progress-elevation of storage facility
	2m	4914 Rhode Island Drive South acquisition			2007 FMAP property acquisition – not closed
	2n	7080 Delaware Court acquisition			2007, SRL
	2o	6804 Bakersfield Drive acquisition			2007, SRL
	2p	6864 Bakersfield Drive acquisition			2007, SRL
	2q	6872 Bakersfield Drive acquisition			2010 SRL
	2r	6882 Bakersfield Drive acquisition			2010 SRL
	2s	6910 Bakersfield Drive acquisition			2010 SRL
	2t	6842 Bakersfield Drive acquisition			2010 SRL
		5180 Martha Ann Drive acquisition			2009 SRL
		10130 Paxton Road acquisition			2009 SRL
		112 Mabelle Drive Elevation			2009 SRL
		5156 Martha Ann Drive Elevation			2009 SRL
		5123 Martha Ann Drive minor flood control			
	2u	6749 Bakersfield Drive acquisition			2010 SRL
	2v	1580 Navaho Drive acquisition			2010 SRL
	2w	5104 Martha Ann Drive Minor Flood Control			2010 SRL
	2x	4902 Rhode Island Drive acquisition			2910 SRL
	2y	9653 Carbondale Drive East Elevation			2010 FMA

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**DUVAL PREPARES
CITY OF JACKSONVILLE EMERGENCY PREPAREDNESS**

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REGIONAL COUNCIL¶

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

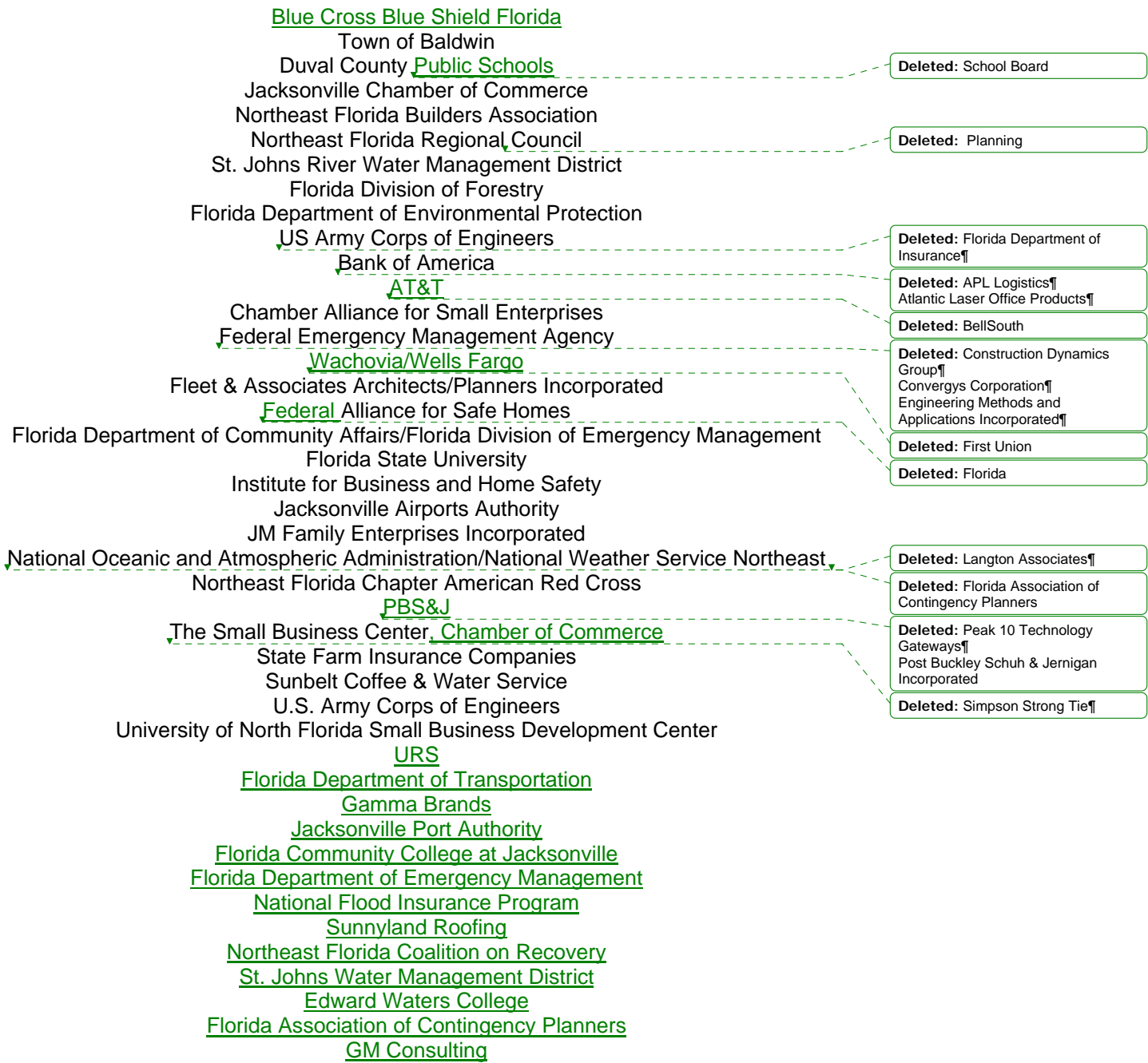
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Local Mitigation Strategy Advisory Committee

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



Risk Assessment Sub-Committee

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

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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: EPD estimates], an estimated \$100 million in business disruption [First Coast Manufactures' 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 50]. Since it is plainly more cost effective to prevent losses than to recover from them, Duval County has developed a Local Mitigation Strategy.

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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.

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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.

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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.

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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.

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Policy changes recommended by the Local Mitigation Strategy include:
Seeking alternative sources of funding for beach renourishment based on mitigation;
re-prioritizing stormwater 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

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.

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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.

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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.

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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.

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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.

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. The minutes and attendance records of these meetings are on file with the Advisory Committee/[Duval Prepares](#). 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 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. Now that the Local Mitigation Strategy is updated and approved by the State of Florida and the Federal Emergency Management Agency, the role of the County and the Regional Council Staff will be reviewed and adjusted accordingly.

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

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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.

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; First Union; 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 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](#).

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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.

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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, 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 Hurricane Evacuation Study 2005 \(with updated 2009 information from the study update now in progress\)](#).

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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. This would include any FMA or [Community Rating System \(CRS\)](#) plans when applicable and available. 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.

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F. Incorporation of LMS into other Documents

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.

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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 problems. 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.¹

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¹ Northeast Florida Regional Council document, Conflict Resolution - Clay County LMS Task Force, August 27, 1998.

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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 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

Annual Evaluation Procedures

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

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First Quarter¶

Hazard Mitigation Advisory Committee reviews, updates and revises the Local Mitigation Strategy and the Hazard Inventory and Vulnerability Assessment . ¶

Second Quarter¶

Hazard Mitigation Advisory Committee solicits and compiles mitigation initiatives and conducts preliminary funding search, ¶

Third Quarter¶

Hazard Mitigation Advisory Committee analyzes, reviews and prioritizes hazard mitigation initiatives and forwards them to the Emergency Preparedness Planning Council for approval. ¶

Fourth Quarter¶

Mayor’s Security and Emergency Preparedness Planning Council, the SEPPC, (LMS Working Group) reviews, approves and recommends hazard mitigation initiatives for funding to City Council, Capital Improvement Plan process, Jacksonville Economic Development Commission, and other funding sources.¶

... [1]

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. [Duval Prepares will accept revisions of the LMS as the projects are completed and removed from the Local Mitigation Strategy.](#) Review and maintenance 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.

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](#).

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Section II – Guiding Principles and Goals

A. Guiding Principles

During the planning process, the Duval County LMS Advisory Committee developed a set of community values or Guiding Principles that serve as a vision for hazard mitigation in Duval County. This set of values guided the Advisory Committee Group in the formulation of specific goals and objectives and helped to direct the planning process and the selection and implementation of mitigation initiatives and programs.

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

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. The following table provides information on the plans, programs, studies, and reports reviewed by the Advisory Committee and incorporated into the Local Mitigation Strategy.

Insert Table 1; 23 pages
pp 17-39

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 a 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.

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

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- a. Although the Hazard Identification and Vulnerability Assessment was conducted with an all-hazards approach, a few hazards - sinkholes, for example - are either not addressed in the final document or are discussed briefly, due to extremely low probability of occurrence, localized nature of the event, difficulty in prediction and/or unlikelihood of effective mitigation.
- b. Historically, numerous natural and man-made disaster events have impacted Duval County. However, while historical 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.
- c. Past Hurricane Hazard Identification in Duval County has been based on information from the Northeast Florida Regional Council (NEFRC) 1998 Hurricane Evacuation Study. An updated study has been released (2005) and the new data is used in this document to measure hurricane exposure in Duval County by identifying areas vulnerable to hurricane impact and evacuation. All local government disaster plans will be revised to conform to the updated study, when the Study is formally released by the NEFRC.
- d. As indicated in the 2005 Hurricane Evacuation Study (NEFRC) all land in Duval County lying east of State Road 9A will be impacted by any level of hurricane activity and is therefore extremely vulnerable to this type of hazard.

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Part of conducting a vulnerability assessment is examining the geography, demographics and land use of an area. Before the hazards are identified and examined, a description of the County is provided including geography, land use and development patterns, and demographics. This will assist the committee in making mitigation related decisions.

B. Geography

Duval County is located in the Northeast corner of Florida, bordered on the east by the Atlantic Ocean and approximately 10 miles south of the Georgia state line. The southern border adjoins St. Johns County east of the St. Johns River and Clay County on the west side of the river. It is bounded on the west by Baker County and on the north by Nassau County. The county encompasses an area of approximately 864 square miles (552,960 acres).

Water is a predominant geographic feature of Duval County to the extent of 102 square miles. The area occupied by Duval County is coastal plain intersected by the St. Johns River, which flows north through the county to reach the Atlantic Ocean at Mayport. The Intracoastal Waterway flows completely through the county, effectively creating a barrier island on which lie the Beach communities. The northeastern portion of the county is largely undeveloped and consists of extensive low-lying areas, most of which are in the 100-year flood plain.

The major geographic features of Duval County are the northward flowing St. Johns River, the largest river in Florida, and the 20 miles of Atlantic Ocean coastline stretching from Little Talbot Island in the north to the St. Johns County line in the south. The river varies from 1 to 3 miles in width as it cuts through the County and has more of the hydraulic characteristics of a long tidal lagoon than a river. It is affected by tidal action from the mouth to over 100 miles upstream. However, a large channel capacity and extensive marshy areas along the lower 10 miles of the river and the Intracoastal Waterway near the mouth allows additional storage of ordinary flood runoff, consequently having minimal effect on tide stages. The mean tidal range in the County varies from about 5 feet at the mouth to less than 1 foot at the county line at Julington Creek.

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[The Development Division of the City of Jacksonville Planning Department has identified 11 Drainage Basins and a multiple of drainage sub-basins that have impact upon the mitigation strategies for development within these basins. See Map.](#)

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C. Land Use and Development Patterns

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.

Although intensive residential, commercial and industrial growth has occurred in many areas in Duval County in recent years, the development pattern has been uneven leaving

significant rural and open spaces. Existing land use can be summarized as follows:
 (Source: CEMP, p. BP-23)

Residential	15.4%
Commercial	1.5%
Industrial	2.1%
Open Space/Recreation	1.2%
Public Facilities	11.5%
Conservation/Historic Pres.	1.3%
Agricultural	26.2%
Vacant/Undeveloped	40.8%

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)

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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.

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.

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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. FLU p.11)

Insert Duval County Future Land Use Map (1 page) pp 44

D. Demographics

The 2000 population census for Duval County was 778,879, an increase of 105,908 since the 1990 Census. The estimated population of Duval County for 2008 is 850,962 (United States Census Bureau). The growth rate for the County overall is approximately 1.9% since 2000. The 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 2.

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Table 2
Population of Duval County by Municipalities

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

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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).

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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 in harm's way in hurricane 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 sharply sometime in the next five years, during which time an aircraft carrier may 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.

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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: Planning and Development Annual Statistical Package, 2007).

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Deleted: The totals of new units during 2003 reveal a marginal increase of 1.3% in development from the previous year (from 2001-2002). In 2003 the City of Jacksonville issued 2,071 major non-residential permits. These included permits for additions, alterations or repairs, new buildings, wreckings, conversions/other and foundations. The total dollar value for this construction amounted to \$878,143,284.

E. Hazards

1. Severe Thunderstorms/Wind Storm Hazards

Florida ranks first among all the states in the number of thunderstorms experienced each year. Most occur during the rainy summer season between May and October and can produce damaging winds, hail, lightning, localized flooding and tornadoes. Thunderstorms are considered severe when one or more of the following conditions are present: winds greater than 57 miles per hour, hail 3/4 of an inch or greater in diameter, or tornadoes form. Down drafts occur along the leading edge of almost all thunderstorms. Strong, localized downdrafts, called down bursts, can produce winds as intense as a tornado.

1a. Frequency

Duval County, including the Town of Baldwin, Atlantic Beach, Neptune Beach, and Jacksonville Beach, experienced 42 severe thunderstorms in the period from 1981 to 1992, averaging almost four per year. These storms caused a total of 42 injuries, but no deaths. In 1993, the County received, along with much of the eastern portion of the United States and especially Florida, a direct hit from the Storm of the Century, which included severe thunderstorms and its accompanying tornadoes and tornado-like winds. Although this storm caused dozens of death, Duval County was fortunate to have suffered no fatalities or major injuries. However the accompanying severe cold and winds created extensive property damage, power outages and hazardous road conditions. According to the National Climatic Data Center of the National Oceanic and Atmospheric Administration, between 1950 and 2008, Duval County reported 317 strong wind events from thunderstorms, estimating \$15.306 million in property damages.

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1b. Vulnerability

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 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.

2. Tornado Hazard

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.

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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.

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1a. Frequency

According to the National Climatic Data Center, there were 7 verified tornadoes between 2005 and 2008. 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 because it only briefly touched down on land. (Source: www.news4jax.com/weather/19872899/detail.html).

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1b. Vulnerability

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.

3. Hurricane 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. Since 1933, 18 hurricanes have passed within 100 miles of Duval County, including the Town of Baldwin, Atlantic Beach, Neptune Beach, and Jacksonville Beach.

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Hurricanes are dangerous and have the potential to be the most destructive storms on earth. These tropical cyclones consist of high velocity winds blowing circularly around a moving low-pressure center. Hurricanes are commonly classified according to wind velocity, using what is known as the Saffir/Simpson Hurricane Scale:

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Hurricane Categories
Based on the Saffir/Simpson Scale

Storm Category	Wind Velocity (mph)	Storm Surge (ft)
1	>74 - 95	4 - 5
2	96 - 110	6 - 8
3	111 - 130	9 - 12
4	131 - 155	13 - 18
5	>155	19+

Source: Duval County Comprehensive Emergency Management Plan, P. BP-5

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 (Dora actually made landfall in St. Johns County, at St. Augustine). The percentage of people in the area who have actually experienced a hurricane has diminished as time and migration have made Dora's impact a memory for a decreasing portion of the population.² Recent events, such as Hurricane Katrina, have made some impression that disaster mitigation is necessary.

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1a. Frequency

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 3 relates Duval County's historical hurricane events:

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Table 3
Number of Hurricanes
Passing within 100 Nautical Miles of Duval County
by Category of Hurricane, 1851-2007

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

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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, 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.

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1b. Vulnerability

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: CEMP, 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, and 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

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- Deleted: It is estimated that there are approximately 800,000 mobile homes or trailers in the state, housing about 16 percent of Florida's population. Approximately
- Deleted: 72,500 people in Duval County live in 27,000 mobile homes
- Deleted: estimates based on 1990 Census
- Deleted: General estimates of the exposure of property at risk from hurricanes may be made. Available data places Duval County seventh among Florida counties in terms of exposure of property at risk from hurricanes, with some \$33 billion in insured property within the county. (Source: Florida Hurricane Catastrophe Fund; Baseline, HIVA-p. 23)
- Deleted: ¶ Should there be a direct hit by a hurricane, there are some significant geographical features of Duval County which could work to reduce the scale of potential damage to property and the environment. Historical experience, along with engineering studies, suggests that the hydrological features of the St. Johns River would buffer many of the potential effects of flooding of Category 1 and 2 hurricanes. Particularly, the width and depth of the St. John's River itself allows the absorption of a great deal of rainfall before the river reaches its capacity and overflows its banks. The relatively narrow inlet of the river acts as a natural barrier to wind-driven or tidal incursions from the ocean and is another feature mitigating hurricane risk. ¶
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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.

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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.

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4. Severe Temperature Hazard

Because of its Sunbelt location and subtropical climate, Florida has, on rare occasion, susceptible to life-threatening temperatures. In 90 years, Duval County has experienced eight major prolonged freezing events and several heat waves.

Extreme temperatures are usually most threatening to agricultural operations. However, because the County's economy does not rely on agriculture, the main threat is to residents who are unprepared for these extremes of temperature.

5. Drought Hazard

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.

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The impact of droughts in Duval County has been relatively indirect. When a drought is

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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.

6. Urban Wild Fire Hazard

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. Lighting 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.

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7. Hazardous Materials Hazard

Duval County's geographic location at a major crossroad for interstate transportation makes it vulnerable to hazardous materials. Interstates 95 and 10 intersect in the middle of downtown Jacksonville; those highways, along with the Port, are used to transport hazardous materials. These transportation routes are also a contributing factor in many industrial hazardous materials dependent companies' decisions to locate in the County.

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Additionally, there are over 200 businesses in Duval County that are designated as extremely hazardous. Duval County's 2 major Naval currently handle hazardous materials. This threat of hazardous materials may be increased in the next five years, due to the potential transfer of a nuclear aircraft carrier to Mayport Naval Station. Nuclear aircraft carriers are powered by two nuclear propulsion plants, which have the capability to be catastrophic. The probability of a nuclear event is low, however, because the Naval Nuclear Propulsion Program has never experienced an accident resulting in the emission of radioactive material (Source: Naval Nuclear Propulsion Program website, http://nnsa.energy.gov/naval_reactors/index.htm). Large numbers of residents are at risk from air and or water contamination from potential hazardous material accidents due to wind and water currents distributing materials over large areas of populated lands. In December 2007, there was a chemical plant explosion at the T2 Laboratory in the north side of Jacksonville, resulting in four deaths and many injuries.

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8. Flooding Hazard

There are 3 main threats from water in Duval County: natural flooding; man-made flooding and storm surge flooding. One of the most prominent features of the area is the existence of large flood plains. The relative flat topographic relief and only minimal elevation above sea level creates extensive flood plain areas in the county. In addition there are interior flood prone areas caused by flat, poorly drained land, which accumulates rainfall through sheetflow or ponding on the surface.

Duval County, including the Town of Baldwin, Atlantic Beach, Neptune Beach, and Jacksonville Beach, 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. Tropical cyclones, including those of less than hurricane intensity, 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 prolonged rainfall events and localized thunderstorms, rainfall alone can and has caused flooding. (Source: Steve Letro, National Weather Service)

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"There are three ways the Consolidated City of Jacksonville/Duval County residents can be flooded: storm surge, creeks and river or natural flooding, and finally neighborhood or localized flooding caused by poor drainage. Areas at risk are shown in the 100-year Flood Plain Map above, as well as areas subject to storm surge for category 1 and 2 storms called Coastal High Hazard Areas and finally, isolated neighborhoods with drainage issues. Due to the low-lying nature of much of the Consolidated City, localized flooding often accompanies heavy thunderstorms. This localized flooding rarely presents more than an inconvenience, but occasionally results in severe flooding that, including Tropical Storm Fay in 2008 that resulted in a Presidential Declaration of Natural Disaster. (FEMA-1785-DR-FL). Many homes located along the banks of the St. Johns River and its tributaries will be subject to river flooding, particularly that (flooding) which is related to severe hurricanes which strike the coastline from the ocean at any angle ranging from 30 degrees to 150 degrees (relative to the coastline). The

Consolidated City of Jacksonville/Duval County evacuation details are addressed in the Consolidated City of Jacksonville/Duval County Evacuation ICP. (Page 27, CEMP, June 15, 2006)" (Source: Duval County CEMP 2009 updated language)

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Major flood hazard areas adjoin the Intracoastal Waterway, its creeks and marshes. Other inland flood zones exist in low-lying areas and are generally at risk. In addition, although large portions of the land east of the 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. (Source: CEMP, p. BP-22-23) Other flood hazard areas exist in the eastern and southeastern portions of the county.

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Natural flooding occurs in designated flood zones mostly along the banks of Duval County's many creeks, streams, tidal wetlands and of course the rivers including the St. Johns. Fourteen percent if the County is within the designated flood plain. Man-made flooding occurs in areas due to urban and suburban development usually when some drainage structure fails or is overwhelmed. The third threat comes from storm surge associated with a hurricane and generally moves from the coast inland or westward and varies greatly with a wide number of contributing factors. Additionally, there are many flood basins in Duval County: Arlington River, Brady/Yellow River, Broward River, Downstream of Trout River, Dunn Creek, Intracoastal Waterway, Julington Creek, Nassau River, Ortega River, Trout River, and Upstream of Trout River.

Duval County's sub-tropical climate produces 51 inches of rainfall during the year. Since Duval County is mostly coastal plain in topographic terms with an average elevation of only 25' above sea level, natural drainage is normally a slow process under good conditions. When complications arise from heavy sustained rainfall, northeaster conditions, high tides or a combination of these factors, these slow drainage characteristics result in localized flooding. Development over the past 100 years has lined the waterfront nearly everywhere it exists resulting in many structures and significant population in flood zones and flood ways.

Deleted: Duval County has had 12 incidents of severe flooding over the last 87 years that were not associated with hurricanes or other tropical storms.

The purpose of the Northeast Florida Regional Council's 2005 Hurricane Evacuation Study and accompanying Storm Surge Atlas to provide data to be used as a guideline for emergency management personnel to use in hurricane preparedness planning. The storm surge information that was used was developed by the National Oceanic and Atmospheric Administration, Tropical Prediction Center, and the National Hurricane Center. A storm surge is the abnormal rise in water levels caused by wind and pressure forces of a hurricane or tropical storm and produces most of the flood damage and drowning (90 % of hurricane deaths) associated with storms that make landfall or closely approach a shoreline. The 2005 study indicates that a category 2 hurricane making a direct hit to Duval County under the worst conditions would cut a much deeper and broader path than the 1988 study indicated. The study indicates that surge from even a category 1 hurricane will result in general storm surges of 4 to 5 feet above normal water levels. Storm surge will be most pronounced along the coast with levels reaching up to 11 feet above ground, but all low lying areas near the rivers and creeks are also subject to high storm surge.

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The Northeast Florida Regional Council issued a 2005 Hurricane Evacuation Study which refined the expectations for the impacts of storm surge and high winds associated with hurricane hazard in Duval County (NEFRC Hurricane Evacuation Study, pg. H15-16). Currently, NEFRC is preparing the 2009 Hurricane Evacuation Study which overlays this LMS 2010 Update process.

9. Earthquakes

Earthquakes are rapid movements of the earth causing movement and shifting of rock beneath the surface. The event of an earthquake occurring in Duval County is rare although past events have been recorded in the State of Florida. Florida is very geologically stable and the geology does not contain any fault lines or volcanoes, which are generally associated with earthquakes. Earthquakes were recorded in Florida in 1879, 1880, 1886, 1893, 1948, and 1952, but only one caused very minimal damage. Earthquakes are not a major hazard concern in the State of Florida. In 2006, there was an earthquake in the middle of the Gulf of Mexico with a magnitude of 6.0, but there was no evidence that it affected Duval County in any way. (Source: Lovett, Richard A. (Sept. 11, 2006) "Rare Earthquake Shakes Gulf of Mexico", National Geographic News.)

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10. Tsunamis

Tsunamis are giant waves generated in a body of water that can be caused as a result of an earthquake, volcano, landslide, or explosions. Tsunamis are more likely to affect the Pacific Rim states; however historical evidence shows that tsunamis or tsunami-like waves have affected the eastern North American coast, including Florida. Tsunami-like waves were recorded in Daytona in 1946 and 1992 and in Mayport in 1886.

These giant waves can greatly affect low-lying coastal areas by inundating mass areas of land. Duval County is not in immediate danger of a tsunami. These natural hazards are not common in the Atlantic Ocean but have happened in the Pacific Ocean in the past decades. While University College London scientists claimed in 1999 that a possible Canary Islands eruption could be catastrophic to the American east coast, they have admitted that this is an unlikely worst case scenario (Source: Ayres, Ali. (29 Oct. 2004). "Tidal Wave Threat 'Over-hyped'". BBC News.)

Deleted: ; however scientists in England have been studying the affects of a potential tsunami in the Atlantic Ocean caused by the possible eruption of a volcano in the Canary Islands that would lead to part of the mountain falling into the ocean

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11. Landslides/Sinkholes

A sinkhole, technically not a landslide, is formed when carbonate layers that lie beneath the ground's surface dissolve and the ground above the void collapses from its weight over the open space underneath. Sinkholes can cause damage to roads, homes, and other buildings that lie on the surface above the underground void. According to the Florida Geological Survey, Duval County, including the Town of Baldwin, Atlantic Beach, Neptune Beach, and Jacksonville Beach, recorded 4 sinkholes in the last 10 years, in 2001, 2004, and 2005. Sinkhole potential is considered very low for the entire county

and is therefore not considered further.

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12. Dam / Levee Failure

Dam or levee failure can be caused by a flooding event and can cause damage to property downstream from the dam or levee when the water starts moving. Duval County is not in immediate danger of this hazard as there are no dams or levees in the County.

F. Probability of Occurrence

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.

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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 tornados spawned by a hurricane is likely to be as significant a risk factor as storm-caused flooding. The Duval County Building Department has 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.

Deleted: The meteorologist in charge of the National Weather Service office in Jacksonville, in a *Florida Times-Union* report concerning the development of new northeast Florida hurricane evacuation study by the Regional Planning Council, observed that:¶
¶
Jacksonville sits at a natural turning point for Atlantic hurricanes due to a variable ridge of high pressure called the "Bermuda High"... As storms reach the western periphery of the Bermuda High, they tend to turn northward and then northeastward... (Dunbar, 1997, p. 2).¶
¶

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.

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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].

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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

Deleted: Property losses in excess of \$4 billion can be expected in the event of a category 3 Hurricane.

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 4** 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 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.

**Table 4
Duval County Hazards Analysis; Probability and Severity**

HAZARD	PROBABILITY	SEVERITY
Wind from Tropical Storm	.19 storms/yr	90 mph
Storm Surge	0.12 storms/yr	110 mph
Floods	7 events/yr	>6"
Hazardous Materials Accidents	2 events/yr	Clean up Required
Extreme Temperatures	8 events/yr	<28 degrees or > 90 degrees
Wildfires	99 events/yr	16 acres
Thunderstorms & Tornadoes	26/5.5/yr	Warning Issued
Drought	1/15 yr	>6 months
Terrorism	0.01 events/yr	Injury/Death
Critical Infrastructure Disruption	1/10 yr	>12 hours

Source: Duval County Comprehensive Emergency Management Plan, 2003

G. Vulnerability and Loss Estimates

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

Deleted: Therefore the extent of the area where risk from hazards will be considered is limited to the generally urbanized areas as depicted on the St. John's River Water Management District satellite image used for the existing land use cover graphic as included in their Local Government Water Resource Atlas (December 1996).

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.

2. Vulnerable Development

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 5** by the Hurricane Catastrophe Fund's data. **Table 6** 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 5
2006 Florida Hurricane Catastrophe Fund
Exposure Concentration for Selected Counties
(In thousands of dollars)

County (Rank)	Residential	Commercial	Mobile Home	Total	Percent of Florida Total
<u>Palm Beach (1)</u>	<u>\$135,813,865</u>	<u>\$20,886,893</u>	<u>\$541,119</u>	<u>\$173,360,791</u>	<u>9.68%</u>
<u>Broward (2)</u>	<u>\$123,726,835</u>	<u>\$21,076,112</u>	<u>\$650,789</u>	<u>\$157,028,118</u>	<u>8.77%</u>
<u>Miami-Dade (3)</u>	<u>\$119,775,213</u>	<u>\$25,658,327</u>	<u>\$257,806</u>	<u>\$155,511,348</u>	<u>8.69%</u>
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 6

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- Deleted: 557,071
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- Deleted: Risk Management
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**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

Since 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.

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**Table 7
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
<u>Town of Baldwin</u>	\$11,562	\$40,571

SOURCE: Duval County Property Appraisers Office, 2008 Database

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3. Vulnerable Critical Facilities

Fire Stations, hospitals, shelters, evacuation routes, staging areas, water treatment plants, sewage plants, fuel depots, electric substations, government buildings and emergency response facilities are all considered critical facilities. There are hundreds of these facilities

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within Duval County. Assessments are underway to determine the vulnerability of critical facilities to the different hazards that threaten the area.

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4. Vulnerable Populations

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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 2006).

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Deleted: The Jacksonville CEMP provides an estimate of about 24,500 mobile homes housing a population of about 65,800 (BP-27), however these figures are based on 1990 Census data

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

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Table 8
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	<u>136,919 / 64,821</u>	<u>8,368</u>	<u>12,481</u>
Category 2		<u>204,565 / 96,606</u>	<u>13,569</u>	
Category 3		<u>324,568 / 149,514</u>	<u>35,413</u>	
Category 4		<u>351,909 / 160,162</u>	<u>42,481</u>	
Category 5		<u>460,170 / 206,548</u>	<u>65,258</u>	

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

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.

It should also be noted that these figures obviously not remain static. Population increases east of the Intercoastal 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 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 for hurricane evacuation routes and sheltering components.

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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.

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I. Hazard Vulnerabilities

1. Areas Vulnerable to Hurricane Hazard

The risk of death, injury and property losses resulting from wind and storm surge elements of a category 1 or 2 hurricane is greatest at the three beaches communities extending from Ponte Vedra on the south up to and including Mayport Naval Station on the north and including land $\frac{3}{4}$ of a mile west of the Intracoastal Waterway. Four areas will experience category 2 force winds in addition to the beaches; 1) Lands south of the St. Johns River from Mill Cove to the Charter Point area, north of Fort Caroline Road; 2) Lands on the north bank of the St. Johns River from the intersection of 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.

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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

Duval County has almost \$ 3 billion worth ~~\$3,378,015,24~~ of residential structures ~~property~~ within the 100-year flood zones, according to the Duval County Property Appraisers. 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

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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.

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I. 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:

1. Wind from Tropical Cyclone
2. Floods
3. Storm Surge from Tropical Cyclone
4. Terrorism
5. Hazardous Materials Accidents
6. Thunderstorms and Tornadoes
7. Wildfires
8. 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:

1. Wind and Storm Surge from Tropical Cyclones
2. Floods
3. Terrorism
4. Hazards Materials Spills
5. Wildfires in the Urban Interface
6. Tornadoes from Thunderstorms

[The Risk Assessment and Planning subcommittee of Duval Prepares, the LMS Advisory Committee reaffirmed its commitment to the hazard prioritization process in meetings conducted to update the 2010 LMS in February and March 2009.](#)

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J. 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.

INSERT MULTI-HAZARD MAPS (pp 65-77)

Section V. 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 will ensure that effective projects and programs that are 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
 - **(1)** why the project is needed;
 - **(2)** how it would effectively reduce disaster damages or save lives (technical merit);
 - **(3)** anticipated cost-effectiveness; and
 - **(4)** 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

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.

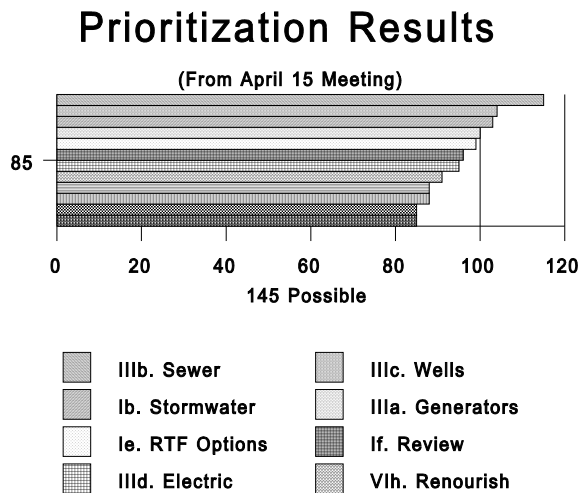
Prioritization Process

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

Insert Prioritization Table pp 80—83

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.

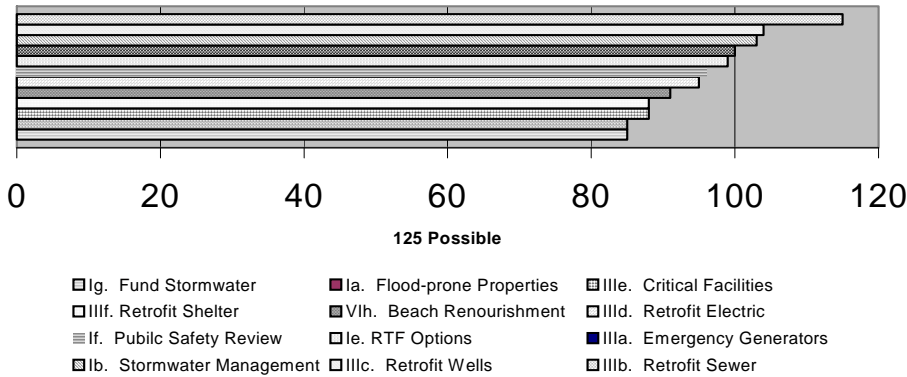


D. 2002 Mitigation Initiative Prioritization Results

Risk Assessment and Planning Subcommittee members of Duval Prepares reviewed some 50 different potential mitigation projects organized into 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. The new 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 new 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 2004 hurricane season. 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 on the 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

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The Duval Prepares LMS Advisory Committee participated in a November 17 2008 meeting convened by the City of Jacksonville Emergency Preparedness Division of the Jacksonville Fire and Rescue Department. At this meeting, a State of Florida Division of Emergency Management senior planner briefed the Duval Prepares members, associates and key stakeholders about the LMS update process. The Co-Chairs of Duval Prepares, Ms. Jane Wahl of State Farm Insurance and Chief of Emergency Preparedness Martin Senterfitt charged the subcommittees for Risk Assessment and Planning; Business Sustainability, and Public Information, to meet in their committee groups to review the existing plan and furnish support to the Division's Mitigation Planner in preparing the initial draft of the updated LMS. In February and March 2009, the Risk Assessment and Planning Subcommittee held several meetings to discuss the prioritization and review of hazards. The Business Sustainability and Public Subcommittees met in June 2009 to formulate their recommendations. The Risk Assessment and Planning Subcommittee reached consensus that the hazards for Duval County have not changed significantly from 2004-2005. Additionally, the priorities as established in the 2004-2005 review process were still the priorities to be addressed in the 2010-2015 LMS Update. The Business Sustainability and Public Information Subcommittees offered updated information to the projects within the current mitigation initiatives and concurred that these projects were still vital to the mission of mitigation in Duval County.

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SECTION V – Funding Sources

A. Funding Sources

The following Table, Table 11, provides current information on sources of available funding that is used for hazard mitigation projects. The table 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.

Deleted: Add Miami Dade mitigation funding chart for accuracy July 6, 2009

¶
American Recovery and Reinvestment Act of 2009 (ARRA)¶
Certain programs enabling small business, stormwater utilities, fire department and education to fund construction.¶
¶

INSERT Funding Table 11; pp 96

First Quarter

Hazard Mitigation Advisory Committee reviews, updates and revises the Local Mitigation Strategy and the Hazard Inventory and Vulnerability Assessment ,

Second Quarter

Hazard Mitigation Advisory Committee solicits and compiles mitigation initiatives and conducts preliminary funding search,

Third Quarter

Hazard Mitigation Advisory Committee analyzes, reviews and prioritizes hazard mitigation initiatives and forwards them to the Emergency Preparedness Planning Council for approval,

Fourth Quarter

Mayor's Security and Emergency Preparedness Planning Council, the SEPPC, (LMS Working Group) reviews, approves and recommends hazard mitigation initiatives for funding to City Council, Capital Improvement Plan process, Jacksonville Economic Development Commission, and other funding sources.

. Given the estimated average annual 1.62 percent growth rate in the county since the 1990 census, and assuming the proportion between population and mobile home growth remained constant, there would now be approximately 72,500 people living in some 27,000 mobile homes in the county. This is a population that is highly vulnerable to high winds.

More exact information concerning the population living in and the distribution of, mobile homes is a critical need for Duval County.

**Population Vulnerable to Storm Surge or Wind by Category of Hurricane
1990 Estimate**

<i>Hurricane Category</i>	<i>Storm Surge</i>	<i>Wind</i>	<i>Total</i>
1	18,200	58,900	77,100
3	47,200	56,100	103,300
5	141,500	148,200	189,700

Division of Emergency Preparedness, Comprehensive Emergency Management Plan, June, 1997, p. BP-28.

Since, from the historical record of periodicity, the most likely strength of a hurricane to strike close to Jacksonville is a Category 1, these figures suggest that at a minimum, about 77,000 people are likely to be exposed to some significant degree of risk should a hurricane sweep across the county. However, although less

frequent, the possibility of a Category 3 hurricane moving into the area cannot be completely dismissed. In that case, the exposed population increases by another 30,000 or more, to over a hundred thousand people.

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Given the apparent strength of the economy into the late 1990's, population in Jacksonville will in all likelihood continue to grow for some time. Such growth will inevitably expose more people to hurricane risk, especially since such growth tends to be in those areas, for example, the beaches communities and along waterways, where the risks associated with hurricanes are greatest.

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At this time, the expected levels of storm surge are being reevaluated based on more recent data than that available at the time the current Storm Surge Atlas was compiled (1983). Preliminary data for the Northeast Regional Planning Council Hurricane Evacuation study indicate that possible levels of flooding due to storm surge are higher than were previously assumed (Dunbar, 1997, p.1). Increases in the depth of flooding and its extent would bring an even larger portion of the population in the area under risk from these effects. The accumulating data underlie the ominous statements in the Conservation Coastal Management Element of Jacksonville's 2010 Comprehensive Plan that Astorm surge and wind emanating from a Category 1 or 2 Hurricane can destroy or heavily damage beachfront homes and commercial establishments. Storm surge from Category 3, 4, or 5 hurricanes is expected to cause mass destruction in coastal municipalities including Atlantic Beach, Neptune Beach and Jacksonville Beach. (Planning & Development Department, 1997, p. 12) (Emphasis added)

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

This – 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 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 2007 there were \$746,900,000 available in 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 Corps 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:

- 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/>.